Recent Trends In Multidisciplinary Subjects, Volume – 3

Dr. J. Naskath, R. Prabha, Dr. Mohd. Shaikhul Ashraf, Dr. Monika, Dr. Shalini Chaturvedi, Dr. Shuchi Goel, Sruthi S.

Flip to Back Look Inside

Dr. K. Kalidasa Murugavel, M.E.,Ph.D.,
PRINCIPAL
NATIONAL ENGINEERING COLLEGE
K.R. NAGAR, KOVILPATTI - 628 503.
THOOTHUKUDI-DIST

< Emerging Low-Power Semiconductor Devices (https://www.taylorfrancis.com/books/edit/10.1201/9781003240778/emerging-low-power-semiconductor-devices-shubham-tayal-abhishek-kumar-upadhyay-deepak-kumar-shiromani-balmukund-rahi)

Show Path

Chapter

Modeling and Simulation of Emerging Low-Power Devices

By M. Venkatesh (/search?contributorName=M. Venkatesh&contributorRole=author&redirectFromPDP=true&context=ubx), G. Lakshmi Priya (/search?contributorName=G. Lakshmi Priya&contributorRole=author&redirectFromPDP=true&context=ubx), S. Arun Samuel (/search?contributorName=S. Arun Samuel&contributorRole=author&redirectFromPDP=true&context=ubx), M. Karthigai Pandian (/search?contributorName=M. Karthigai Pandian&contributorRole=author&redirectFromPDP=true&context=ubx)

Book Emerging Low-Power Semiconductor Devices (https://www.taylorfrancis.com/books/edit/10.1201/9781003240778/emerging-low-power-semiconductor-devices-shubham-tayal-abhishek-kumar-upadhyay-deepak-kumar-shiromani-balmukund-rahi)

Edition	1st Edition
First Published	2022
Imprint	CRC Press
Pages	27
eBook ISBN	9781003240778

ABSTRACT

< Previous Chapter (chapters/edit/10.1201/9781003240778-1/role-tfet-devices-performance-analysis-wireless-communications-lokesh-lakshmi?context=ubx)
Next Chapter > (chapters/edit/10.1201/9781003240778-3/tunnel-field-effect-transistor-chandan-kumar-pandey-saurabh-chaudhury-neerja-dharmale-young-suh-song?context=ubx)

ScienceDirect

Materials Today: Proceedings

Available online 18 May 2023

In Press, Corrected Proof What's this?

Experimental investigation of self-compacting concrete (SCC) using fly ash

N. Karthiga @ Shenbagam [a], M. Arun Siddharth [a], V. Kannan [b], C. Dhanusree [a]

Show more

https://doi.org/10.1016/j.matpr.2023.04.582

Get rights and content

Abstract

The use of SCC in the recent times has been increased abundantly in order to reduce the size the members of high raise buildings. In this research work M_{50} grade concrete was used for testing in which nearly 20% replacement of cement by weight was done using fly ash. Polypropylene fibres are used to enhance the strength and ductility aspects, aspect ratio was considered between 50 and 150. Mix design was done as per the IS codal provisions from which samples were prepared, with different proportions of concrete. Mechanical, durability and physical tests were conducted on the prepared samples. After the tests it was concluded that when 20% replacement of cement by fly ash and 3.5% of addition of fibres increased the compressive strength of concrete up to 68 N/mm^2. Tested samples were then compared with the normal concrete the variation in strength aspect is nearly 30%. From SEM and XRD analysis it was found that when we use fly ash inside concrete it increases the durability of concrete, as it starts reacting with the available calcium hydroxide, resulting in the densified porosity of concrete, thus decreasing the thickness in the interfacial transition zone. The presence of more aluminium oxide in both the admixtures helps in maintaining the hardened nature, it also increases the compressive strength in the initial stage itself by reducing the formation of ettringite.

Introduction

As the concrete has a flowing tendency, in congested reinforcement, due to its flowing property the concrete should be free from segregation [1], [2], [3]. This is achieved by using low powder content, using superplasticizers inside concrete, reducing the use of water content. Materials that are used for manufacturing normal concrete are the same ones used for mixing SCC also. The various improvements in SCC were discussed in detail [4], [5], [6], [7], [8]. The mix proportion, testing methods and procedures for SCC is given in detail for the researchers in European recommendations [9], [10]. Tests on properties of durability, variation of content in cement paste, usage of aggregate content in minimum and maximum way were carried out and it was finally concluded that increase in paste content reduces the strength of concrete, modulus of elasticity of concrete [11], [12]. The strength and the behaviour of SCC when fly ash was used inside concrete was studied. Marble waste powder and limestone when used in concrete the mechanical and the transportation properties were found to increase in higher way [13], [14], [15]. The effect of auto shrinkage and the parameters that influence the mix proportion for mortar was studied in detail [2]. Ductility studies were also carried out in SCC when cement was replaced using fly ash, fly ash, incinerated rice hush ash etc., with the use of these materials the porosity effect in concrete gets reduced and the bonding of concrete in the ITZ zone improves in a larger extent. Use of different types of fibres inside concrete and the effect of it in the strength parameters were studied and was finally concluded that when polypropylene fibres when used inside concrete had a very high toughness when tested for flexure. From past research it was found that the steel fibres when used increases the ductile nature [16], [17], [18], [19] and the concrete without fibres was little brittle in nature [12], [13]. When the concrete was heated below 300°celsius made the concrete have less strength in compression [20], [21], [22], [23]. The entrapped air when fibres are used in concrete increases the pore structure as a result of which the amount of fibres when increased the compressive strength decreases [24]. Nylon fibres when used in light concrete, resulted in a study of new parameter named post failure compressive

strength [25]. The density of concrete decreases when the percentage of fibres are increased [26], [27]. As fibres are used in concrete during compression testing the energy released during the test increases [25]. Nano silica used in concrete also improves the durability and strength aspects as it usage acts as an artificial pozzolanic material [27], [28]. Plastic waste when used into concrete, was found to increase the viscosity of the concrete [29], [30]. Recycled coarse aggregate from granite and marble waste product was used inside concrete [31] and various tests were carried out on different specimens with different proportions and the results was determined related to strength aspects [32]. The workability of concrete affected when red granite waste powder was used as replacement of sand [33], [34], [35], [36]. The main aim of this research paper is to use the waste material from industry as a replacement instead of cement, so that we can provide concrete as a eco-friendly material. (See Fig. 1, Fig. 2, Fig. 3)

Section snippets

Mix proportion and methodology

In this work cement is replaced by **fly ash** from 0 to 30% by weight. Polypropylene and synthetic fibres are added in various from 0 to 20% separately. One normal specimen without any replacement is prepared which is taken as the controlled specimen. The mix design of the prepared samples is as shown in Table 1. Various tests to determine the fresh properties such as slump flow, T500, V funnel, L box, U box, J ring, sieve segregation are performed. To understand the durability properties of the…

Tests on fresh concrete

The fresh workability tests are carried out for the desired samples and a few of them are tabulated in the Table 2.

The test results that are obtained from the prepared samples were found to be within the permissible results as be the codal provisions.…

Results and discussions

In order to perform the durability properties on concrete for different proportions of fly ash and granite powder, proportions of synthetic and polypropylene fibres by volume fraction. Normal concrete with fibres alone was considered.…

Conclusions

From the various tests performed we can conclude that.

1. Due to the usage of fly ash in SCC, it reduces the cost of the concrete.…
2. The use of the powder content does not increase or decrease the flow properties when replacement at very low percentages. But when replaced over 20% it decreases the flowing properties of SCC concrete.…
3. The formation of CSH gel was perfect with 20% of waste powder content, on further increases the matrix formation.…
4. The elastic modulus of concrete increases due to the…

…

CRediT authorship contribution statement

N. Karthiga @ Shenbagam: Conceptualization, Writing – original draft, Writing – review & editing. **M. Arun Siddharth:** Writing – original draft. **V. Kannan:** Supervision. **C. Dhanusree:** Writing – original draft, Writing – review & editing.…

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: [Karthiga Shenbagam N reports financial support was provided by Bannari Amman Institute of Technology Department of Civil Engineering. Karthiga Shenbagam N reports a relationship with Bannari Amman Institute of Technology Department of Civil Engineering that includes: employment. Karthiga Shenbagam N has patent pending to Assignee. Karthiga @ Shenbagam Na*, Arun …

Acknowledgements

I thank the management of Bannari Amman Institute of Technology, for allowing me to do the this work.…

Recommended articles

References (36)

S.A. Abukersh *et al.*
Recycled aggregate concrete produced with red granite dust as a partial cement replacement
Constr. Build. Mater. (2011)

A. Alrifai *et al.*
Paste and mortar studies on the influence of mix design parameters on autogenous shrinkage of self-compacting concrete“s
Constr. Build. Mater. (2013)

A. Kanellopoulos *et al.*
Durability performance of self-compacting concrete
Constr. Build. Mater. (2012)

A. Medeiros *et al.*
Effect of the loading frequency on the compressive fatigue behavior of plain and fiber reinforced concrete
Int. J. Fatigue (2015)

M.T. Bassuoni *et al.*
Durability of self-consolidating concrete to sulphate attack under combined cyclic environments and flexural loading
Cem. Concr. Res. (2009)

B. Felekoglu *et al.*
Effect of water/cement ratio on the fresh and hardened properties of self-compacting concrete
Build. Environ. (2007)

B. Felekoglu *et al.*
Effects of fibre type and matrix structure on the mechanical performance of selfcompacting micro-concrete composites
Cem. Concr. Res. (2009)

C.K. Leung *et al.*
Fatigue enhancement of concrete beam with ECC layer
Cem. Concr. Res. (2007)

P. Dinakar *et al.*
Durability properties of high volume fly ash self compacting concretes
Cem. Concr. Compos. (2008)

Y. Ding *et al.*
The investigation on the workability of fibre cocktail reinforced self-compacting high performance concrete
Constr. Build. Mater. (2008)

View more references

Cited by (0)

View full text

ScienceDirect

Materials Today: Proceedings

Available online 12 May 2023

In Press, Corrected Proof What's this?

Influence of adding steel – glass – polypropylene fibers on the strength and flexural behaviour of hybrid fiber reinforced concrete

A.K. Devi Keerthika Esakki [a], S. Karan Aakash Dev [a], T. Gomathy [a], C. Chella Gifta [b]

Show more

https://doi.org/10.1016/j.matpr.2023.05.055

Get rights and content

Highlights

- • The effect of adding three different type of fibers on strength and load - deformation behaviour have been examined.
- • Strength effectiveness was observed in steel -polyester fiber combination and negative results in Glass- polypropylene combination.
- • Load deflection performance and strain capacity are improved 17% higher than non-fibrous control concrete beam.

Abstract

This experimental research investigates the strength and load deflection characteristics of hybrid fiber reinforced concrete. Two or more types of fibers are combined to improve the overall properties of concrete. Grade of concrete chosen for study is M40 and the specimens were incorporated with 0.75% volume fraction of Steel, Glass and polypropylene fibers in equal proportions and in different combinations. This study primarily focused on compressive strength, split tensile strength and flexural tensile strength of composite with two types of fiber combinations. Results were compared with non-fibrous control concrete and strength effectiveness was observed to be more in Steel-Polypropylene fibers combination. Negative results were produced by Glass- polypropylene hybrid fiber composites. Based on the best strength results reinforced concrete beam specimen is made with Steel – polypropylene hybrid fiber combinations as a secondary reinforcement and it is tested under flexural loading conditions. Load deflection behaviour and crack studies were carried out on tested beam specimens. Finally experimental results were compared with Finite element software results and close agreement was observed between them.

Introduction

Concrete is the most commonly used building material worldwide. It is inexpensive and easily available everywhere and has good compressive strength but low tensile strength. Concrete is often prone to cracking because of its weak tensile strength and poor toughness properties. Exposure to severe environmental conditions is another major concern for concrete, which easily damages the rebars by corrosion [1]. Therefore, its low tensile capacity and poor toughness characteristics mainly affect its overall concrete performance. The development of high- performance fiber-reinforced cementitious composites made remarkable progress in the field of concrete technology, and it is gaining

great momentum in modern civil engineering applications. Many researchers have demonstrated that adding discrete fibers controls crack growth in concrete. These small fiber elements bridge the micro cracks, improving the tensile strength and changing the composites overall behavior [2]. Most fibers used in Fiber Reinforced composite (FRC) are metallic and non-metallic type. Steel, Carbon, Polymer, Polypropylene, Nylon, Basalt and Glass fibers are popular in developing fiber reinforced concrete. FRC should be designed to perform well with adequate strength, workability, sufficient ductility and high durability [3]. Fiber shape, size, tensile strength, volume fraction, elastic modulus, pull out properties, and bond characteristics significantly influence the flexural and tensile strength of FRC. Past research works have been conducted on fiber reinforced cement composites using only one type of fiber in the cement matrix.

Each fiber type tends to be more effective in improving certain aspects of cement-based materials [4]. For example, steel fibers are more common and mainly added to increase the toughness and prevent or minimize cracks due to structural loading. But the same steel fibers easily basset and undergo rusting, and their fire-resisting properties are controversial. Steel fibers at high volume fractions cause workability-related problems. Glass fibers greatly increase tensile strength, but it tends to slow down or decrease as the fiber content exceeds 6% by volume because of their low density. Also, it quickly deteriorates in the highly alkaline environment of the cementitious matrix. Synthetic fabrics are very popular nowadays, effective and eco-friendly. Low-modulus fibers have improved FRC composites elongational capacity, toughness, impact strength, and crack control [5]. But the dosage beyond 1% decreases the mechanical properties due to the workability problem and exhibits poor bonding with the cement matrix. Effects due to basalt fiber is best up to 0.2% fiber content, raising concrete's flexural and tensile strength [6]. Polypropylene fibers are highly durable in an alkaline environment, and Nylon fibers are stronger. Polyester fibers increase the modulus of rupture at early ages. Finer polymeric fibers are low modulus and effectively control the plastic shrinkage cracks that reduce the compressive strength and elastic modulus [7], [8]. Concrete failure is mostly multiscale nature and during service life the micro size cracks are expanded into macro level and its propagates until it reaches the complete collapse failure. This necessitates the blending of different size of fibers in the same composite known as Hybrid Fiber Reinforced Concrete. (HyFRC) for the ideal reaction [9]. Based on an exhaustive literature review, it is understood that the single fibers are best in enhancing the mechanical properties but weak in certain aspects like low workability, poor bonding, low resistance to fire and rusting etc. Hence this weakness could be overcome only by adding different types of fibers, making the composite perform superior. The synergy response of Hybrid FRC could be manifested by the contribution of different types of fibers to produce superior mechanical properties and control its weakness.

Hybrid fiber reinforced concrete (HyFRC) is a special type of fiber reinforced concrete and it is a blend of discrete fibers mixed with cement and aggregates. The combination of fibers of different modulus and sizes effectively controlled the multiscale cracking and their strain hardening behaviour is relatively high even at low volume fractions. Many hybrid systems have been developed by combining organic - inorganic fibers, metallic- non-metallic fibers, micro- macro fibers, and low–high modulus fibers in cement composite and it offers many attractive engineering properties. A hybrid combination of metallic and non-metallic fibers can offer potential advantages in improving concrete properties and reducing the overall cost of its production [9]. Song et al. reported the upgraded compressive and splitting tensile strength, modulus of rupture and impact resistance values of nylon-polypropylene hybrid fiber combinations [1]. Flexural toughness was evaluated by Banthia et al. in a hybrid composite made with steel and polypropylene fibers stated that the micro-fibers provide better toughness than macro fibers.[10] Fresh properties were analyzed in a few hybrid combinations and reported appreciable cohesiveness and flowability results within satisfactory limits [2]. The positive synergy between the amorphous metallic straight fibers and carbon steel hook-ended fibers were investigated by Rashid et al. reported superior performance compared to single fiber reinforced composites [11].Qi et al combined Polypropylene and Carbon fibers discussed that hybrid fiber removed the origin of cracks and preventing the spread of fracture and these hybridization added strength amd toughness of the composite.[12]. Glavind and Aare [13] investigated normal- and high-strength concrete with varying concentrations of steel and polypropylene fibres. Steel and polypropylene fibre were used in proportions of 0.6% and 1.0%, respectively. 0.5% by volume of SFs and 0.5% by volume of PP fibres are incorporated in hybrid mixes. They proved that the hybridization of these two fibres increased the ultimate compressive strength of the composite for normal-strength concrete. Bhagyasree Raj [14] presented research on using hybrid fibres to improve the strength and durability of foam concrete. Furthermore, the durability properties of HFRFC improved for all hybrid combinations, making it a promising solution for improving the strength, functional properties, and durability of lightweight foam concrete.

Hence the studies, as mentioned earlier, exhibited substantial improvement in fresh and hardened properties of concrete in fiber combinations. Further in this study investigated the flexural performance of hybrid FRC made with three different fibers, namely steel, glass and polypropylene. This paper mainly focuses on the structural behaviour of flexural beams made with the combination of three different fibers in different volume fraction along with few mechanical properties. The load–deflection behaviour of rectangular concrete beams reinforced with hybrid fibers as a secondary reinforcement is also evaluated and the experimental values are validated with analytical solutions.

Section snippets

Materials

Ordinary Portland cement 43-grade having a specific surface area of 312 m^2/kg and a specific gravity 3.15 is used. Fine aggregate is the manufactured sand confirming zone II of IS 383–1970 [15] specification, fineness modulus 2.51 and bulk density 1843 kg/ m^3 is used in mixture proportion. To achieve better packing density, combined gradation of 20 mm and 12.5 mm size coarse aggregate is proportioned as per IS 383 –1970. MASTEREASE PC-based high range water reducing admixture is added to…

Strength properties of fiber combinations

Table 1 shows the compressive strength, splitting tensile strength, and flexural strength results in comparing control and hybrid fiber combinations. Fibers matrix composition contributes to the strength and energy absorption properties of concrete. Compressive strength governs the brittleness of both plain and fiber-reinforced concrete. From Table 4, it is clearly understood that the hybrid fiber composites with steel and polypropylene fibers with fiber content 0.75 % increases the compressive …

Conclusion

The following conclusions are made based on the scope of the investigation. This research gives good knowledge about mixing, handling of different type of fibers and influence of hybrid fibers on the flexural response of structural beams.

1. Workability problems associated with the steel fibers are eliminated with the partial contribution of low-moduli polypropylene fibers and with the addition of water reducing admixture.…
2. Compared to other combinations steel and polypropylene combinations have…

…

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.…

Acknowledgements

The authors would like to acknowledge National Engineering College Department of Civil Engineering, Kovilpatti Tamilnadu, India, for providing the laboratory facilities.…

Recommended articles

References (18)

P.S. Song *et al.*
Nylon-and Polypropylene-fiber-reinforced concretes
Cem. Conc. Res. (2005)

B. Ramesh *et al.*
Mechanical behaviour of basalt fiber reinforced concrete: An experimental study
Mater. Today: Proc. (2021)

C.X. Qian *et al.*
Development of hybrid polypropylene-steel fiber reinforced concrete
Cem. Conc. Res. (2000)

B. Raj *et al.*
Mechanical and durability properties of hybrid fiber reinforced foam concrete
Construct. Build. Mater. (2020)

Abdulkadir Cuneyt Aydin, Self Compactability of high-volume hybrid fiber reinforced concrete, Cons. Build. Mat. 21...

M. Adeen
Alya'a Al-Attar, Sa'ad Ra'ouf, Determination of mechanical properties of Hybrid Steel-Nylon Fiber Reinforced Concrete

Modern App. Sci. (2010)

N. Banthia *et al.*

Hybrid fiber reinforced concrete fiber synergy in high strength matrices

Mate. Struc. (2004)

Arnon Bentur and Sidney Mindess, Fiber Reinforced Cementitious Composites, Modern Concrete Technology series, Second...

F. Liu *et al.*

Experimental investigation on the tensile behavior of hybrid steel-PVA fiber reinforced concrete containing fly ash and slag powder

Cons. Build. Mat. (2020)

There are more references available in the full text version of this article.

Cited by (0)

View full text

Available online 18 May 2023
In Press, Corrected ProofWhat's this?

Enhancing the strength of expansive clayey soil using lime as soil stabilizing agent along with sodium silicate as grouting chemical

Author links open overlay panelV. Dharini, M. Balamaheswari, Anto Nevis Presentia

https://doi.org/10.1016/j.matpr.2023.05.156Get rights and content

Abstract

The expansive clayey soils have been found plenty in the southern semiarid region of Tamil Nadu. This study deals with the strength enhancement of the locally available expansive clayey soil by using hydrated lime powder as a stabilizing agent

and sodium silicate as a grouting chemical. Standard proctor test and unconfined compressive strength test were carried out to determine the optimum percentage of lime content for soil stabilization, which was 10%. An unconfined compressive strength test was carried out by varying the proportion of sodium silicate to 2%, 4%, 6%, 8%, and 10% by keeping optimum lime content. California Bearing Ratio (CBR) test was conducted to determine the soil's load-carrying capacity for both the untreated soil and treated soil. The CBR value for soil treated with lime content is 5.2 times the CBR value of untreated soil. Similarly, the CBR value for soil treated with an optimum proportion of lime and sodium silicate is 7.86 times the CBR value of untreated soil.

Introduction

Expansive soils are problematic soils that have been subjected to swelling and shrinkage due to changes in moisture variation. The structures built on expansive soils are subject to cracking, uneven settlement, etc. Soil Stabilization improves the inherent characteristics and engineering properties of weak soil by using chemicals such as lime, fly ash, cement, and other lime-based products, etc. This stabilization process helps to eliminate the process of replacement of weaker soil. The lime added with cement in the treatment of expansive clay shows a reduction in the plasticity index with the increase in the shear strength of the soil [1]. The addition of coal waste together with the lime founds promising to improve the soil-bearing capacity [2]. The addition of cement to the lime sludge shows decrement in the Atterberg limits of the expansive clays [3]. The chemical stabilization with lime proves to be more efficient compared with the other type of pozzolanic materials. The combination of Portland cement with reactive magnesia and carbide slag-activated ground granulated blast furnace slag results in the higher unconfined compressive strength of clayey soil [4]. The soil treated with Formalin aqueous waste shows a reduction in the swelling potential and an increase in the unconfined compressive strength of the treated soil [5]. The pozzolanic reaction between the stabilizing agent and soil leads to

the modification physical–mechanical properties of the black cotton soils [6]. Using chemical admixtures for treatment increases the strength of soil and makes it suitable for construction activity.

The cement added with silica fume forms a denser structure reducing the ill effects of expansive soils [7]. The liquid limit and the plastic limit value of the expansive soil decrease with the varying percentage of pozzolanic binders [8]. The Sodium silicate acts as an alkali activator with other chemicals and tends to reduce the swelling potential of expansive soils [9]. The use of nanoparticles, Roadcem used with the cementitious products shows a reduction in porosity and suction values [10]. The consolidation characteristics of the Iranian clay show modification in the properties with the increase in cement content [11]. The 7-day compressive strength of soil treated with lime and zinc oxide nanoparticles shows a closer structure with reduced porosity in the scanning electron microscopy images [12]. Hydrated lime-activated ground granulated blast furnace slag performs better compared to the quick lime-activated blast furnace slag in the treatment of marine clay [13]. The addition of calcium carbide residue-based geopolymer along with flyash was found to be effective in the treatment of marine soft clays [14]. The zeolite and cement in the treatment of expansive clays result in the highest strength improvement rates. [15] Ladle furnace slag has been used in soil stabilization and shows remarkable strength increment [16]. Other than chemical stabilization, ground modification techniques are being employed in the field to improve the characteristics of expansive soils. It is very important to design the foundation system carefully for problematic soils having low bearing capacity.

The present study focuses on the strength improvement of expansive clay available in the local region by using hydrated lime with sodium silicate. Expansive clayey soil has a great affinity towards the water which leads to the swelling of soils. The addition of sodium silicate [17] reduces the affinity towards water thus modifying the plasticity characteristics. The combination of lime

along with sodium silicate leads to higher strength improvement. The optimum percentage of lime and sodium silicate for achieving the strength is determined by using the Unconfined Compression Strength tests. The Samples are tested without and with curing conditions. The chemicals used in this study are economical compared with the other ground improvement techniques. The solution proposed for expansive clay plays a sustainable role in the environment.

Section snippets

Soil sample

The Soil sample is collected from the nearby place Subha nagar (village road) under Kovilpatti (subdivision) which is 4 km nearer to national highway 44. The soil samples collected are air-dried and the index and engineering properties of the soil are determined which is summarized in Table.1.

Chemicals used as stabilizing agents

Hydrated lime is used as a stabilizing agent to treat the expansive clay. The amount of calcium oxide present in the hydrated lime was about 74% which is determined by the method of calcium ion

Experimental investigation

The unconfined compressive strength for the soil samples is calculated by adding lime to the soil sample without curing and with curing conditions. The sample preparation is tested for the varying percentage of lime as 6 %, 8%, 10 %, and 12%. The prepared soil samples are subjected to curing for 1 day and 3 days for the varying proportion of lime content. The tests are conducted to ascertain the optimum percentage of lime for Soil stabilization along with Sodium silicate as a grouting chemical.

Results and discussions

Unconfined Compression Strength tests are carried out for naturally obtained soil and treated soil. Expansive soil is treated with varying proportions of lime such as 6%, 8%, 10%, and 12%. The samples are initially tested by not subjected to a curing period. The samples are then subjected to curing for 1 day and 3 days respectively to study the strength gained by the soil. The unconfined compressive strength of soil samples that are not subjected to the curing period is 20.1, 21.9, 24.1, and,

Design of the total thickness of the flexible pavement

The flexible pavement design is done as per the codal provision IRC 37 – 2001 [18]. The results obtained from the California Bearing Ratio test for the soil samples for three cases i.e, untreated soil treated soil with lime and treated soil with lime and sodium silicate, were 1.57, 8.14, and 12.35 simultaneously. Hence, for these CBR values, the flexible pavement was designed to find the pavement's total thickness containing a bituminous surface course with a granular base and sub-base, which

Conclusions

The main objective of this investigation is to study the strength enhancement in the soil by carrying out the Standard proctor compaction test, the unconfined compression (UCC) strength test, and the California Bearing Ratio test. The expansive soil properties have to be improved before laying a foundation or for a highway project, the CBR value has to be improved. Extensive field study has to be studied by adopting these results in the site by deep mixing method of soil improvement. The

CRediT authorship contribution statement

V. Dharini: Conceptualization, Methodology. **M. Balamaheswari:** Writing – original draft, Supervision, Writing – review & editing. **Anto Nevis Presentia:** Investigation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

The authors sincerely thank Department of Civil Engineering of National Engineering College, for providing the laboratory facilities to carry out this experimental work.

ScienceDirect

Materials Today: Proceedings

Available online 27 May 2023

In Press, Corrected Proof What's this?

Influence of GFRP rebars diameter on bond characteristics of reinforced cement concrete

Dhanalakshmi K [a], Kannan V [b]

Show more

https://doi.org/10.1016/j.matpr.2023.05.235

Get rights and content

Abstract

The bond strength of any reinforced concrete elements is important to enhance the structural strength and durability of the structures. In this present study, Glass Fibre Reinforced Plastic (GFRP) reinforcing bars have been introduced as reinforcement for concrete structures subjected to corrosive conditions or where electrical/electromagnetic insulation is required. In order to ascertain the bond behaviour, a beam bond strength test and pull-out test were conducted, in addition to the preliminary tests such as physical and mechanical properties (compressive strength, splitting tensile strength test, flexural strength test) of the specimens. Totally, four types such as GFRP, Thermo-Mechanically Treated steel (TMT), High yield strength deform (HYSD) and Mild steel (MS) of rebars were used with varying diameters of the bar. GFRP rebars showed higher bond stress values compared to HYSD and TMT steel rebars from the beam bond test. And TMT rebars showed higher bond stress values compared to HYSD rebars from both beam bond and pull-out tests.

Introduction

Reinforced concrete is a very common building material and bond strength is one of the most essential parameters of the reinforced concrete structural members. Bond is not a single phenomenon, but serves a wide range of structural functions in reinforced concrete structures. It not only ensures an adequate level of safety, by allowing the two materials (concrete and steel) to work together, but also controls the structural behaviour, by providing an adequate level of ductility [30]. At the serviceability limit state, it serves to control the crack width and deflection and at ultimate limit state, strength of laps and anchorage depends on bond characteristics of rebar. Bond characteristics of steel rebar is generally evaluated by conducting pull out test as per IS 2770 (Part-1) [15]. The test specimens consist of concrete cubes, with a single reinforcing bar embedded vertically along a central axis. During testing, the bar is pulled axially from the cube and the slip is measured for the evaluation of the bond strength. Hamed Jafarzadeh and Mahdi Nematzadeh [7] have investigated and reported that the factors, such as, cracking (flexural or diagonal tension) and dowel forces, which lower the bond resistance of a flexural member, are not present in a concentric pull-out test. Husain Abbas et al. [11] have studied that the concrete in the test specimen is subjected to a state of compression (and not tension), and the friction at the bearing surface of the concrete offers some resistance against splitting and hence the bond condition in a pull-out test does not ideally represent those in a flexural member. Hence, many investigators have evaluated bond characteristics of rebars using beam type bond test [4]. It is also seen from literature that the average bond stress decreases with increase in bar diameter and decreases as the embedment length increases. It is generally thought that the decrease in bond stress with increase in embedment length is due to the non-linear stress distribution that exists between the bars and the concrete.

Yitian Zhang et al. [28] have developed Glass Fibre Reinforced Plastic (GFRP) reinforcing bars as reinforcement for concrete structures subjected to corrosive conditions or where electrical/electromagnetic insulation is required. GFRP reinforcing bars possess many advantages, such as, high strength-to-weight ratio, electromagnetic neutrality and ease of handling [12], [5]. Besides, they are not affected by electrochemical corrosion. However, the surface deformation and mechanical properties of GFRP reinforcing bars are different from those of

steel reinforcing bars, and it is stated by Hui Ma et al. [10]. Therefore, the design guidelines for steel reinforcing bars cannot be directly used for GFRP reinforcing bars. Currently, limited experimental data are available on the bond behaviour of GFRP reinforcing bars. This has also been one of the reasons to carry out this study to investigate the bond properties of GFRP reinforcing bars. Though the pull-out test is easier to perform, beam bond test is bound to give a lesser and more accurate measure of the bond stress than the pull-out stress [23]. In the present study, the bond stress of the reinforcing bars was evaluated by using beam type bond test, since the beam type bond test realistically simulates stress conditions encountered in the flexural members. The clamping of the GFRP bar in the testing machine is also difficult in pull out test [26]. Very few literatures are available on the evaluation of bond characteristics using beam test. Presently, no specific standards are available in India to study the bond characteristics of the reinforcing bars using beam bond test. Therefore, in this study bond tests were conducted as per RILEM standards.

Section snippets

Materials

In the present investigation, Ordinary Portland Cement of 53 grade was used and the cement sample was tested as per IS: 4031-1988 [20] to obtain the Specific gravity (determined by Le – Chatelier flask) (IS: 1727-1967), Standard consistency (IS: 4031 – 1988 Part 4), Initial setting time (IS: 4031 – 1988 Part 4) and Final setting time (IS: 4031 – 1988 Part 4). The river sand available at Chennai was used and the following tests were carried out on the sample as per IS: 2386-1968 (Part 3) [14]....

Physical properties of materials

The physical properties of cement and aggregates are shown in Table 3.1 from the table, the specific gravity for cement, fine aggregates and coarse aggregates are 3.14, 2.62 and 2.68 respectively. The fineness modulus for fine and coarse aggregate are 2.77 and 6.81 and shows the good particle distribution in the sieve analysis. The fineness of cement is 98% in passing of 90-μm sieve. It is also showing the lumps free particles and may lead the good reactivity while adding the water....

Mechanical properties of materials

Tension test ...

Conclusion

Bond stress of various reinforcing bars was evaluated experimentally using beam type bond test as per RILEM specifications as well as pullout test as per IS: 2770 (Part I)-1967. The following is the summary of the conclusions based on the experimental investigations:

- GFRP rebars showed higher bond stress values compared to HYSD and TMT steel rebars from beam bond test....
- TMT rebars showed higher bond stress values compared to HYSD rebars from both beam bond and pull-out tests....
- The bond stress of MS...

...

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper....

Recommended articles

References (25)

D. Shen *et al.*
Influence of strain rate on bond behavior of concrete members reinforced with basalt fiber-reinforced polymer rebars
Constr. Build. Mater. (2019)

Proceedings of 3rd International Conference on Artificial Intelligence: Advances and Applications pp 537–546

Deep Learning-Based Condition Monitoring of Insulator in Overhead Power Distribution Lines Using Enhanced Cat Swarm Optimization

J. Jey Shree Lakshmi, J. Subalakshmi, J. Joyslin Janet, B. Vigneshwaran & M. Sivapalanirajan

Conference paper | First Online: 15 April 2023

Part of the Algorithms for Intelligent Systems book series (AIS)

Abstract

Uninterrupted power supply to power consumers has increasingly become a global requirement for monitoring and assessing power apparatus's health online and offline for lifetime estimation.

Traditionally, extraction of low-level features from aerial images was used for condition monitoring of high-voltage insulators. It is hard to attain insulator defect identification with a complex background. Convolution fusion Network (CFN) with Enhanced Cat Swarm Optimization (ECSO) algorithm for feature selection addresses these issues in this proposed work. CFN can integrate different level features and combine them into wealthy visual features. Electrical insulator photographs captured inside a studio make realistic Overhead Power Distribution Lines (OPDLs). Deep CFN is the right choice to extract in-depth features from the insulators. ECSO can exclusively differentiate the intact and defective insulators and their material types to select optimal features from the dataset. Ensemble multi-class support vector machine (MCSVM) with sigmoidal kernel function used for insulator recognition.

Keywords

High-voltage insulators

Image processing techniques

Deep fusion network **Cat swarm optimization**

Locally connected feature

Multi-class Support Vector Machine

References

1. Sampedro C, Rodriguez-Vazquez J, Rodriguez-Ramos A, Carrio A, Campoy P (2019) Deep learning-based system for automatic recognition and diagnosis of electrical insulator strings. IEEE Access 7:101283–308

2. Prates RM, Cruz R, Marotta AP, Ramos RP, Simas Filho EF, Cardoso JS (2019) Insulator visual non-conformity detection in overhead power distribution lines using deep learning. Comput Electric Eng 78:343–55

3. Gao Z, Yang G, Li E, Shen T, Wang Z, Tian Y, Wang H, Liang Z (2019) Insulator segmentation for power line inspection based on modified conditional generative adversarial network. J Sens 1–8

4. Wang X, Zhang J, Yan WQ (2019) Gait recognition using multichannel convolution neural networks. Neural Comput Appl 32:14275–14285

5. Ray S, Ganguly B, Dey D (2020) Identification and classification of stator inter-turn faults in induction motor using wavelet kernel based convolutional neural network. Electric Power Compon Syst 48:1421–1432

6. Liu H, Hussain F, Shen Y, Morales-Menendez R, Abubakar M, Junaid Yawar S, Arain HJ (2019) Signal processing and deep learning techniques for power quality events monitoring and classification. Electric Power Compon Syst 47:1332–1348

7. Kumar D, Samantaray SR, Kamwa I, Sahoo NC (2014) Reliability-constrained based optimal placement and sizing of multiple distributed generators in power distribution network using cat swarm optimization. Electric Power Compon Syst 42:149–164

8. Liu Y, Guo Y, Georgiou T, Lew MS (2018) Fusion that matters: convolutional fusion networks for visual recognition. Multimed Tools Appl 77:29407–29434

9. Li S, Li J (2017) Condition monitoring and diagnosis of power equipment: review and prospective. High Volt 2(2):82–91

10. Ababneh JI, Bataineh MH (2008) Linear phase FIR filter design using particle swarm optimization and genetic algorithms. Digit Signal Process 18(4):657–668

11. Karaboga N (2009) A new design method based on artificial bee colony algorithm for digital IIR filters. J Frankl Inst 346(4):328–348

12. Kanan HR, Faez K, Hosseinzadeh M. (2007). Face recognition system using ant colony optimization-based selected features. In: Proceedings of the 2007 IEEE symposium on computational intelligence in security and defense applications (CISDA 2007). IEEE, pp 57–62

13. Shu CC, Tsai FW (2007) Computational intelligence based on the behavior of Cats. Int J Innov Comput Inf Control 3(1):163–173

14. Piao J, Chen Y, Shin H (2019) A new deep learning based multi-spectral image fusion

method. Entropy 21:1–16

15. Zhai Y, Chen R, Yang Q, Li X, Zhao Z (2018) Insulator fault detection based on spatial morphological features of aerial images. IEEE Access 6:35316–35326

16. Chen Q, Yan B (2019) Research on aerial insulators convolution neural network detection and explosion detection. J Electron Meas Instrum 31(6):942–953

17. Liao S, An J (2016) Aerial detection of damaged insulators on transmission lines. J Syst Simul 33(4):176–179

18. Jiang Y, Han J, Ding J (2017) Glass insulator identification and blasting defect diagnosis based on multi-feature fusion. China Electric Power 50(5):52–58

19. Cheng J, Wang L, Xiong Y (2018) Modified cuckoo search algorithm and the prediction of flashover voltage of insulators. Neural Comput Appl 30:355–370

Author information

Authors and Affiliations

National Engineering College, Kovilpatti, India

J. Jey Shree Lakshmi, J. Subalakshmi, J. Joyslin Janet, B. Vigneshwaran & M. Sivapalanirajan

Corresponding author

Correspondence to M. Sivapalanirajan .

Editor information

Editors and Affiliations

Poornima College of Engineering, Jaipur, Rajasthan, India

Garima Mathur

Poornima College of Engineering, Jaipur, Rajasthan, India

Mahesh Bundele

Department of Computer Science and Engineering, Malaviya National Institute of Technology Jaipur, Jaipur, India

Ashish Tripathi

Systems Research Institute, Polish Academy of Sciences, Warsaw, Poland

Marcin Paprzycki

Rights and permissions

Copyright information

About this paper

Cite this paper

Jey Shree Lakshmi, J., Subalakshmi, J., Joyslin Janet, J., Vigneshwaran, B., Sivapalanirajan, M. (2023). Deep Learning-Based Condition Monitoring of Insulator in Overhead Power Distribution Lines Using Enhanced Cat Swarm Optimization. In: Mathur, G., Bundele, M., Tripathi, A., Paprzycki, M. (eds) Proceedings of 3rd International Conference on Artificial Intelligence: Advances and Applications. Algorithms for Intelligent Systems. Springer, Singapore. https://doi.org/10.1007/978-981-19-7041-2_45

.RIS .ENW .BIB

DOI	Published	Publisher Name
https://doi.org/10.1007/978-981-19-7041-2_45	15 April 2023	Springer, Singapore

Print ISBN	Online ISBN	eBook Packages
978-981-19-7040-5	978-981-19-7041-2	Intelligent Technologies and Robotics Intelligent Technologies and Robotics (R0)

Publish with us

Policies and ethics

Proceedings of Fifth International Conference on Inventive Material Science Applications pp 235–243

Performance Characteristics of Vegetable Oil and Its Blended Combinations as Alternate Liquid Insulation

M. Padmavathy & M. Bakrutheen

Conference paper | First Online: 02 October 2022

Part of the Advances in Sustainability Science and Technology book series (ASST)

Abstract

For many years, petroleum products have dominated the world's energy needs in different application sectors. Natural-based ester oil is presented as alternative liquid insulation considering eco-friendliness to identify a suitable replacement for

standard mineral oil. In this study, different ratios of vegetable ester oil were blended to investigate the usual features of blended liquid as liquid insulation. The oils of sunflower, safflower, and rice bran are being studied. According to standards, viscosity, breakdown voltage, flashpoint, fire point, and pour point are tested for various combinations. According to the investigation, individual oil samples can potentially replace typical mineral oil samples. Furthermore, the blended varieties demonstrate that changes occur as a result of the combination of samples, which prompts future investigation.

Keywords

Vegetable oil **Blending** **Liquid insulation**

Transformers

Proceedings of Fifth International Conference on Inventive Material Science Applications pp 17–25

Performance Characteristics of Mineral Oil Blended with Vegetable Oil

P. Prakash, M. Seethraman, L. Santhosh Kumar, S. Jayaprakash & M. Bakrutheen

Conference paper | First Online: 02 October 2022

Part of the Advances in Sustainability Science and Technology book series (ASST)

Abstract

For a long time, oil-based commodities have dominated the world's energy requirements across a wide range of businesses. Vegetable-based ester oil is provided as an environmentally friendly fluid protection option to determine if it may be used to replace standard mineral oil. Various mineral and

ester oil ratios were blended in this study to evaluate the essential characteristics of blended liquid as liquid insulation. Sunflower, safflower, and rice bran oils are being investigated. Viscosity, breakdown voltage, flash point, and pour point are tested according to industry standards for various combinations (IEC and ASTM). According to the study, blended combinations indicate variances in attributes towards positive signs for replacement with the mineral oil.

Keywords

Vegetable oil **Blending** **Liquid insulation**

Transformers

- Read on any device
- Instant download
- Own it forever

Buy eBook

Softcover Book **EUR 199.99**

Price excludes VAT (India)

- Compact, lightweight edition
- Dispatched in 3 to 5 business days
- Free shipping worldwide - see info

Buy Softcover Book

Hardcover Book **EUR 199.99**

Price excludes VAT (India)

- Durable hardcover edition
- Dispatched in 3 to 5 business days
- Free shipping worldwide - see info

Buy Hardcover Book

Tax calculation will be finalised at checkout

Purchases are for personal use only

Learn about institutional subscriptions

References

Proceedings of Fifth International Conference on Inventive Material Science Applications pp 97–106

Influence of Acetic Acids on Performance Parameters of Vegetable Oil Insulation

M. Rajesh, J. Salamon Raja, S. Selvakumar, S. Prasanth & M. Bakrutheen

Conference paper | First Online: 02 October 2022

Part of the Advances in Sustainability Science and Technology book series (ASST)

Abstract

For analyzing the presence of oxidative by-product of acid formation in the characteristics of vegetable-based insulating liquids, a study of impact of acid inclusion with the vegetable oil is proposed in this work to analyze the characteristics of selected oil as

liquid insulation in transformer under the exposure of acidic condition. For the experimentation purpose, vegetable oils like sunflower oil (SFO), rice bran oil (RBO), sesame oil (SSO), and palm oil (PAO) are taken as base oil samples. The inclusion of acetic acid level in oil samples with the concentrations of 5 ml and 10 ml to study the comprehensive changes in properties of oil samples. The characteristics of samples have been measured as per the international standard. From the experimental results, it is inferred that oil samples have shown the degradation of its performance with an increase in acid. Suitable actions have to be taken for minimization of effects of acids in the performance of oil samples as liquid insulation in transformers.

Keywords

Vegetable oil **Acetic acid** **Liquid insulation**

Transformers

References

ScienceDirect

Materials Today: Proceedings

Volume 49, Part 5, 2022, Pages 1537-1542

Improvement of California Bearing Ratio value in weak subgrade soil with the developed anchored geogrid

Balamaheswari M, Anitha B, Kanimozhi B, Naganatha Prabhu L

Show more

https://doi.org/10.1016/j.matpr.2021.07.311
Get rights and content

Abstract

This study aims to improve the California Bearing Ratio (CBR) value of the weak subgrade soil using a modified form of geogrids with anchors. The tests are carried out with a single layer of geogrid as reinforcement to determine the optimum placement depth in the CBR mould. The modified geogrid with anchors positioned at the optimum placement depth for which the CBR value is 6.00 compared to the CBR value of 4.68 for the reinforced condition. The inclusion of anchors in the geogrid results in enhancing CBR value for the reinforced condition to a percentage improvement of 95%.

Introduction

The soil reinforcing technique is widely adopted in construction areas where the ground needs improvement. The widely used reinforcement material in the construction field is geosynthetics. Among them, geogrids are mainly used for reinforcing work in the construction of roadways to stabilize and strengthen the subgrade soil. The improvement in the load-carrying capacity of the weak soils with different geogrids has been carried out for the unpaved and paved road construction. The cyclic loading test was conducted to know about reinforced unpaved road performance over the unreinforced paved road. It is found that the initial cost is high for the reinforced unpaved road, and maintenance cost is low when compared with the unreinforced paved roads [1]. Among the various functions of geosynthetics, the reinforcement function plays the primary role in enhancing the load-carrying capacity [2]. The interaction due to the geogrid interlocking with aggregate minimizes aggregate particles' lateral movement and reduces the vertical subgrade deformations [3]. The geogrid placement depth in the CBR test was studied, and it is found that geogrid can be placed at the middle of the height of the specimen or the upper one-third layer and the middle layer [4]. Geogrid with higher tensile strength provided better performance compared to the lesser one [5]. The engineering performance of different soil types was studied for using geogrid as reinforcement and found that CBR value increases for reinforced case compared with the unreinforced case for both the laboratory and field investigations [6]. Likewise, when geotextile was used as reinforcement, the migration of subgrade fines into the subbase has been reduced [7]. Using geogrid as a single layer of reinforcement has reduced the potential swell behavior of expansive clays [8]. When the layers of geogrids are increased from single to two or multiple improvements in the soil strength, higher bearing capacity has been achieved. [9] Using the geosynthetics such as geogrids and geotextiles has enhanced pavement life and reduced the rut depths [10].

Similarly, a lot of research has been carried out in numerical analysis using finite element software. The Mechanical properties of reinforcement and the material properties for the pavement materials were assigned and the model was analyzed for the stress and deformation in the PLAXIS 2D [11]. The soil parameter for the different clay layers was assigned in the software PLAXIS 2D in which the failure pattern, displacement, and factor of safety were taken as output to find the optimum tensile strength of the geotextile [12]. While carrying out finite element analysis using PLAXIS 2D for the weak subgrade soil, the inclusion of a single layer of reinforcement was better than increasing the number of layers [13]. The reduction in pavement layer thickness has been studied using numerical modeling using the ADINA to know about the strains and deformation when using subgrade reinforcement with geogrids [14]. The geogrid displacement has to be reduced which

is not accounted for in soil reinforcement design for which model studies were carried out under pull conditions [15]. Hence detailed field studies were also conducted by various researchers on the usage of geosynthetic materials in subgrade stabilization [16]. The presence of geosynthetic reinforcement in flexible pavement construction has reduced the vertical stress to a greater extent in the field study conducted for measuring the performance characteristics [17]. The interaction between soil and the reinforcement in the grid anchor system increases nearly 50% compared to the typical geogrid [18]. A detailed study is needed in the area of pavement subgrade reinforced with anchored geogrids based on the literature reviewed. This study discusses the series of CBR tests conducted to fix the optimum depth of placement of reinforcement for the weak subgrade soil and the new form of anchorage provided in the geogrid to study the enhancement of CBR value. Placing the anchors in geogrid reduces the geogrid's displacement from its placement depth by yielding more stiffness to it. Using IRC 37:2001[19], the pavement's total thickness has been arrived for the unreinforced, reinforced, and anchored reinforcement cases.

Section snippets

Subgrade soil

Various laboratory tests are conducted on the soil sample collected from the site Alampatti-Thonugal (village road) under Kovilpatti (subdivision), which is 4 km nearer to the national highway 44. The soil sample was collected in polythene bags in wet conditions. It was then air-dried, and the index properties tests and the engineering properties test are carried out to classify the soil. Table 1 summarizes the results of the lab tests on the subgrade sample.…

Reinforcement

Among the various forms of geogrids, …

Experimental investigations

The standard proctor test was carried out to determine the optimum moisture content and maximum dry density to carry out the CBR test for the subgrade sample for the sample under three categories: unreinforced, with reinforcement, reinforcement with anchorage conditions. The experiment is first carried out for unreinforced soil, and then a series of tests was conducted to fix the depth of placement of reinforcement with a single layer of geogrid [8]. Based on the experimental findings,…

Results and discussions

The CBR tests are carried out with a single layer of reinforcement of geogrid. The load taken by the sample for the depth of placement of reinforcement at u/h=0.17 for 2.5 mm and 5.0 mm penetration is 0.528 kN and 0.856 kN which is represented in Fig. 3. For 2.5 mm penetration and 5.0 mm penetration, the standard load is 1370 kg or 13.44 kN and 2055 kg or 20.15 kN respectively. Based on the observations the calculated CBR values at 2.5 mm penetration and 5.0 mm penetration are 3.93% and…

Design of total thickness of the flexible pavement

The flexible pavement design was done as per the codal provision IRC 37 – 2001 [19]. The results obtained from the California Bearing Ratio test for the soil samples for three cases i.e., unreinforced, reinforced, and anchored geogrid, were 1.38, 4.68, and 6.00 simultaneously. Hence, for these CBR values, the flexible pavement was designed to find the pavement's total thickness containing a bituminous surface course with a granular base and sub- base, which is presented in Table 3. The design…

Conclusions

In this study, the effect of depth of reinforcement with a single layer of geogrid in the CBR test is carried out to fix the optimum depth of placement of reinforcement. Further, a CBR test is carried out for the anchored reinforcement case at an optimum depth of placement to study anchors' interlocking effect with the soil. Hence to arrive at the conclusions, it may be recommended that a detailed field study is needed to quantify the parameters for the site. The important findings from this…

CRediT authorship contribution statement

M. Balamaheswari: Conceptualization, Writing – original draft, Writing - review & editing, Supervision. **B. Anitha:** Project administration, Resources. **B. Kanimozhi:** Formal analysis, Visualization, Investigation. **L. Naganatha Prabhu:** Methodology, Investigation.…

ScienceDirect

Materials Today: Proceedings

Volume 64, Part 2, 2022, Pages 1116-1121

Manufactured sand for the development of reinforced concrete spun pipes

N.K. Mahaa Lakshmi [a], C. Chella Gifta [b], S. Sankar Kumar [a], S. Stephan [a]

Show more

https://doi.org/10.1016/j.matpr.2022.06.048

Get rights and content

Highlights

- The effect of Msand replacement as a fine aggregate for the manufacture of RCC spun pipes was investigated.
- Addition of Manufactured sand replacement slightly decreases the concrete workability.
- Msand as a fine aggregate replacement increases then the compressive strength decreases and 50% replacement produces highest compressive strength.
- RCC spun pipes manufactured with 50% replacement shows positive results in Three edge bearing and Hydrostatic test.

Abstract

Due to overexploitation of natural resources, the deficiency of river sand as a fine aggregate is a major problem and manufactured sand is replaced as a suitable alternative material. This paper investigates the influence of Manufactured sand as a replacement for fine aggregate material in the manufacture of RCC spun pipes. M35 grade concrete is prepared with cement, coarse aggregate, superplasticizers, and river sand is replaced with 50%,75% and 100 % manufactured sand. Test results shows that the compressive strength of concrete cubes with 50% replacement levels leads to higher compressive strength at early ages, and their reactivity decreases at later age strength. Test conducted on concrete pipes reveals that the load-carrying capacity of pipes with 50% replacement levels increases and delays the crack formation on the surface and postponed the ultimate failure. Similarly, the hydrostatic test also shows positive results with the addition of MSand. The cost of Manufactured sand is lower than the river sand and it is free from impurities such as silt and clayey matters and it gives a possible solution to the shortage of fine aggregate in the production of RCC pipes.

Introduction

Concrete technology is a fast-growing industry and concrete is an important material used in the construction sector. Conventional Concrete is made up of cement, fine aggregate, coarse aggregate, and water in a definite proportion. Concrete is a popular building material and it can be cast into any shape and size because of its plasticity in the fresh stage and gaining strength in the hardened stage. Concrete is used in load-bearing elements like foundation, slab, column, beams, girders, shear walls, and in non-structural elements such as RCC sewer pipes, Manhole

covers, interlocking paver units, etc. Reinforced Cement Concrete pipes are the composite structure specially designed as spun concrete provided with steel reinforcement and manufactured by the spinning process. In general, it is a good construction material to take all the compressive forces, and it is weak in tension and counteracted by steel reinforcement in the tensile zone. Reinforced concrete pipes are widely classified as pressure pipes and non-pressure pipes, and it is available in various diameters ranging from 100mm to maximum 1200mm. The application of RCC spun pipes is specific, and they are mainly used in the water drainage system, sewerage system, bridge culverts, irrigation mains, etc. These RCC spun pipes are manufactured with the specifications laid in IS 458 codal provisions [1]. The conventional raw material such as Cement, Coarse aggregate, Fine aggregate, Mild steel, and High-tension steel rods and bars are used in the manufacturing process. But the availability of natural resources became scarce and the continuous usage leads to huge depletion of these resources [2]. United Nations Environment Programme reported the construction materials like fine and coarse aggregates are the world's second-largest sources extracted from natural resources and commercialized in huge volume. Globally there is a huge demand for sand and its about 40–50 billion tonnes per year. UN environmental report states that significant environmental problems like flooding, pollution, lowering of aquifers are caused mainly by the extraction of river sand. Therefore, an alternate material is to be explored and it should be utilized in the development of concrete composites for various applications. Nowadays, to overcome the demand for natural river sand, many kinds of research are done to replace the river sand with some alternate material partially of completely. Manufactured sand known as M sand is common and it is used as fines in the development of concrete composites [3]. They are produced artificially by crushing hard granite stones into smaller grains and it is washed to remove minute particles and graded as fine aggregate. M sand particles are mostly angular and rough in texture and preferred in the manufacturing of concrete. The sharp edges of M sand particles provide better bonding characteristics with the cementitious materials, and it is cheaper than the river sand. Its chemical, physical properties such as colour, size, shape, surface texture depends upon the type of stone and its source of extraction. The use of M sand becomes a suitable substitute for natural sand, and it has become essential when techno-commercial and sustainable requirements are mainly focused. High exercise should be made to control the quality while using manufactured sand, and it always yields better performance and meets the standard requirements. Based on the literature review, it is clear that many alternate materials including manufactured sand have been developed to replace fine aggregate either partially or fully and they reported the compressive strength increases up to 10% after 28days curing. Replacement with stone dust up to 60% does not influence the strength value of concrete, but it could be used only in places where the setting time is unimportant.

In this experimental study, the incorporation of M sand as a partial replacement of fine aggregate for the manufacture of reinforced concrete spun pipe is focused. Laboratory investigations were done to develop the mixture composites of M35 grade concrete and further M sand was replaced by 50%, 75% and 100% in the production of concrete. Mechanical properties on composite and pipes were determined to obtain the optimum percentage of replacement for the manufacture of pipes. The pipes are manufactured and tested as per the specifications laid in IS 458 and the influence of M Sand replacement in the composite is discussed in this paper.

Section snippets

Materials

Ordinary Portland Cement 43 Grade conforming to IS 8112 is used as a binder material to manufacture concrete pipes [4]. Properties of the Ordinary Portland cement obtained from the laboratory test is given in Table 1. Coarse aggregates of size 20mm and 10mm was used in this experimental study. The basic properties of Coarse and Fine aggregates are given in Table 2. As per IS 458 the specification of aggregates conforming to IS 383 is recommended to manufacture RCC spun pipes [5]. Also, the…

Test on concrete cube specimens

The compressive strength of the concrete cube is tested as per the procedure laid in IS 516 codal provisions [8]. Tests were conducted on cubes of 150mm×150mm×150mm size to understand the influence of M Sand replacement on compressive strength. Concrete cubes are tested in a CTM of 2000kN capacity, and the test setup is shown in Fig. 6.…

Test on RCC spun pipes

Four series of RCC pipes casted with and without manufactured sand are tested as per the specification laid in IS 3597 code [9]. The following tests were…

Results and discussion

Table 4 gives Compressive strength results. For each series, nine cube specimens are tested and the average value is reported as 3days,7days and 28days compressive strength in N/mm2. It is clear that the compressive strength increases with the increase in age in all the four

specimens, including control concrete. Malhotra stated the compressive strength of concrete with 7 % stone powder is much greater than the concrete with the river sand for the same water-cement ratio [10]. Compressive…

Conclusions

This study concluded the utilization of manufactured sand as a fine aggregate replacement in the manufacture of reinforced concrete spun pipes. Based on the test conducted, the following points can be drawn.

(1) Compared to the reference concrete, the compressive strength of concrete incorporating the manufactured sand increases because of the high fraction of fine particles and micro fines, which offers good packing density at early ages. But at the later ages, the reactivity of M sand particles…

…

CRediT authorship contribution statement

N.K. Mahaa Lakshmi: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Project administration, Resources, Software, Validation, Visualization, Writing – original draft. **C. Chella Gifta:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Project administration, Resources, Software, Validation, Visualization, Writing – original draft. **S. Sankar Kumar:** Formal analysis, Funding acquisition, Investigation, Validation, Writing –…

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.…

Acknowledgement

The authors thank the M/s Tirunelveli Spun Pipes (P) Ltd, Tirunelveli and National Engineering College Kovilpatti for providing the support in manufacturing and testing of Reinforced Concrete Spun Pipes and for the entire technical facilities to complete the investigation.…

Special issue articles Recommended articles

References (11)

IS 458: 2003, Precast Concrete Pipes (with and without reinforcement) – Specification, BIS New...

N. Prakash *et al.*
Fresh and hardened properties of self-compacting concrete produced with manufactured sand
Cem. Concr. Compos (2011)

Y. Huang *et al.*
Effect of Particle Shape of Limestone Manufactured Sand and Natural Sand on Concrete
Proc. Eng. (2017)

IS 8112: 2013, Ordinary Portland Cement, 43 Grade Specification, BIS New...

IS 383 : 1970, Specification for Coarse and Fine Aggregate from natural sources for concrete, BIS New...

There are more references available in the full text version of this article.

Cited by (0)

View full text

RESEARCH ARTICLE | SEPTEMBER 20 2023

Predictive and comparative analysis for diabetes using machine learning algorithms

Poneeswari Jeyamurugan; Saranya Durairaj; Premchand Somasundaram; Chidambaram Subbiah

+ Author & Article Information

AIP Conf. Proc. 2831, 020023 (2023)
https://doi.org/10.1063/5.0166388

Diabetes is one of the most deadly diseases in the globe. It causes an increase in blood glucose levels due to the lack of insulin in the body, raising the risk of consequences such as stroke and heart disease. All forms of diabetes stem not only from the person being overweight or leading an inactive lifestyle some are present from childhood. Diabetes can't be cured, but early prediction and timely treatment can stop the progression and severity rate of the disorder. In this paper, the approach of machine learning-based technique has been proposed for classification, early-stage identification, and prediction. It can be applied with much success to predict, prevent, managing a Diabetic Mellitus Disease. To solve this we aim to implement the data analytic on four classifiers namely Naïve Bayes, SVM, logistic regression, and Decision Tree to predict with a large number of datasets and provide the best Result. So, the combination of the model and the ANN can be used for feature selection and processing as an optimized Predictive Model with the best accuracy. During the analysis, it is observed that outperforms other classifiers of accuracy and ANN improves the significant prediction with accuracy ofdiabetes.

Topics

Machine learning, Decision theory, Diseases and conditions, Carbohydrates, Regression analysis

REFERENCES

1. A. L. Hines, M. L. Barrett, H. J. Jiang and C.A. Steiner, "Conditions with thelargest number of adult hospital readmissions by payer" *HCUP Statistical Brief*, 172, 2014. Google Scholar

2. Agency for Healthcare Research and Quality (AHRQ), "*HCUP Nationwide Inpatient Sample (NIS)*." 2011. [Online]. Available: http://hcupnet.ahrq.gov/ HCUPnet.jsp.

3. "ADA: Economic Costs of Diabetes in theU.S. in 2012. Diabetes Care," 2013.

4. R. G. Shashank, "*Examining the drivers of hospital readmissions of Type-2 Diabetic patients*," Oklahoma State University, 2018.

5. X. Charlie, C. Christina and P. Stephone, "*Beating Diabetes: Predicting Early Diabetes Patient Hospital Readmittance to Help Optimize Patient, Care*," 2018.

6. X. Yifan and J. Sharma, "*Diabetes patient readmission prediction using big data analytic tools*," Aug-2017.

7. Dara. Mize, "A Prediction Model for Disease-Specific 30-Day Readmission Following Hospital Discharge," *MASTERs*, 2018. Google Scholar

8. Y. Kumar Jain and S. Kumar Bhandare, “Min Max Normalization Based Data Perturbation Method for Privacy Protection”, *International Journal of Computer &Communication Technology*, Vol.2, No.8, (2011), pp.45–50. Google Scholar

9. M. Arif Wani Saduf, “Comparative Study of Back Propagation Learning Algorithms for Neural Networks”, *International Journal of Advanced Research in Computer Science and Software Engineering*, Vol.3, No.12, (2013), pp.1151–1156. Google Scholar

10. L. Deng and D. Yu, “Deep Learning Methods and Applications”, *Foundations and Trends® in Signal Processing*, Vol.7, No.3-4, (2014), pp.197–387.

https://doi.org/10.1561/2000000039
Google Scholar Crossref

11. Abarna, A., Amuthavani, B., Varshini, V., Chidambaram, S. "Prediction of Emergency Admissions in Health centres using Data Mining", *International journal of innovative Technology and Exploring Engineering. (Scopus indexed) Value of Citation*: 6.03, ISSN:2278-3075, Volume-9, Issue 8, Jun 2020, pp. No. 664–667, https://doi.org/10.35940/ijitee.h6486.069820.
Crossref

12. Y. Bengio, "Learning Deep Architectures for AI", *Foundations and trends® in Machine Learning*, Vol.2, No.1, (2009), pp.1–127. https://doi.org/10.1561/2200000006
Google Scholar Crossref

13. G. Kaur, "Improved J48 Classification Algorithm for the Prediction of Diabetes", *International Journal of Computer Applications*, Vol.98, No.22, (2014).
https://doi.org/10.5120/17314-7433
Google Scholar

14. R. Zolfaghari, "Diagnosis of Diabetes in Female Population of Pima Indian Heritage with Ensemble of BP Neural Network and SVM", *International Journal of Computational Engineering & Management*, Vol.15, No.4, (2012), pp. 2230–7893.
Google Scholar

15. R. Zolfaghari, "Using the ADAP LearningAlgorithm to Forecast the Onset of Diabetes Mellitus", *International Journal of Computational Engineering & Management*, Vol.15, No.4, (2012), pp. 2230–7893.
Google Scholar

This content is only available via PDF.

Sign in

Don't already have an account? Register

Sign In

Username

Password

Reset password
Register

Sign in via your Institution

Sign in via your Institution

Pay-Per-View Access
$40.00

BUY THIS ARTICLE

Design and development of health monitoring system using sensor

Palavesam, Priya Dharshini ; **Murugan, Karthiga** ; **Sivanesakumar, Bavatharani** ; **Vaikundam, Suresh**

One of the most significant issues facing hospital authorities today is implementing a real-time monitoring system to track patients' physical status. The Health Monitoring System (HMS) is a sophisticated modern technology that offers an alternative to traditional health management. This article presents the development of a mobile application that uses biosensors and Bluetooth technology to measure and show human biological data. Heart rate, body temperature, ambient temperature, and humidity are all measured by biosensors. The doctor will be able to check the patient's health at regular intervals by scanning the barcode of the built mobile application. The proposed system will improve the system's efficiency while also lowering costs and reducing errors. This system's output displays a heart rate of 70-75 beats per minute, a body temperature of 35-40 degrees Celsius, and a humidity of 70-75 grams per cubic meter.

Publication:	AIP Conference Proceedings, Volume 2831, Issue 1, id.050004, 6 pp.
Pub Date:	September 2023
DOI:	10.1063/5.0164395
Bibcode:	2023AIPC.2831e0004P

Convolutional neural network for remote sensing classification

Fathima, Hazeena Mariyam ; **Lakshmi, Maha** ; **Pooja, Padma** ; **Anitha** ; **Kalaiselvi**

In this research article, Land use and land cover, in particular, are discussed as key characteristics of modern natural resource management and environmental monitoring systems. Land use, land cover mapping, and monitoring approaches are being implemented to preserve current natural resources and identify the causes of over-exploitation of land and water resources. The study of land use and land cover (LULC) also aids in the understanding of changes in biophysical cover for a wide range of purposes. In reaction to changing economic, social, and environmental factors, LULC evolves. Such shifts in land use are occurring at a variety of geographical and temporal scales. LULC change has ahuge influence on the various landscape and environmental aspects, which implies the water quality, land, and natural air resources, efficiency of an ecosystem, and climate system on its own, through the impacts caused by greenhouse gas fluxes and surface albedo impacts. The proposed Convolutional Neural Network (CNN) will analyze remote sensing data and urban-related data to repetitively categorize the urban Land use and Land cover change. As input, hyperspectral satellite imagery is used, and categorization is performed. This showed that CNN efficiently integrates urban data with remote sensing. It even outperforms other artificial neural networks in terms of long-time series processing. Thedeep-learning (LSTM) approach will be used to classify urban land use and land cover. Python is used to implement and validate this project. For image extraction and classification of satellite pictures, CNN is utilized. The convolutional neural network is a type of CNN that excels at dealing with images. CNN assist in improving categorization accuracy. The overall classification accuracy is estimated using a confusion matrix.

Publication:	AIP Conference Proceedings, Volume 2831, Issue 1, id.020002, 14 pp.
Pub Date:	September 2023
DOI:	10.1063/5.0171255
Bibcode:	2023AIPC.2831b0002F

IoT based health monitoring system

Rajasundhar, Dhayalan ; **Perumal, Praveenraj** ; **Ravaneeshwaran, Jegadeesh** ; **Ayyachamy, Shenbagavalli**

Due to a lack of health monitoring systems in India, roughly 25% of the population perishes. We have integrated a great deal of technology into our everyday lives in today's society, and as a result, we are having difficulties caring for our own or our neighbors' health. To solve this challenge, we suggest an embedded system that continuously examines the patient's health. This smart healthcare system can monitor the patient's pulse rate and body temperature and save the results in a server to keep track of the patient's health. If any of the above parameters exceeds the threshold value, this smart device alerts doctors or caregivers and requests corrective action to save the patient's life.

Publication:	AIP Conference Proceedings, Volume 2831, Issue 1, id.050006, 7 pp.
Pub Date:	September 2023
DOI:	10.1063/5.0166115
Bibcode:	2023AIPC.2831e0006R

Analyzing of hydel, wind and fuel cell hybrid system for rural electrification with reduced cost of energy

Jeyalakshmi Velusamy[1*], *Guru Prasad* Murugan[2], *Dhanalakshmi* Sundararajan[3], and *Rajeshwari* Rathnavel[4]

[1]Professor, Electrical and Electronics Engineering Department, JP College of Engineering, Ayikudi, Tenkasi, Tamilnadu, India
[2]Student, Electronics and Communication Engineering Department, National Engineering College, Kovilpatti, Tamilnadu, India
[3]Professor, Electrical and Electronics Engineering Department, Velammal College of Engineering and Technology, Madurai, Tamilnadu, India
[4]Assistant Professor, Electrical and Electronics Engineering Department, JP College of Engineering, Ayikudi, Tenkasi, Tamilnadu, India

Abstract. In this work, a Hybrid Renewable Energy System (HRES) is proposed to electrify remote areas. Hydroelectric and wind energy potential are exploited, and they could be converted into chemical energy and stored in hydrogen fuel cells. By this technique, carbon emissions is substantially reduced and helps to control climate change and global warming. In this proposed work, surplus amount of electrical power is diverted to the production of hydrogen through electrolysis, the stored hydrogen can be used as a energy reserve which could be utilized based on requirement. The hydrogen fuel cell acts as a backup to the grid. A simulation study was carried out using Hybrid Optimization of Multiple Energy Resources (HOMER) software. The simulation study reveals that the Cost of Energy has been significantly reduced.

1. Introduction

Renewable energy is obtained from natural resources that are not depleted once used, like the wind or solar energy. There has been increasing interest in renewable energy sources as an alternative to the standard conventional energy sources due to depletion of natural resources and their consequential environmental impact [1]. In recent years there has been a tremendous advancement in the development of solar energy since it has low carbon profile. Although it is expected to become the most competitive renewable energy power, it still faces several challenges, such as large-capacity power accommodation and long-distance transmission [2].

*Corresponding author: jeyaguru2003@gmail.com

Wind energy is considered to be the least harmful to the environment [3]. It is also the most cost-effective renewable energy source.Hydropower is accepted as a clean renewable energy source with instant output adjustment and flexibility in storage and discharge. The use of green sources of energy is increased in isolated area due to the high cost of transmission lines and higher transmission losses. A stable energy system is possible by combining two or more renewable energy sources, such as solar, wind, hydro, diesel, etc., in comparison to nonrenewable energy system [4]. On taking account of the above-mentioned facts, the shortcomings of one source could be sufficed by another resource through hybridization.

Hybrid Renewable energy system has high reliability, more efficiency and reduced energy storage capacity [5]. Previous study shows that, the hybrid systems have been considered as preferred for remote systems like radio telecommunication, satellite earth stations, or at sites far away from a conventional power system [6–9]. For a grid - connected applications, the existing single source system (PV, Wind or hydro) can be converted to a hybrid system [10]. Hybrid systems captures the maximal output of each energy resource and can provide grid-quality electricity.

The following study with a Wind-PV-diesel hybrid power system developed using HOMER software for a small town in Saudi Arabia which is powered by the annual contributions of wind, solar Photo Voltaic (PV) and the diesel generations being 4713.7, 1653.5, and 11,542.6 MWh, respectively helped in avoiding 4,976.8 tons of greenhouse gases into the atmosphere annually [11,32]Studies conducted at Nangal village in India showed that hybridization reduced the cost of energy (COE) to $0.032 per kWh while average COE in India is $0.080 [12,33].

As demand grows, new systems need to be installed, often only to meet the peak demand for a few hours per year. New distribution lines may be difficult or expensive to build in such condition the shortage of energy could be met with the help of stored energy [13,34]. Energy storage systems play a vital role in powering standalone or off-grid networks. Electricity could be made available at remote locations with the help of energy storage system thereby improving connectivity, internet penetration and enablesrural electrification. Pumped Storage Hydropower (PSH) is the widely used energy storage system. Although PSH is technically viable to operate as on-peak generation power plants, the economic drawbacks of PSH due to its high capital cost and its cycle efficiency limit its feasibility [14,35]. By maximizing the utilization of renewable resources, and also storing excess energy in a storage system, the dependency of utilization of grid can be reduced [15, 36].

In the case of chemical energy storage systems, energy is stored in the form of hydrogen. Surplus or off-peak electrical power is used to make hydrogen and this stored hydrogen is used as fuel in a power plant when electricity is required. Hydrogen has a high mass energy density [16]. Water is the only combustion product which substantially reduces its environmental footprint. Versatility of hydrogen is attributed to its numerous applications.

Enormous hydropower resources and excellent solar conditions are distributed across the regions of Africa, South America, Central Asia, and Southeast Asia.There lies a huge potential for power development. However,the regions where the energy resources are available are far from load centers, requiring long-distance power transmission, thereby

undermining the economic feasibility of such energy sources [2]. Electrification of the rural area has long been done through means of grid extension. Connection to the grid is challenging due to geographical remoteness, thick jungles, rugged terrains, high costs of supply, low household incomes, low consumptions, dispersed settlement of consumers, and inadequate road infrastructures [17,37,38].The challenge of long-distance power transmission could be resolved by utilizing surplus amount of electrical power to produce hydrogen through electrolysis process, the stored hydrogen can be used as an energy reserve which could be transported to the load centers. Through this process the transmission losses are substantially reduced.

In this work a system consisting of hybridized wind and hydro power sources is proposed. During off-peak hours the excess electricity produced from the power plants is utilized for the production of hydrogen. The produced hydrogen is transported to load centers then it is converted into electricity. This mechanism plays a crucial role in powering remote standalone systems since establishing transmission lines is not feasible.

2. System Description

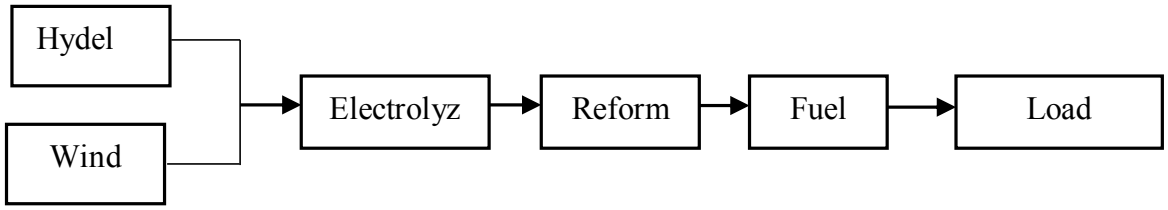


Fig 1. Schematic diagram of Hybrid Renewable Energy System (HRES)

The schematic diagram of the system involved in this work is presented in Figure 1. The system is equipped with two power generators (hydro turbine and wind turbine), an energy storage device, the electrolyzer, a reformer, a converter system and a load.

The reformer stores excess electricity from intermittent sources in the system (hydro and wind) for use during periods of insufficient generation to meet the demand for electrical load. The operating principle of the HRES can be explained briefly, as follows. During a period of excess energy supply, the surplus hydro or wind power is used to electrolyze water to produce hydrogen. Later, when a supply-demand imbalance occurs, the stored hydrogen is combusted in a fuel cell, thus enabling electricity production. The proposed system has been implemented using HOMER software as illustrated in Figure 2. The proposed system is an off-grid system, The grid component on the HOMER's schematic presentation was introduced for the purpose of comparing the proposed autonomous system with grid extension.This study reveals that, the levelized cost of energy of the HRES system is lower than the conventional power system. In addition, HOMER's programmer has to enter all costs into the system in terms of constant dollars [18, 19]. In this study, the calculations related to energy cost have also been performed in terms of dolla

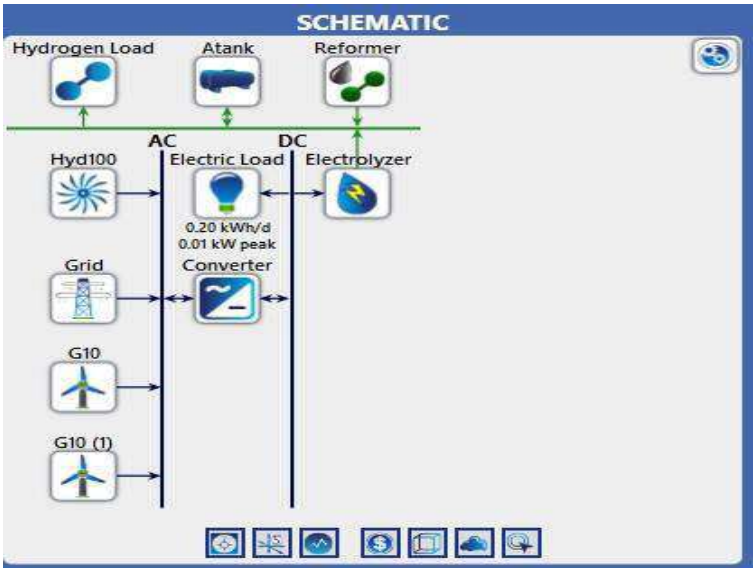


Fig 2. The proposed hybrid system in HOMER

3. System Analysis

3.1 Hydro Turbine

The model of Generic Hydro turbine adopted in this simulation study has a rated power of 100 KW. The electrical power output of the Hydro turbine is calculated using the following equation:

$$P_{hyd} = \frac{\eta_{hyd} \cdot \rho_{water} \cdot g \cdot h_{net} \cdot Q_{turbine}}{1000 W/kW} \quad (1)$$

Where,

P_{hyd} = Power output of the hydro turbine [kW]
η_{hyd} = Hydro turbine efficiency [%]
ρ_{water} = Density of water [1000 kg/m^3]
g = Acceleration due to gravity [9.81 m/s^2]
h_{net} = Effective head [m]
$\mathring{Q}_{turbine}$ = Hydro turbine flow rate [m^3/s]

Table 1 Hydro turbine module specifications [20]

Module parameter	Value
Type	100KWGeneric
Lifetime	25 years
Available head	10 m
Minimum flow ratio	50%
Maximum flow ratio	110%
Efficiency	85%
Pipe head loss	10%
Output current	AC
Capital Cost (Including generator, controls, transformers and transmission system)	$459,845
Maintenance cost	$13,795/year

3.2 Wind Turbine

The model of Generic G10 wind turbine of rated power 10KW has been considered for this simulation study. The electrical power output of the wind turbine is calculated using the following equation:

$$U_{hub} = U_{anem} \cdot \left[\frac{Z_{hub}}{Z_{anem}}\right]^{\alpha} \quad (2)$$

Where,

U_{hub} = Wind speed at the hub height of the wind turbine [m/s]
U_{anem} = Wind speed at anemometer height [m/s]
Z_{hub} = Hub height of the wind turbine [m]
Z_{anem} = Anemometer height [m]
α = Power law exponent

Table 2 Wind turbine module specifications [21]

Description	Specification
Manufacturer	Bergey Wind Power
Model	Bergey excel 10-R
Nominal power	10 KW at 12 m/s
Cut-in Wind Speed	2.5 m/s
Cut-Out Wind Speed	None
Furling Wind Speed	14–20 m/s
Max. Design Wind Speed	60 m/s
Hub height	30 m
Type	3 Blade Upwind

4. Integrated Electrolyzer and Fuel cell model

Electrolyzer generates hydrogen from water by utilizing the excess electricity. Whereas fuel cell is used to convert chemical energy into electrical energy. Electrolysis of water is the reverse of the fuel cell reaction [22]. A fuel cell can act as both fuel cell and water electrolysis cell based on the direction of the electrical current. In this work the process of integration has been proposed to nullify the need for an electrolyzer also it paves way for the reuse of discharged fuel cell thereby reducing electronic waste generation. The efficiency of hydrogen production is calculated as follows [22]:

$$Electrical\ Efficiency_{(HHV)} = \frac{HHV of H_2 produced}{Electricity used} \quad (3)$$

The efficiency of fuel cell is calculated as follows [11]:

$$Electrical\ Efficiency = \frac{Electricity\ produced}{HHV\ of\ fuel\ used} \quad (4)$$

5. Availability of resources

The global gross hydropower potential is estimated at 52.0 PWh/year, which is sufficient to suffice one-third of current global energy need [23]. Hydropower is distributed across different geographic locations, mostly being remote areas. Therefore, an enormous potential is untapped. The per capita calculation presented in figure (3) reveals that 41 countries have sufficient potential per capita hydropower energy within their boundaries to cover the needs of the average citizen. Figure (4) shows that energy per capita is higher in North America compared to Asia and Europe.

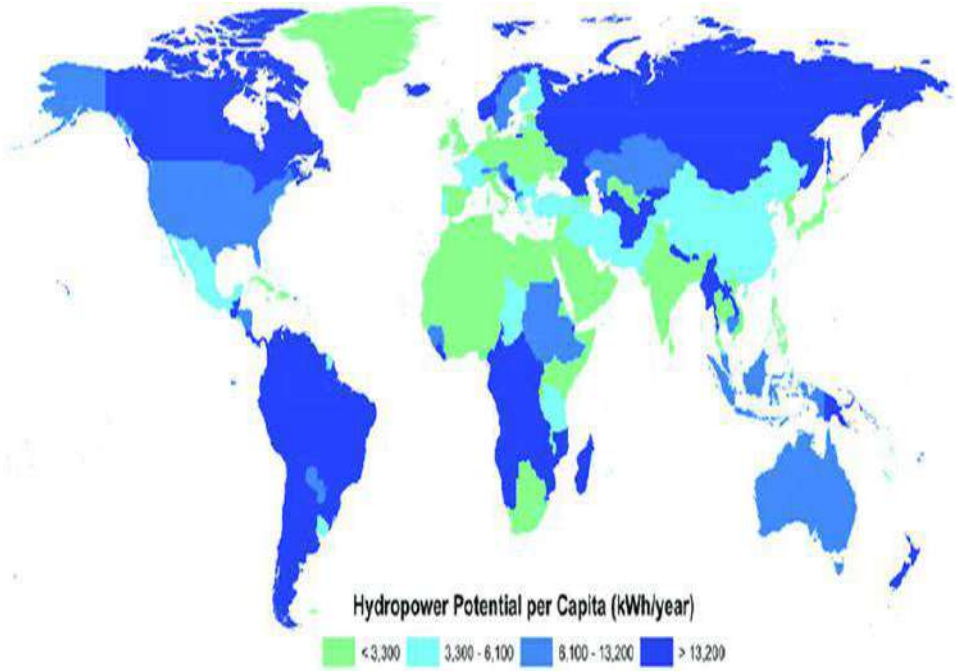


Fig 3. Global map of hydropower per capita per country [23]

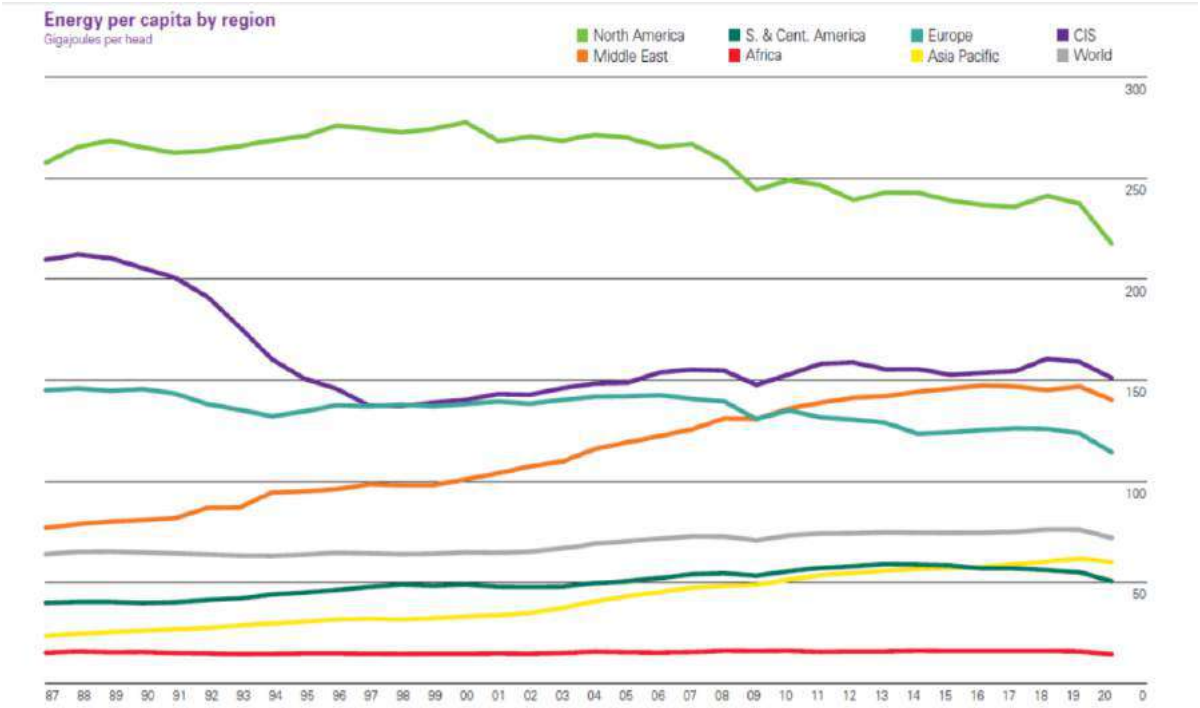


Fig 4. Energy per capita by region (GJ/head) [24]

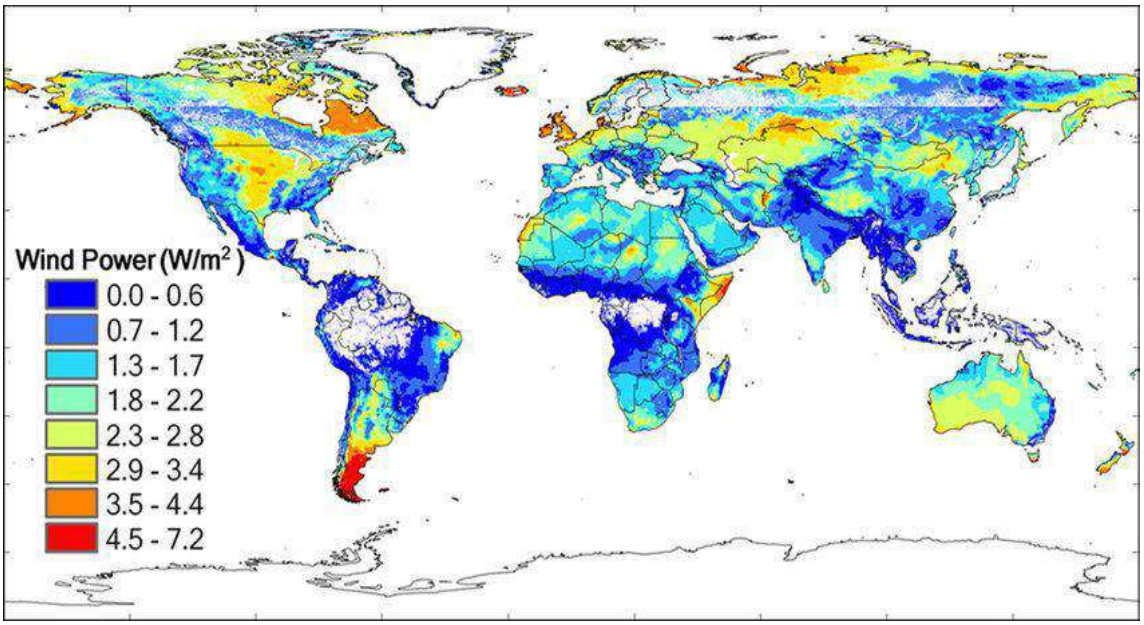


Fig 5. Global distribution of annual average onshore wind power potential

The global wind energy potential is estimated at 690,000 TWh/year [25]. Figure (5) reveals that the wind energy potential is higher in the regions of Central America, Asia and parts of South America. International Energy Agency (IEA) has stated that even though wind capacity additions have almost doubled in, more efforts are still needed [26]. The growth of renewable energy is not sufficient to achieve net zero emission target of the IEA which is attributed to the challenges involved in the development of renewable energy

systems such as low productivity, voltage instability and wind speed fluctuations [27,39, 40]. Uncertainties in wind energy could be resolved with energy storage systems. In this work hydrogen fuel cell based energy storage system is proposed.

6. Load Assessment

Hydrogen powered fuel cell-based energy system is proposed to power telecommunication network. The telecommunication plays a vital role in communication between people around the world. The main challenge faced by this industry is to provide the required energy for its towers in the remote rural areas in the absence of the grid [28].Diesel generators is being widely used to power the network which has a serious impact on the environment and also reduce the cost of energy [29] .

In this section the feasibility of fuel cell powered telecom network has been analyzed. Studies conducted in India revealed that 70 percent of the mobile towers face electrical grid outages in excess of 8 hours a day [30]. The energy deficit could be resolved with hydrogen powered fuel cell. The average demand of a telecom base station is 2.52 kW/day [30]. Which translates to 920 kW/year. A hydrogen reformer output of 60,386 Kg/year has been obtained in the simulation studies. Hydrogen has energy content value of 33.3 kW/Kg. Calculations reveals that the output from the reformer could power 2,185 telecom towers annually.

7. Result Analysis

The simulation studies performed with HOMER showed that among the 14,620 system configurations of the HOMER search space, 12,190 were feasible.Its cost of energy (COE), operation cost and total net present cost (NPC) were $0.2869/KWh, $260,341.70 and $37,87,892 respectively. The breakdown by component and cost type of the NPC, has been presented in the Figure 6. This figure shows that 62% of the NPC was dominated by the capital cost of the system. The hydroelectric turbine was the most important component in terms of costs and accounted for 63% of the total capital cost. Fuel cost of $ 381189.8 was incurred by the generic reformer system. For this configuration, the total annual electricity production was 1,032,984 kWh/year, 91% dominated by the production of hydroelectric turbine. A significant gain of $ 660,201/year was made as electricity was sold to the grid this enumerated the net profit and boosted return of investment as represented in figure (6).

Figure (7), which displays the monthly distribution of electrical generation, shows that the power generation from hydroelectric powerplant was higher during the rainy season than the dry season. Figure (8) shows the generation of hydro power to meet the daily demand.

This microgrid required 165 kg/day and has a peak of 20 kg/hr. In the proposed system, the generic reformer serves as the hydrogen source. The Generic Reformer has a rated capacity of 100 kg/hr. The annual production is 60,386 kg/yr. Figure (9) depicts the total production of hydrogen by the configuration. Figure (10) represents the annual production of the generic reformer.

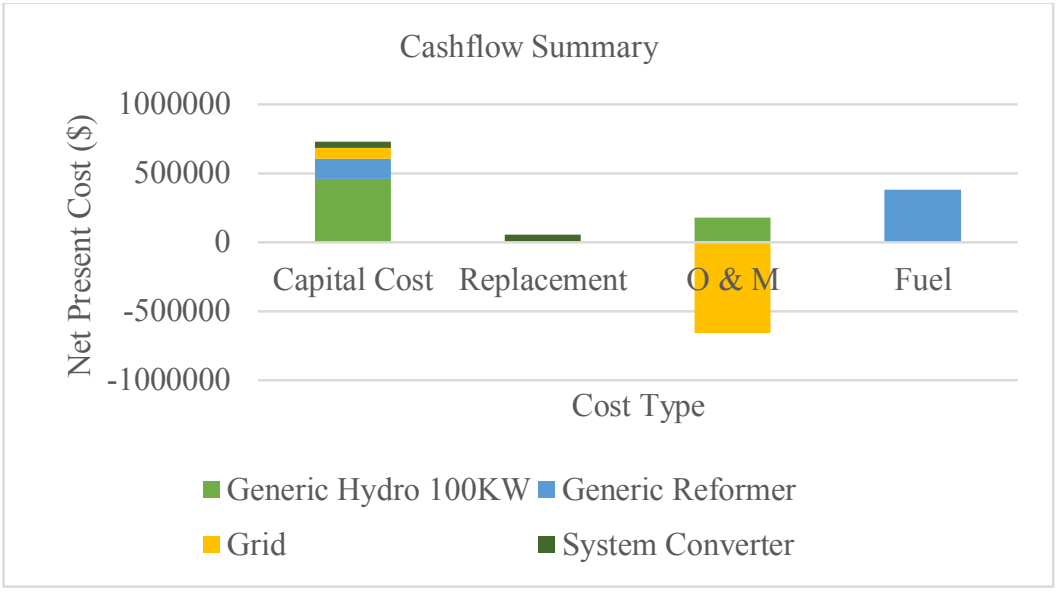


Fig 6. Cash flow summary based on the HOMER simulation

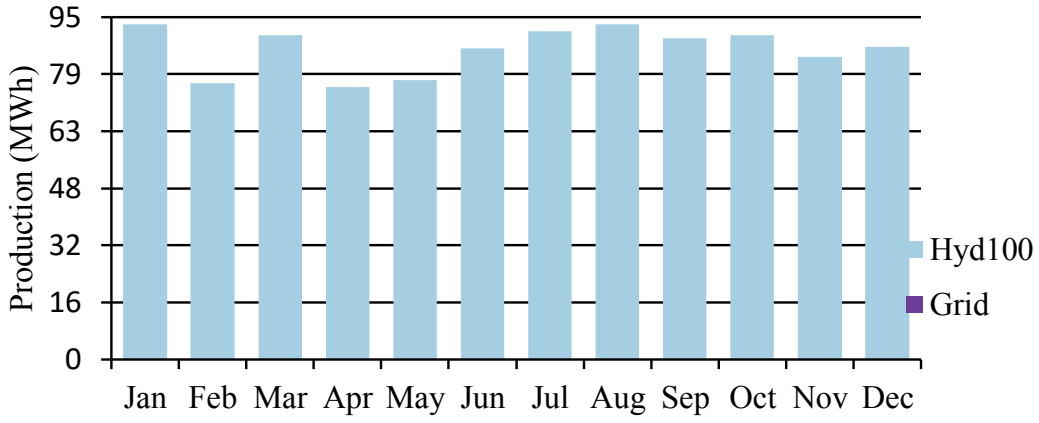


Fig 7. Monthly average electrical output of the system

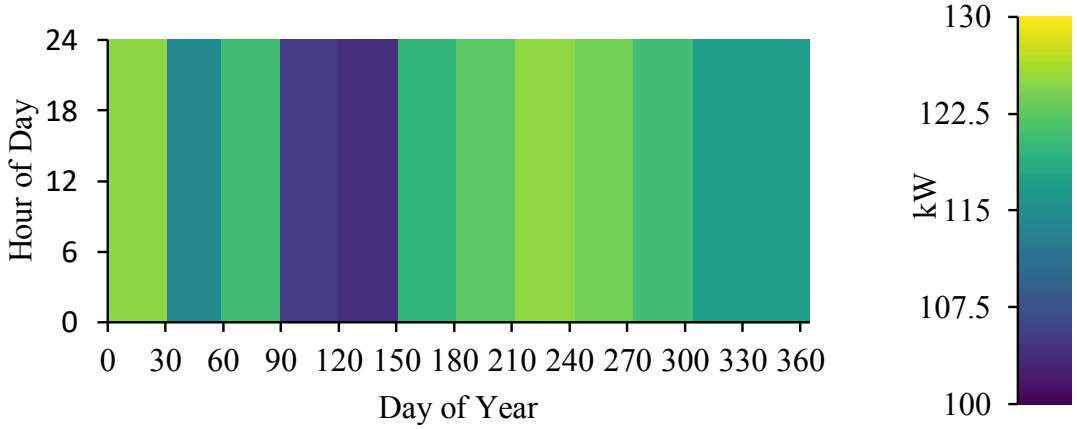


Fig 8. The Hydro-Electric output

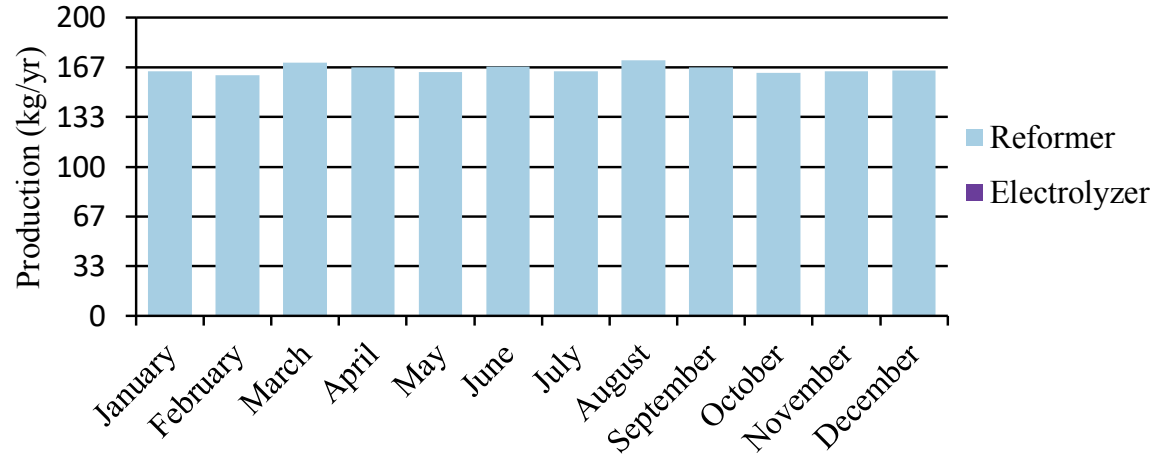


Fig 9. Monthly average hydrogen production

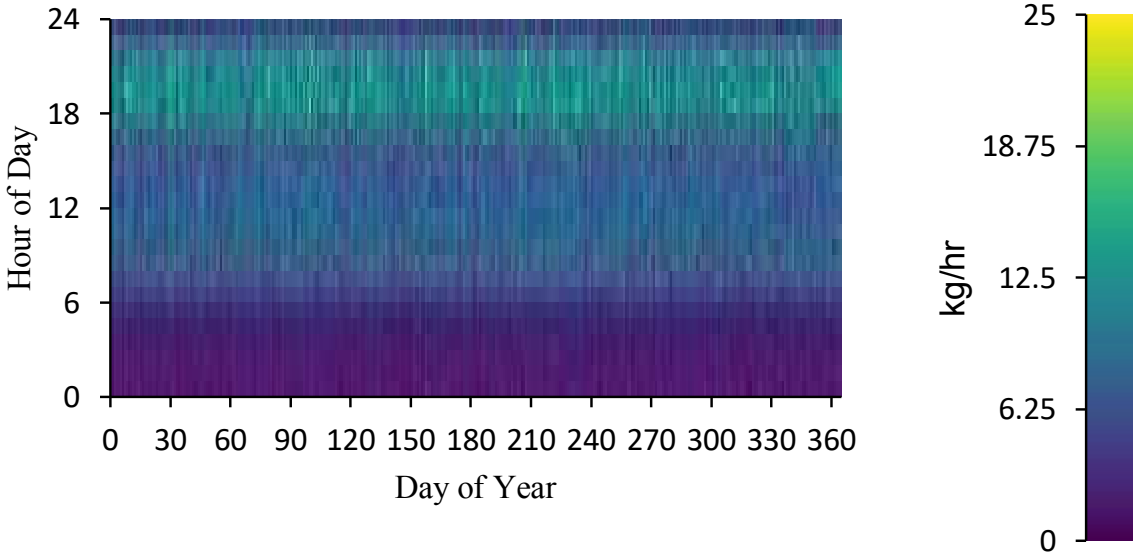


Fig 10. The reformer output

8. Conclusion

In this paper, a hybrid renewable energy systemhas been proposed and simulated using HOMER software. HRES comprising of hydel power, wind energy and fuel cell is investigated in this work. Hydrogen fuel cell is expected as one of the promising energy storage solutions. Energy storage systems are essential in increasing renewable energy penetration. Simulation studies revealed that the COE of HRES is lower than the average COE prevalent across grids. HRES provides autonomy to standalone systems by reducing their dependency on grids. It reduces transmission losses by a huge fraction thereby facilitating swift transmission between power stations and load centres. This ensures electrification of remote areas and improves connectivity. Renewable energy is a clean source of energy and green hydrogen produced from the electrical power reduces the environmental impact significantly.

References

1. Abdelhamid Kaabeche, Maïouf Belhamel, Rachid Ibtiouen, Techno-economic valuation and optimization of integrated photovoltaic/wind energy conversion system. Int J of Solar Energy **85,** 2407 – 2420 (2011) https://doi.org/10.1016/j.solener.2011.06.032

2. Zhenchen Deng, Jinyu Xiao, Shikun Zhang et al , Economic feasibility of large-scale hydro-solar hybrid power including long distance transmission. Int J of Global Energy Interconnection **2**, 290-299 (2019) https://doi.org/10.1016/j.gloei.2019.11.001

3. S.A.Abbasi , Tabassum-Abbasi, Tasneem Abbasi. Impact of wind-energy generation on climate: A rising spectre. Int J of Renewable and Sustainable Energy Reviews **59**, 1591-1598 (2016) https://doi.org/10.1016/j.rser.2015.12.262

4. Omar Hafez, Kankar Bhattacharya , Optimal planning and design of a renewable energy-based supply system for microgrids, Int J of Renewable Energy **45** , 7-15 (2012) https://doi.org/10.1016/j.renene.2012.01.087

5. Sunanda Sinha, S.S. Chandel, Review of software tools for hybrid renewable energy systems,Int J of Renewable and Sustainable Energy Reviews **32**, 192-205 (2014) https://doi.org/10.1016/j.rser.2014.01.035

6. Yang HX, Zhou W, Lou CZ, Optimal design and techno-economic analysis of a hybrid solar–wind power generation system, Int J of Applied Energy **86**, 163-169 (2009) https://doi.org/10.1016/j.apenergy.2008.03.008

7. W.Zhou, HX. Yang, ZH.Fang, Battery behavior prediction and battery working states analysis of a hybrid solar–wind power generation system, Int J of Renewable Energy **33**, 1413-1423 (2008) https://doi.org/10.1016/j.renene.2007.08.004

8. S.Diafa, M.Belhamelb, M.Haddadic, A. Louchea, Technical and economic assessment of hybrid photovoltaic/wind system with battery storage in Corsica Island, Ing J of Energy Policy **36**,743-754 (2008) https://doi.org/10.1016/j.enpol.2007.10.028

9. Ali Nasi Celik , Techno-economic analysis of autonomous PV–wind hybrid energy systems using different sizing methods, Int J of Energy Conversion and Management **44**, 1951-1968 (2003) https://doi.org/10.1016/S0196-8904(02)00223-6

10. GC. Bakos, NF.Tsagas , Techno economic assessment of a hybrid solar/wind installation for electrical energy saving, Int J of Energy and Buildings **35**,139-145 (2003) https://doi.org/10.1016/S0378-7788(02)00023-3

11. Shafiqur Rehman, Mahbub Alam Md, J.P. Meyer et.al, Feasibility study of a wind–pv–diesel hybrid power system for a village, Int J of Renewable Energy **38**, 258-268 (2012) https://doi.org/10.1016/j.renene.2011.06.028

12. Kamal Kant Sharma, Akhil Gupta, Raman Kumar et. al, Economic evaluation of a hybrid renewable energy system (HRES) using hybrid optimization model for electric renewable (HOMER) software—a case study of rural India, IntJ of Low-Carbon Technologies **16** ,814-821 (2021) https://doi.org/10.1093/ijlct/ctab012

13. Denholm P, Ela E et.al, Role of energy storage with renewable electricity generation Technical Report No. NREL/TP-6A2-47187. National Renewable Energy Lab. (NREL), Golden, CO (United States), 1-61 (2010) https://doi.org/10.2172/972169

14. D. Abdellatif, R. AbdelHady., A.M.Ibrahim et al. Conditions for economic competitiveness of pumped storage hydroelectric power plants in Egypt Int J of Renewables **5**,1-14 (2018) https://doi.org/10.1186/s40807-018-0048-1.

15. A. Prasai, A.Paquett ,Y. Du, R.Harle , D.Divan , Minimizing emissions in microgrids while meeting reliability and power quality objectives, Proceeding of 2010 Int. Power Electronics Conference 726-733 (2010)

16. Paul Breeze. Hydrogen Energy Storage. In: Mariana L. Kuhl, editor. Power System Energy Storage Technologies. Germany: Elsevier: 69-77. (2018)

17. G.Anteneh, Dagnachew, L.Paul. Lucas et.al, The role of decentralized systems in providing universal electricity access in Sub-Saharan Africa–A model-based approach. Int J of Energy **139** ,184-195 (2017) phttps://doi.org/10.1016/j.energy.2017.07.144

18. T.Lambert , P.Gilman , P.Lilienthal , Micropower system modeling with HOMER. In. Felix A Fareet, editor. Integration of alternative sources of energy. Unites States: Wiley 379-418 (2006).

19. HOMER analysis https://analysis.nrel.gov/homer/

20. Tamanjong Fru Fofang, Emmanuel Tanyi, Design and Simulation of Off-Grid Solar/Mini-Hydro Renewable Energy System using Homer Pro Software: Case of Muyuka Rural Community. Int Jof Engineering Research and Technology **9**. 597-604 (2020).

21. Naser Yimen, Oumarou Hamandjoda et.al,Analyzing of a Photovoltaic/Wind / Biogas/Pumped-Hydro Off-Grid Hybrid System for Rural Electrification in Sub-Saharan Africa—Case Study of Djoundé in Northern Cameroon. Int J of Energies **11**,1-30 (2018) https://doi.org/10.3390/en11102644

22. KW.Harrison, Remick Ret.al, Hydrogen Production: Fundamentals and Case Study Summaries. National Renewable Energy Laboratory, Natural Resources Canada, Report No. NREL/CP-550-47302, (2010)

23. Hoes, Olivier & Meijer, Lourens & Ent, Ruud & van de Giesen, Nick. Systematic high-resolution assessment of global hydropower potential. Int J of PLOS ONE **12**,1-10 (2017)

24. BP Statistical Review of World Energy, 70th edition (2021). https://www.bp.com

25. Mingquan Li, Edgar Virguez et.al. High-resolution data shows China's wind and solar energy resources are enough to support a 2050 decarbonized electricity system. Int J of Applied Energy **306** (2022) https://doi.org/10.1016/j.apenergy.2021.117996

26. IEA (2021), Renewables 2021, Paris. https://www.iea.org

27. Mehrdad Ahmadi Kamarposhti, Soodabeh Soleymani, Seyed Mehdi Hosseini, Improving the wind penetration level of the power systems connected to doubly fed induction generator wind farms considering voltage stability constraint. Journal of Renewable and Sustainable Energy **7**,1-23 (2015) https://doi.org/10.1063/1.4927008

28. Daming Li, Lianbing Deng, Qinglang Su, Yonghua Song, Providing a guaranteed power for the BTS in telecom tower based on improved balanced owl search algorithm. Int J of Energy Reports **6** , 297-307 (2020) https://doi.org/10.1016/j.egyr.2020.01.006

29. Shafiqur Rehman, M. Luai, Al-Hadhrami, Study of a solar PV diesel battery hybrid power system for a remotely located population near Rafha, Saudi Arabia. Int J of Energy **35**, 4986-4995 (2010) https://doi.org/10.1016/j.energy.2010.08.025

30. Eisha Akanksha, Dr. Y.P. Singh, Power Consumption and Optimization of Energy Consumption for Telecom Towers in India. International Journal of Electronics & Communication Technology **8**, 52-54 (2017) https://www/iject.org

31. U.S Bureau of Labor Statistics. https://www.bls.gov

32. M. Muselli, G.Notton, A. Louche , Design of hybrid photovoltaic power generator with optimization of energy management. Int. Journal of Solar Energy **65,** 143-157 (1999) https://doi.org/10.1016/S0038-092X(98)00139-X

33. M. H. Nehrir et al., A Review of Hybrid Renewable/Alternative Energy Systems for Electric Power Generation: Configurations, Control, and Applications, IEEE Transactions on Sustainable Energy, **2**, 392-403, Oct 2011.

34. J. C. Smith, M. R. Milligan, E. A. DeMeo, B. Parsons, Utility Wind Integration and Operating Impact State of the Art, IEEE Transactions on Power Systems, **22**, 900-908, Aug 2007.

35. Barbour, Edward, Wilson, IA Grant et.al, A review of pumped hydro energy storage development in significant international electricity markets. Renewable and Sustainable Energy Reviews, **61**. 421-432 (2016).

36. N. Hatziargyriou, H. Asano, R.Iravani , C. Marnay, Microgrids, IEEE Power and Energy Magazine, **5,** 78-94, Aug. 2007.

37. Lily Parshall, Dana Pillai, Shashank Mohan, Aly Sanoh, Vijay Modi, National electricity planning in settings with low pre-existing grid coverage: Development of a spatial model and case study of Kenya, Energy Policy, **37** , 2395-2410 (2009) https://doi.org/10.1016/j.enpol.2009.01.021.

38. Debajit Palit, Akanksha Chaurey, Off-grid rural electrification experiences from South Asia: Status and best practices,Energy for Sustainable Development **15**, 266-276 (2011) https://doi.org/10.1016/j.esd.2011.07.004.

39. S. K. Salman , A. L. J. Teo, Windmill modeling consideration and factors influencing the stability of a grid-connected wind power-based embedded generator, in IEEE Transactions on Power Systems, **18,** 793-802, May 2003.

40. E. Vittal, M. O'Malley , A. Keane, A Steady-State Voltage Stability Analysis of Power Systems With High Penetrations of Wind, in IEEE Transactions on Power Systems, **25**, 433-442, Feb 2010.

41. Gholamreza Aghajani, Noradin Ghadimi, Multi-objective energy management in a micro-grid, Energy Reports, **4**, 218-225 (2018). http://dx.doi.org/10.1016/j.egyr.2017.10.002

Silicon Nanowire and Carbon Nanotube MOSFET: A Simulation Study

Publisher: IEEE

Mayuri Arun Kumar ; Basava Keerthana U ; Anupriya D ; P Vimala ; T. S. Arun Samuel **All Authors**

Abstract: This paper shows analysis, simulation and comparison of different characteristics of Carbon Nanotube MOSFET and Silicon Nanowire MOSFET. Here we analyze and compare drain... **View more**

Metadata

Abstract:
This paper shows analysis, simulation and comparison of different characteristics of Carbon Nanotube MOSFET and Silicon Nanowire MOSFET. Here we analyze and compare drain current versus drain voltage, drain current versus gate voltage, Average current of carriers versus gate voltage, Transconductance over drain current ratio versus gate voltage. So here is a detailed outlook on the analysis and comparison of silicon nanowire MOSFET and carbon nanotube MOSFET.

Published in: 2023 International Conference on Advances in Electronics, Communication, Computing and Intelligent Information Systems (ICAECIS)

Date of Conference: 19-21 April 2023

DOI: 10.1109/ICAECIS58353.2023.10170513

Date Added to IEEE *Xplore*: 07 July 2023

Publisher: IEEE

ISBN Information:

Conference Location: Bangalore, India

Mayuri Arun Kumar
Electronics and Communication Engineering, Dayananda Sagar College of Engineering, Bangalore, India

Basava Keerthana U
Electronics and Communication Engineering, Dayananda Sagar College of Engineering, Bangalore, India

Anupriya D
Electronics and Communication Engineering, Dayananda Sagar College of Engineering, Bangalore, India

P Vimala
Electronics and Communication Engineering, Dayananda Sagar College of Engineering, Bangalore, India

T. S. Arun Samuel
Electronics and Communication Engineering, National Engineering College, Kovilpatti, Tamilnadu, India

Contents

In the areas of nanotechnology, materials science, and related disciplines, nanoHUB.org is the most widely used free and open platform for computational research, instruction, and collaboration. A web browser can be used to access the library of cloud-based simulation tools that is housed on this website.

Authors

Mayuri Arun Kumar
Electronics and Communication Engineering, Dayananda Sagar College of Engineering, Bangalore, India

Basava Keerthana U
Electronics and Communication Engineering, Dayananda Sagar College of Engineering, Bangalore, India

Anupriya D
Electronics and Communication Engineering, Dayananda Sagar College of Engineering, Bangalore, India

P Vimala
Electronics and Communication Engineering, Dayananda Sagar College of Engineering, Bangalore, India

T. S. Arun Samuel
Electronics and Communication Engineering, National Engineering College, Kovilpatti, Tamilnadu, India

Figures

References

Citations

Keywords

Metrics

More Like This

3-D Analytical Modeling of Dual-Material Triple-Gate Silicon-on-Nothing MOSFET
IEEE Transactions on Electron Devices
Published: 2017

An Analytical Model for the Threshold Voltage Shift Caused by Two-Dimensional Quantum Confinement in Undoped Multiple-Gate MOSFETs
IEEE Transactions on Electron Devices
Published: 2007

Show More

College Enquiry Chatbot

Publisher: IEEE

Janapreethi S ; Janapriya S ; Sarulatha M ; G.R. Hemalakshmi **All Authors**

Abstract: Today's widespread use of smartphones is proof that technology is always evolving. Nowadays, artificial intelligence is crucial to numerous industries, including manufact... **View more**

Metadata

Abstract:
Today's widespread use of smartphones is proof that technology is always evolving. Nowadays, artificial intelligence is crucial to numerous industries, including manufacturing, human resources, and customer service. There are numerous chatbots that help people discover solutions to their questions. As a result, we are developing an AI-powered chatbot that can address all questions about colleges. It serves as an intelligence tool with an emphasis on higher education. This artificially intelligent machine will respond to queries from users regarding matters related to higher education. The information is kept in the chatbot's database so that it can be used to spot trends and decide how to respond to questions. The chatbot for college inquiries was developed using an NLP system that evaluates questions and comprehends messages. People react to each other differently based on emotions and attitude. Because chatbots must go by rules just like humans do, they will communicate with customers in a courteous and correct manner. Students can ask the chatbot any questions at any time of the day or night, and they will receive a prompt and accurate response. A chatbot can respond to thousands of users simultaneously. Chatbot can work 24 ×7 without getting tired. It has minimal errors, which increases productivity.

Published in: 2023 2nd International Conference on Vision Towards Emerging Trends in Communication and Networking Technologies (ViTECoN)

Date of Conference: 05-06 May 2023

DOI: 10.1109/ViTECoN58111.2023.10156978

Date Added to IEEE *Xplore*: 26 June 2023

Publisher: IEEE

ISBN Information:

Conference Location: Vellore, India

Contents

Users can more easily speak naturally with one another thanks to a type of software called a chatbot. Artificial intelligence has gotten trickier as communication and information technology have advanced. Artificial intelligence systems profit from human traits like the ability to solve problems rapidly, make split-second decisions, carry out repetitive jobs, and respond to users. There are several electronic firms, such as those in e-business, entertainment, and virtual assistants. The Internet is a part of everything in this generation. It is quite effective to control everything at your doorway using this method. By doing this, users can make chatbots believe they are conversing with real people. There is no method to maintain the runtime knowledge base because it is relatively little. For AI to grasp user inquiries and concerns and give consumers the right answers, chatbots use machine learning as an interface. To engage or connect with users, they are designed utilising an artificial intelligence markup language. Chatbots are commonly referred to as answering machines. Your knowledge was used to pre-program this application, which makes it incredibly simple to use. Pattern matching, natural language processing, and data mining are techniques used in applications. The chatbot compares the user's input sentences with existing pattern sentences in the knowledge base. Each recorded pattern was compared to the chatbot's knowledge, and this knowledge was obtained from various sources.

Technological regime and knowledge productivity: An industry-level analysis of Chinese manufacturing
2010 IEEE International Conference on Industrial Engineering and Engineering Management
Published: 2010

Show More

Performance Analysis of LEGO Mindstorm EV3 Robot with PID Controller for Trajectory Tracking Application

Publisher: IEEE

A Stephan ; N Karthick Pugalum Perumal ; M Shivram Kumar ; C Akash ; L Varatharajan ; M Sivapalanirajan **All Authors**

Abstract: Robotics is an emerging field of interest among students to explore attractive tasks with their ideas. For engineering design, analytical observations are mandatory for t... **View more**

Metadata

Abstract:

Robotics is an emerging field of interest among students to explore attractive tasks with their ideas. For engineering design, analytical observations are mandatory for the identification of further improvements in the design. LEGO Mindstorm robotics is the one which gives a platform for both design and analytical inference from its operation. In this work, a Proportional Integral Derivative (PID) controller-based two-wheeled line follower is developed, and its performance is analyzed from the tools of the LEGO platform. Colour and ultrasonic sensors are used in three scenarios to check the ruggedness of the controller inline tracking and obstacle detection. The robotic performance is informative and impressive with 36% more efficient in the path tracking with different scenarios using LEGO modules.

Published in: 2023 7th International Conference on Intelligent Computing and Control Systems (ICICCS)

Date of Conference: 17-19 May 2023

DOI: 10.1109/ICICCS56967.2023.10142757

Date Added to IEEE *Xplore*: 08 June 2023

Publisher: IEEE

ISBN Information:

Conference Location: Madurai, India

ISSN Information:

Contents

A wheeled mobile robotic system is a promising research area for designing and analyzing the controller structure for various environmental conditions. It is used in many applications like cleaning robots, rovers, segway, warehouses and service robots [1]. Such design and controller algorithm implementation needs a flexible, user-friendly and virtuous system as hardware. In this work, a two-wheeled mobile robot for trajectory tracking and obstacle detection application is developed with sensors and actuators onboard. Lego Mindstorm EV3 is a modular robotic system that allows users to design and implement various robot structures to build their ideas into reality [2]. It provides a platform for analyzing the performance of the controllers with the given constraints.

RFID Attendance System-Enabled Automated Hand Sanitizer Dispenser using IoT

Publisher: IEEE

Kaveri K ; Jervila R ; Alhaseena KM ; Naskath J **All Authors**

Abstract:A hand rub or hand antiseptic are other names for hand sanitizer. The main purpose of it is to get rid of common diseases from hands. Hand sanitizers can be liquid, foam,... **View more**

Metadata

Abstract:
A hand rub or hand antiseptic are other names for hand sanitizer. The main purpose of it is to get rid of common diseases from hands. Hand sanitizers can be liquid, foam, or gel-based. The majority of the time, it is used in their place when soap and water are not available for hand cleansing. Hand sanitizers are often used in supermarkets, hospitals, daycare facilities, schools, and other public spaces to prevent the spread of infection. Nearly everyone has seen significant effects from the COVID-19 epidemic, and manufacturers are not an exception. Personal hygiene has gained critical precedence over all other considerations in public space as people have become more cautious in their contacts with other people and items. Visitors may find hand sanitizers in many public areas; however they must be manually activated. Some no-touch hand sanitizer dispensers are commercially available to prevent any contact at all, but they are costly, and the majority of off-the-shelf commercial sanitizers cannot be automated. This article examines and evaluates contemporary approaches to achieving the sustainable development goal of good health and well-being by using automated hand sanitizer and attendance system. It comprises all modules, including the pupil counter, temperature measurement and hand sanitization using Internet of Things.

Published in: 2023 2nd International Conference on Applied Artificial Intelligence and Computing (ICAAIC)

More Like This

Date of Conference: 04-06 May 2023

DOI: 10.1109/ICAAIC56838.2023.10140315

Date Added to IEEE *Xplore*: 08 June 2023

Publisher: IEEE

ISBN Information:

Conference Location: Salem, India

Contents

The internet of things connects humans, animals, computers, digital machinery, and other objects with unique IDs. The following justifies the decision to use the Internet of Things (IoT) to power a hand sanitizer dispenser that uses Radio Frequency Identification (RFID). Real-time monitoring: The Internet of Things (IOT) enables remote tracking of usage and supply levels for the hand sanitizer dispenser. This will ensure that the dispenser is efficiently managed and that sanitizer is constantly available in it. Improved User Experience: A system built on the Internet of Things can offer a simple and convenient user interface. The dispenser can be accessed by users via their mobile phones or other devices, and it can automatically dispense the sanitizer to reduce physical contact. [1]. Increased Safety and Hygiene: By ensuring that the dispenser is always filled with sanitizer and by offering touchless dispensing, an IOT-based system can assist improve safety and hygiene. This is crucial in environments like hospitals, schools, and universities where infection control is essential. Data analytics can be used to enhance dispenser placement, refill schedules, and other elements that affect user experience and efficiency. IoT-based systems can gather and analyze data on usage patterns. [2]. Finally, an IoT-based system for an RFID-based hand sanitizer dispenser offers a number of advantages, including real-time monitoring, automated replenishment, improved user experience, increased safety and hygiene, and data analytics. Due to these advantages, it is the best option for installing a hand sanitizer dispenser in a range of locations, including offices, hospitals, and other healthcare facilities. [3]. The majority of the advantages that IOT technology provides are suitable for a system of authentic monitoring. So, the main goal of this project is to develop a robust real-time monitoring system. The most important component of every enterprise is safety. Safety and security are essential elements in the workplace, in classrooms, and in workplaces [4]. Following some simple safety procedures to prevent the spread of illness and Keeping an eye on the temperature and hand-washing. The value is updated through IOT and LCDs as various environmental conditions are being monitored. In the event of an unusual circumstance, this will convey a message and an alert sound. In this article, automated hand sanitizers and attendance systems are examined and evaluated as modern methods for reaching the sustainable development aim of excellent health and wellbeing. It includes Internet of Things-based Automated Hand sanitizer, Attendance counter, and Temperature gauge modules(A-HAT). The remainder of the material is formatted as follows: A quick list of works that have discussed associated issues in the subject is provided in Section 2. As of Section 3 it is described how to formally express the problem and construct the system model. In Section 4, the connection probability of the suggested model is estimated using simulation and numerical data. The final section of Section 5 outlines the findings and suggests further research.

Authors

Figures

References

Citations

Keywords

Metrics

More Like This

Internet of things baseline method to improve health sterilization in hospitals: An approach from electronic instrumentation and processing of steam quality

2018 13th Iberian Conference on Information Systems and Technologies (CISTI)

Published: 2018

Internet of Things Enabled Approach for Hygiene Monitoring in Hospitals

2020 4th International Conference on Computer, Communication and Signal Processing (ICCCSP)

Published: 2020

Show More

Machine Learning-based Depression Prediction using Social Media Feeds

Publisher: IEEE

M Keerthiga ; D Abisha ; P Kalaiselvi ; S Shenbagalakshmi **All Authors**

Abstract: In today's environment, young people frequently use social media platforms to communicate emotions. They post about their feelings on social media, which can help us unde... **View more**

Metadata

Abstract:

In today's environment, young people frequently use social media platforms to communicate emotions. They post about their feelings on social media, which can help us understand how they feel at the time. As a reaction to the critical need for early detection tools, this research study uses sentiment analysis techniques to examine user contributions to social networks to help detect potential depression at an early stage. The research describes different methods for predicting sadness from user posts. The dataset is vectorised using count vectoriser and TF-IDFvectorizer, and features like post sentiment is retrieved. In our project, the model is divided into training and test datasets and trained using the Naive Bayes, Support Vector Machine, Decision Trees, Random Forest, and K-Nearest Neighbors machine learning techniques. The measures that are assessed are recall and accuracy. The Instagram API is applied to mine Instagram posts to create the dataset for the model. Each comment will undergo pre processing; each word will be processed through a lexicon to determine if it is positive or negative. This research study presents a new feature vector for classifying the texts as positive or negative. Each comment generates a score value from the lexicon to signify the degree of positivity, negativity, and other factors. A CSV file containing around 6,300 posts has been preprocessed. The distinctive characters and extraneous characters are eliminated using regular expressions. The data quality is then enhanced using stop words, Lemmatization, and tokenization. The best method for this approach yields an accuracy of 90.19% and a recall of 89.85% utilizing a decision tree model using a count vectorizer.

Published in: 2023 International Conference on Inventive Computation Technologies (ICICT)

Date of Conference: 26-28 April 2023

DOI: 10.1109/ICICT57646.2023.10134427

Date Added to IEEE *Xplore*: 01 June 2023

Publisher: IEEE

ISBN Information:

Conference Location: Lalitpur, Nepal

ISSN Information:

Contents

Depression is a serious issue in this generation. Today, death among young adults is suicide due to depression. It is quite easy to communicate ideas and opinions about anything on Facebook, Twitter, Wikipedia, LinkedIn, WhatsApp, Google+, Instagram, etc. Anyone may now readily produce, express, and share ideas, thoughts, opinions, and sentiments with millions of people across the world about anything, thanks to social media platforms. To recognize depression in a person, a study that employs emotions, machine learning methods, and natural language processing are employed to detect and identify emotions from the text on multiple social media platforms. K-Nearest Neighbours, Multinomial Naive Bayes, Decision Tree, Support Vector Machine, Random Forest and Logistic Regression Algorithms are employed as classifiers to examine Instagram posts from a selection of mixed-sentiment feeds for depression and anxiety. The accuracy value of the findings from the different methods will be examined to choose the best algorithm for diagnosing depression. The process of linking and categorizing ideas or attitudes represented in a source textbook is called sentiment analysis. Much sentiment-rich data is being produced through social media through feeds, status updates, blog posts, etc. Stoners generated this data; therefore, sentiment analysis is beneficial for understanding crowd sentiment. The two methods utilized for evaluating sentiments from the textbook are the knowledge base approach and the machine learning technique. The development of the Internet has changed how individuals communicate on social media. It may result in mortality, stress, and even melancholy. Different sentiment analysis methods are used to accomplish this. Symbolic Techniques, Knowledge base approaches and machine learning techniques are the two fundamental methods utilized in sentiment analysis. With the knowledge base technique, a sizable collection of predefined emotions is essential, as is a strong knowledge representation for sentiment analysis. This post uses several machine learning algorithms to recognize people's emotions and provide interventions. Today, a growing number of social media platforms, like Twitter, Facebook, and Instagram, are preferred by individuals to share their emotions, thoughts, and daily lives. Of the millions of people who suffer from depression every day, just a small percentage receives adequate care. Depression is one of the most prevalent internal health issues nowadays. For people, mental health is just as important as general physical health. Media users frequently vent their frustrations on taxing social media platforms and disclose information about them. Nowadays, social media users' activities can be used to make the detection. Because it is taxing for social media users to post often information about themselves and the issues they are having. So it can be used to measure someone's level of mental wellness. User posts on the well-known social media sites Twitter, Instagram, and Facebook are used to collect the data. This study uses machine learning to handle scraped data from SNS (Social Networking Sites) users. Natural Linguistic Processing (NLP), graded using Support Vector Machine (SVM) and the Naive Bayes technique, may make depression detection easier and more successful. Many studies have been done to identify sadness in users' social media posts using machine learning algorithms.

Citations

Keywords

Metrics

More Like This

Social Media Sentiment Analysis for Local Water Company Customers Using a Support Vector Machine Algorithm
2023 10th International Conference on ICT for Smart Society (ICISS)
Published: 2023

Sentiment Analysis of Bandung Tourist Destination Using Support Vector Machine and Naïve Bayes Algorithm
2022 6th International Conference on Information Technology, Information Systems and Electrical Engineering (ICITISEE)
Published: 2022

Show More

Optimized Parameter selection of Induction Motor using Finite Element Method

Publisher: IEEE

B.Arun Kumar ; V.K. Sasi Bharathi ; M. Gengaraj ; P.Loka Priya ; Dhanusha ; B. Vigneshwarn **All Authors**

Abstract: The efficiency of squirrel cage induction motors can be increased by adjusting several different factors. The majority of research only addresses one aspect at a time. To... **View more**

Metadata

Abstract:

The efficiency of squirrel cage induction motors can be increased by adjusting several different factors. The majority of research only addresses one aspect at a time. To obtain the most effective motor, all parameters must be optimized. This study demonstrates how the Maxwell module Rmxprt may be used to optimize three phase induction motor parameters such as rotor slot type, stator slot type, steel sheet, and rotor material. By altering the rotor winding configuration of a normal 3-phase induction motor, two distinct models are created and simulated using the Finite Element Method. To determine the best optimal model, the results have been compared.

Published in: 2023 International Conference on Computer Communication and Informatics (ICCCI)

Date of Conference: 23-25 January 2023

DOI: 10.1109/ICCCI56745.2023.10128398

Date Added to IEEE *Xplore*: 24 May 2023

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

ISSN Information:

Contents

High efficiency induction motor designers have received increasing attention as a result of increases in electrical energy prices, oil demand, and related material technological progress. One of the most fundamental methods for creating motion in both industrial and domestic products is the electric motor. As a result, they frequently serve as sources of vibration and noise as well [1]. Although there are many other kinds of electric motors, induction motors are the most often used since they are inexpensive and simple to use.

Independent PV-Battery Systems by Combining Autonomous Incremental Conductance Particle Swarm Technique with a Power Management Circuitry

Publisher: IEEE

P Anitha ; B Selvakumar ; A S Kamaraja ; K Karthik Kumar **All Authors**

Abstract: The two primary problems with distributed generating systems were production power and sustain abilities. Lighting loads have lately had a significant impact on these con... **View more**

Metadata

Abstract:

The two primary problems with distributed generating systems were production power and sustain abilities. Lighting loads have lately had a significant impact on these concerns. Today's DC-provided lightings load deals a greater solutions. In the conventional network, obtaining DC outputs requires the use of a rectifier, which is expensive and has a low efficiency. The research offers an effective independent PV-battery (IPVB) system fed light emitting diode as a load that addresses these problems by utilising a power managing circuitry (PMC) with peak power point tracing. By using the Incremental conductance Particle Swarm (ICPS) approach with a different step size, the undesirable variations at MPP brought on via the conventional Incremental conductance's technology are greatly reduced. The non-isolated DC bidirectional converters in the PMC operates as a voltage regulator by a regulated DC voltages bus of 36 Volts. It selects the battery's charge and discharge phases depend upon the battery's capacity, the solar irradiation power, and the converter's output watts. The effectiveness of three peak power and PMC has in fact been investigated through simulations.

Published in: 2023 7th International Conference on Trends in Electronics and Informatics (ICOEI)

Date of Conference: 11-13 April 2023

DOI: 10.1109/ICOEI56765.2023.10125591

Date Added to IEEE *Xplore*: 24 May 2023

Publisher: IEEE

ISBN Information:

Conference Location: Tirunelveli, India

Contents

Authors

Figures

References

Citations

Keywords

Metrics

More Like This

State of Charge and Equivalent Internal Resistance Estimation for a Multi-cell Application based on Cell-Difference-Model

2019 IEEE Energy Conversion Congress and Exposition (ECCE)

Published: 2019

Supercapacitor Characterization Using Fluctuating DC Current - Impacts of State of Charge, Number of Cycle and Frequency on Cell Resistance and Capacitance

2016 IEEE Vehicle Power and Propulsion Conference (VPPC)

Published: 2016

Show More

A Web of Things-Specific IFTTT Applet: Integration of a Trigger Service with Action Services

Publisher: IEEE

Anshio SV ; Abinesh K ; Jayanth S ; Ms. KANTHIMATHI M **All Authors**

Abstract: An If This Then That (IFTTT) applet was used to illustrate the process followed here. This work connects two separate application services. In this case, these two apps w... **View more**

Metadata

Abstract:
An If This Then That (IFTTT) applet was used to illustrate the process followed here. This work connects two separate application services. In this case, these two apps were selected to pilot a new Internet of Things-based infrastructure. There was the “Trigger” service, which was the ubiquitous “Google Assistant,” and the “Action” service, which was the “AdafruitIO” Message Query Telemetry Transport (MQTT) broker. Both the active state of a multi-sensor network and a relay may be monitored remotely using an MQTT broker service, and numerous electrical appliances could be controlled remotely using a Virtual Personal Assistant (VPA). The second goal was to facilitate communication between the two services by integrating and connecting them using an “If This Then That” Applet. The AdafruitIO dashboard allowed the sensor readings and relay status to be monitored remotely from a computer or mobile device.

Published in: 2023 7th International Conference on Trends in Electronics and Informatics (ICOEI)

Date of Conference: 11-13 April 2023

DOI: 10.1109/ICOEI56765.2023.10126019

Date Added to IEEE *Xplore*: 24 May 2023

Publisher: IEEE

▸ **ISBN Information:**

Conference Location: Tirunelveli, India

Contents

IFTTT, short for “If This Then That,” is a free online service that enables you to build” applets” out of chains of basic conditional statements. Whenever time data in another online service-say, Gmail, Facebook, Telegram, Instagram, or Pinterest-changes, the corresponding applet is activated. To facilitate communication between two systems, IFTTT connects them Simply said, IFTTT is a free service that connects your applications and gadgets. For example, Amazon Alexa to Google services like Drive, Calendar, and Gmail. Using the IFTTT Platform, companies like Google, Twitter, Facebook, Amazon, Instagram, eBay, Honeywell Home, Dropbox, and many more can speed up the digital transformation of their goods into integrated services while drastically lowering development costs.

IoT based Smart Controller for Ceiling Fan

Publisher: IEEE

S. Ragul ; Yuvaraj. S ; V. Vijayabalan ; B. Venkatasamy ; L. Kalaivani ; F. Antony Jeffrey Vaz **All Authors**

Abstract: This work reviews the design of controlling the ceiling Fan speed by using android mobile. This product is to provide comfortable sleeping at midnight during the winter a... **View more**

Metadata

Abstract:
This work reviews the design of controlling the ceiling Fan speed by using android mobile. This product is to provide comfortable sleeping at midnight during the winter and rainy seasons. It automatically controls the speed of the Fan based on the factors such as temperature and humidity. The speed control can be fully automatic or semi-automatic. The proposed smart controller is implemented between Fan and E.B. mains. There is no need to disturb the existing Fan arrangement. The main aim of this study is to replace the existing Fan regulator alone. The mode of operation of the Fan can be controlled by using IoT/Bluetooth/Manual. PIR sensor is incorporated; it makes the Fan run only when the people are present inside the room. This study also includes a night visible digital clock and wakeup alarm system. The proposed controller is made as two variants; one is to control a single ceiling fan with additional features that make a complete bedroom solution cost-effective. Another is a high-power controller that controls a large number of Fans based on the factors, which conserves a lot of energy.

Published in: 2023 7th International Conference on Trends in Electronics and Informatics (ICOEI)

Date of Conference: 11-13 April 2023

DOI: 10.1109/ICOEI56765.2023.10125708

Date Added to IEEE *Xplore*: 24 May 2023

Publisher: IEEE

▸ **ISBN Information:**

Conference Location: Tirunelveli, India

Contents

In Indian household electrical appliances, the Ceiling Fan is one of the most common things. In India, ceiling Fan almost exists in every room in the country. Different ceiling Fans have different types of regulators. Most people do not care about the regulators, but the standard Regulators can waste a lot of energy and increase electricity bills. As the proposed smart controller can automatically adjust the Fan's Speed according to the weather condition, the user can conserve energy. A ceiling Fan could be a typical appliance that's connected to the ceiling and uses an electrical motor to rotate blades in a circular motion. Ceiling Fans facilitate cooling an area by moving air that causes action cooling. In fashionable days, controlling ceiling Fans through a phone has been increasing because of high performance and scale-back work by connecting through the Smartphone, which is beneficial for aged and physically disabled individuals.

A Performance Analysis of Predicting Diabetics Disease Using Hybrid Machine Learning Approach

Publisher: IEEE

Suga Priya K ; Saranya A ; Abinesh S ; Chidambaram S **All Authors**

Abstract: Nowadays the diabetic, is considered a chronic disease. It is one of the metabolic disorders seeded by tenaciously accumulated blood sugar levels. If diabetes is early pr... **View more**

Metadata

Abstract:
Nowadays the diabetic, is considered a chronic disease. It is one of the metabolic disorders seeded by tenaciously accumulated blood sugar levels. If diabetes is early predicted then the risk is lowered. Due to the trivial quantity of tagged data or the lack of labels in the PIMA datasets, it is tremendously sticky to create a strong and infallible prediction of diabetes. In our work we proposed a XG Boost for diabetes prediction using k-cross validation, and compared with k-nearest neighbor, decision tree, Support vector machine, Ada Boost and naive bayes, and also unusual rejection, satisfying in absent values, data standardization, and characteristic selection is done. Using the Pima Indian Diabetes Dataset, each one of the investigations in this work was carried out under identical experimental settings. Our proposed ensembling classifier provides an experimental result of 85% compared to existing algorithms. Our proposed framework performs better than others in predicting diabetes.

Published in: 2023 9th International Conference on Advanced Computing and Communication Systems (ICACCS)

Date of Conference: 17-18 March 2023 **DOI:** 10.1109/ICACCS57279.2023.10113086

More Like This

Date Added to IEEE *Xplore*: 05 May 2023

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

ISSN Information:

Contents

Right now the most prevalent illness is diabetes and it can take hold of the residential as well as flourish nations [1]. The pancreas enters the body, allowing glucose from food to enter the bloodstream, and releases the hormone insulin. Diabetes develops when there is inadequate production of that hormone because of pancreatic failure. Diabetes can cause several complications, including Thirsty, Drowsiness, High Pressure, Delay of wound healing, Urinating often and mood changes [2]. According to a study on sugar patients, the adult prevalence of sugar increased from 3.5% to 9.5% between 1826 and 2016, respectively, and is rapidly rising in industrialized countries [3]. In 2018, there were 463 million diabetics worldwide and it will increased by 2058 [4].

Spatiotemporal Anomaly Object Detection Using Edge Cloud Collaborative For Real-Time Surveillance Video

Publisher: IEEE

Aarthy R ; Viranth D ; Ramya S ; Rajagopal S ; Divyashri S **All Authors**

Abstract: Video Object Detection is a method that enables computer systems to examine video and identify items in the scene. Object detection is computer vision technology that tri... **View more**

Metadata

Abstract:

Video Object Detection is a method that enables computer systems to examine video and identify items in the scene. Object detection is computer vision technology that tries to find items in images or videos. The objective of Video Object Detection is to enable the system to detect, identify, and categorize items in the frame. In normal closed-circuit television footage, only the videos are captured and recorded. So, in order to trigger the detection of events automatically, an Internet of Things-enabled camera system was used. In the Internet of Things applications, the videos 0are stored and processed in a centralized server which causes time latency. In order to overcome this problem, a simple hybrid instantaneous online video object detection system was proposed. In this system, an edge and cloud collaborative technology was used. The current video object detection methodology uses Deep Neural Network to detect objects present in the scene. For real-time streaming video, the object could not be detected accurately using Deep Convolutional Neural Network because of low end-to-end latency, and also it was not applicable for latency-sensitive Internet of Things applications. The proposed work focuses on detecting vehicles traveling in the wrong lane of the road by analyzing real-time surveillance video. For detecting this anomaly, an edge cloud computing technology was proposed. In this technology, data are analyzed using the Kalman filter algorithm and with an entry-exit algorithm, and the result was stored in the cloud. By implementing the above technologies, both processing and communication time are reduced and instantaneous anomaly detection was achieved.

Published in: 2023 9th International Conference on Advanced Computing and Communication Systems (ICACCS)

Date of Conference: 17-18 March 2023

DOI: 10.1109/ICACCS57279.2023.10112775

Date Added to IEEE *Xplore*: 05 May 2023

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

ISSN Information:

Contents

A video surveillance system consists of cameras that monitors live video and records the unnecessary events. It can be set to record only in response to movement, continuously, or only at specific times of day. Cameras may be obvious and out in the open to prevent crime, or they may be more hidden and unobtrusive to record evidence with fewer chances of it being manipulated. It is critical to remember that laws control the placement of security cameras in the workplace. Following a series of allegations of intimidating behavior on a certain train station, the installation of video cameras and intercoms was discovered to limit the likelihood for such incidents as perpetrators were aware that their actions may be recorded and used to identify them to authorities. Furthermore, the fact that the thieves boarded a train did not dissuade the police, who boarded at the following station and caught them. The word spread, and the conduct was drastically decreased. In video surveillance, scenes are observed in search of particular behavior that are inappropriate or presence of improper conduct. Video surveillance is frequently used to keep an eye on people or object entering sporting events, particularly those that are directly surrounded by public areas. Platforms for trains are one of these uses.

IEEE Access
Published: 2022

Real-time Image Edge Detection System Design and Algorithms for Artificial Intelligence FPGAs
2022 International Conference on Artificial Intelligence of Things and Crowdsensing (AIoTCs)
Published: 2022

Show More

A Recommendation System for Crop Prediction Under Diverse Weather Conditions

P ShunmugaLakshmi ; V Ram Kishore ; Pillai Pratham Ramachandran ; S Santhi ; S Kalaiselvi All Authors

Abstract: In order to develop strategic initiatives in agricultural belonging for trading protocol and tripling countrymen earnings, early and accurate agricultural output estimati... **View more**

Metadata

Abstract:

In order to develop strategic initiatives in agricultural belonging for trading protocol and tripling countrymen earnings, early and accurate agricultural output estimation is pivotal in computable and commercial decision at the territory plane. Crop production forecasting, which is done to foresee a greater crop output, is the impressive difficulty in the agronomic division. To help farmers increase agricultural yield, this study has collected and evaluated data on N, P, K, temperature, humidity, ph, rainfall and soil_moisture. The superior values of this work are to recommend the crop to cultivate, suggest the appropriate fertilizers to use and predict the disease of a crop. A python environment is used to perform initial preprocessing on the data. KNN classification is used for developing the recommendation system. The link between the count, nutrients, temperature, humidity, pH, rainfall, and crop, are visualized using bar graphs and scatter plots. The tensor and torch were used to forecast crop disease and also to suggest appropriate fertilizer based on the data. The application was developed using Python Flask. This Classification was compared with other algorithms such as SVM, DT , RF and K-means.

Published in: 2023 9th International Conference on Advanced Computing and Communication Systems (ICACCS)

Date of Conference: 17-18 March 2023 **DOI:** 10.1109/ICACCS57279.2023.10112944

Date Added to IEEE *Xplore*: 05 May 2023

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

ISSN Information:

Contents

Farmers and agriculture are harmed nationwide because they cannot produce adequate crops due to abrupt changes in the weather. Their inability to support their family forces them to take drastic action. The impacts of an increasing population taken together with the abnormal climatic conditions, soil abrasion, and an unstable geographical condition forces immediate plans to assure the timely and reliable crop growth and yield. Added to that, this causes the country's food resources to be scarcely available. Changes must be made to the circumstances faced by the farmers in our nation. Agriculture, which is the backbone of India's economy, has a significant impact. The agriculture industry employs the majority of the nation's labor force, which makes up more than 40%, and is directly or indirectly responsible for the livelihood of more than 50% of the nation. Every year, agriculture generates large amounts of data, so it is necessary to abandon the antiquated standard chart-based prediction methods in favor of a system that prioritizes and predicts outcomes using the available dataset.

Published: 2022

Show More

Seperation of Phishing Emails Using Probabilistic Classifiers

Publisher: IEEE

Ishwarya R ; Muthumani S ; Siva Sharma Karthick P.G ; Suriya S **All Authors**

Abstract: The activity of phishing has been carried out in more area nowadays and it is growing with advancements. Till now there are few methods to overcome the phishing but those... **View more**

Metadata

Abstract:
The activity of phishing has been carried out in more area nowadays and it is growing with advancements. Till now there are few methods to overcome the phishing but those are not up to the level of expectation. Phishing attempts have grown 65% in the last year and it is still growing rapidly. So that cost of the damage caused by it for mid-size companies is $1.6 million. Our work is to detect malicious emails and do the codification by using probabilistic classification. Victims trust the emails so the phishers can easily hack the information. In this work, a phishing detection method is proposed by using Naive bayes algorithm, SVM, KNN and RF. It involves collecting the datasets, pre-process and filter the data using string to word vector filter. Then classification of email data as spam or not spam and finally analysis about the performance accuracy.

Published in: 2023 9th International Conference on Advanced Computing and Communication Systems (ICACCS)

Date of Conference: 17-18 March 2023

DOI: 10.1109/ICACCS57279.2023.10112826

Date Added to IEEE *Xplore*: 05 May 2023

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

▸ ISSN Information:

Contents

Sign In to Continue Reading

Density Map Based Estimation of Crowd Counting Using Vgg-16 Neural Network

Publisher: IEEE

Anusiya G ; Nandha Kumar S ; Siva Sangari V ; Santhi S **All Authors**

Abstract: The system is to evolve a method that can precisely evaluate the count of crowds from a raw image obtained with random crowd size and perspective. In the current world sc... **View more**

Metadata

Abstract:
The system is to evolve a method that can precisely evaluate the count of crowds from a raw image obtained with random crowd size and perspective. In the current world scenario, in many places, they are using the old traditional ways, like preserving registers and using sensors, in the entrance for counting the number of people in the crowd. These approaches are ineffective. Three methods namely counting by Regression, Detection and Density Estimation can be used to perform crowd counting. In our approach, we are counting by Density Map based Estimation. It is a VGG-16- based Convolutional Neural Network that is trained to categorize the input images into various density classes. We are using an architecture that contains multi-column based CNN, each column CNN learns can adapt to changes in people or heads sizes caused by perspective effects or differences in the image by using filters based on the sizes. It aims to create high-dimensional maps from the given image which can be combined with the provisional data obtained from the density classes. Additionally, a real density map is precisely calculated using different kernels, which don't require any knowledge about the input image's outlook map. In this case, a Gaussian filter was used to create the ground truth density map, and when it was submitted to the neural network, it created the equivalent density map. We have collected a dataset that contains 1199 photos with over 2, 20,000 heads annotated because the existing dataset does not capture all the circumstances. We conduct experiments on the collected dataset as well as the old dataset in order to validate the current model and method used. In particular, our strategy beats all currently used methods for the proposed simple MCNN model.

Published in: 2023 9th International Conference on Advanced Computing and Communication Systems (ICACCS)

Date of Conference: 17-18 March 2023

DOI: 10.1109/ICACCS57279.2023.10113006

Date Added to IEEE *Xplore*: 05 May 2023

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

ISSN Information:

Contents

When it comes to safety monitoring and behavior analysis, especially in the case of large- scale events, estimating the number of people and their density are crucial. They might make it possible to spot traffic congestion before they happen or security-related anomalies, alerting decision-makers and helping them prevent mass-crowd tragedies. Closed-circuit television (CCTV) security cameras have traditionally been employed to watch crowds, and they have provided a significant number of photos with different angles, sizes, and illumination conditions in recent years.

Abstract

The advancements in computer-aided design, manufacturing, and additive manufacturing techniques attracted the researcher to apply various new methods with the unique combination of alloys and composites to design and develop complex parts. Among them the selective laser melting (SLM) process, a branch of additive manufacturing, and Ti6Al4V (Ti64) composite. Due to the better mechanical and corrosion resistance characteristics of Ti64 and its composites, they have been utilized for making various engineering parts related to jet engine fans of aero-engine, engine valves of automobiles, knee and hip joint endoprosthesis in the biomedical field, and corrosion resistance pipes in chemical industries. Also, more complex, net-shaped, and lattice-structured components can be fabricated by advancing the SLM process. The final quality of the parts manufactured from the SLM technique will depend on the fabrication process parameters followed. Many researchers have done research work on metal additive manufacturing by changing and optimizing the SLM process parameters such as laser power (P), scanning speed (v), hatch spacing (d), and layer thickness (h). Also, they have studied the effect of changes on the feedstock preparation, SLM process parameters, milling time of composite and post-heat treatment on the quality of Ti6Al4V composites. Therefore, a detailed review is needed to study the effect of the abovementioned parameters on the quality of metal additively manufactured parts through SLM. Hence, a short review is done on future challenges and opportunities of SLM-processed Ti6Al4V composites and reported in this article.

References

1. Cai C, Radoslaw C, Zhang J, et al. In-situ preparation and formation of TiB/Ti–6Al–4V nanocomposite via laser additive manufacturing: microstructure evolution and tribological behavior. *Powder Technol* 2018; 342: 73–84.

Crossref

Google Scholar

2. Fereiduni E, Ghasemi A, Elbestawi M. Selective laser melting of hybrid ex-situ/in-situ reinforced titanium matrix composites: laser/powder interaction, reinforcement formation mechanism, and non-equilibrium microstructural evolutions. *Mater Des* 2019; 184: 108185.

Crossref

Google Scholar

3. Zhuang J, Gua D, Xi L, et al. Preparation method and underlying mechanism of MWCNTs/Ti6Al4V nanocomposite powder for selective laser melting additive manufacturing. *Powder Technol* 2020; 368: 59–69.

Crossref

Google Scholar

4. Zhou Z, Liu Y, Liu X, et al. Microstructure evolution and mechanical properties of in-situ Ti6Al4V–TiB composites manufactured by selective laser melting. *Compos B Eng* 2021; 207: 108567.

Crossref

Google Scholar

5. Zhang J, Song B, Cai C, et al. Tailorable microstructure and mechanical properties of selective laser melted TiB/Ti–6Al–4 V composite by heat treatment. *APM* 2022; 1: 100010.

Google Scholar

6. Wang M, Lin X, Huang W. Laser additive manufacture of titanium alloys. *Mater Technol* 2015; 31: 90–97.

Google Scholar

7. Zhao Z, Wang S, Du W, et al. Interfacial structures and strengthening mechanisms of in situ synthesized TiC reinforced Ti6Al4V composites by selective laser melting. *Ceram Int* 2021; 47: 34127–34136.

Crossref

Google Scholar

8. Yan Q, Chen B, Li JS. Super-high-strength graphene/titanium composites fabricated by selective laser melting. *Carbon N Y* 2021; 174: 451–462.

Crossref

Google Scholar

9. Yang J, Chang R, Gao P, et al. The creep behavior of (TiB + TiC + Y_2O_3)/α-Ti composites at high temperature and short-term. *Mater Charact* 2022; 194: 11244.

Crossref

Google Scholar

10. Slawik S, Bernarding S, Lasagni F, et al. Microstructural analysis of selective laser melted Ti6Al4V modified by laser peening and shot peening for enhanced fatigue characteristics. *Mater Charact* 2021; 173: 110935.

Crossref

Google Scholar

11. Wang R, Gu D, Chen C, et al. Formation mechanisms of TiB2 tracks on Ti6Al4V alloy during selective laser melting of ceramic-metal multi-material. *Powder Technol* 2020; 367: 597–607.

Crossref

Google Scholar

12. Tang M, Zhang L, Zhang N. Microstructural evolution, mechanical and tribological properties of TiC/ Ti6Al4V composites with unique microstructure prepared by SLM. *Mater Sci Eng A* 2021; 814: 141187.

Crossref

Google Scholar

13. Hattal A, Chauveau T, Djemai M, et al. Effect of nano-yttria stabilized zirconia addition on the microstructure and mechanical properties of Ti6Al4V parts manufactured by selective laser melting. *Mater Des* 2019; 180: 107909.

Crossref

Google Scholar

14. Rahmani R, Antonov M, Kollo L, et al. Wear resistance of (diamond-Ni)-Ti6Al4V gradient materials prepared by combined selective laser melting and spark plasma sintering techniques. *Adv Tribol* 2019; 2019: 5415897.

Google Scholar

15. Munir KS, Kingshott P, Wen C. Carbon nanotube reinforced titanium metal matrix composites prepared by powder metallurgy-A review. *Crit Rev Solid State Mater Sci* 2015; 40: 38–55.

Crossref

Google Scholar

16. Bartolomeu F, Abreu CS, Moura CG, et al. Ti6Al4V-PEEK multi-material structures – design, fabrication and tribological characterization focused on orthopaedic implants. *Tribol Int* 2019; 131: 672–678.

Crossref

Google Scholar

17. Wang R, Gu D, Xi L, et al. Selective laser melted TiB2/Ti6Al4V graded materials and first-principle calculations. *Mater Lett* 2019; 254: 33–36.

Crossref

Google Scholar

18. Farayibi PK, Abioye TE. Additive manufacture of TiB2/Ti–6Al–4V metal matrix composite by selective laser melting. *Int J Rapid Manuf* 2019; 8: 259–270.

Crossref

Google Scholar

19. Su Y, Luo SC, Meng L, et al. Selective laser melting of in situ TiB/Ti6Al4V composites: formability, microstructure evolution and mechanical performance. *Acta Metall Sin* 2020; 33: 774–788.

Crossref

Google Scholar

20. Borisov E, Masaylo D, Vera P. Selective laser melting of nanocomposite Ti–6Al–4V and TiC powder. *Key Eng Mater* 2019; 822: 575–579.

Crossref

Google Scholar

21. Sui Q, Meng L, Wang S, et al. Effect of Nb addition on mechanical properties and corrosion behaviour of Ti6Al4V alloy produced by selective laser melting. *J Mater Res* 2020; 35: 571–579.

Crossref

Google Scholar

22. Gu D, Hagedorn YC, Meiners W, et al. Nanocrystalline TiC reinforced Ti matrix bulk-form nanocomposites by selective laser melting (SLM): densification, growth mechanism and wear behavior. *Compos Sci Technol* 2011; 71: 1612–1620.

Crossref

ISI

Google Scholar

23. Attar H, Bonisch M, Calin M, et al. Selective laser melting of in situ titanium–titanium boride composites: processing, microstructure and mechanical properties. *Acta Mater* 2014; 76: 13–22.

Crossref

Google Scholar

24. Xu W, Brandt M, Sun S, et al. Additive manufacturing of strong and ductile Ti–6Al–4V by selective laser melting via in situ martensite decomposition. *Acta Mater* 2015; 85: 74–84.

Crossref

Google Scholar

25. Ali H, Ma L, Ghadbeigi H, et al. In-situ residual stress reduction, martensitic decomposition and mechanical properties enhancement through high-temperature powder bed pre-heating of selective laser melted Ti6Al4V. *Mater Sci Eng A* 2017; 695: 211–220.

Crossref

Google Scholar

26. Li H, Yang Z, Cai D, et al. Microstructure evolution and mechanical properties of selective laser melted bulk-form titanium matrix nanocomposites with minor B_4C additions. *Mater Des* 2020; 185: 108245.

Crossref

Google Scholar

27. DebRoy T, Wei HL, Zuback JS, et al. Additive manufacturing of metallic components process, structure and properties. *Prog Mater Sci* 2018; 92: 112–224.

Crossref

Google Scholar

28. Zhang LC, Attar H. Selective laser melting of titanium alloys and titanium matrix composites for biomedical applications: a review. *Adv Eng Mater* 2016; 18: 463–475.

Crossref

Google Scholar

29. Arafune K, Hirata A. Thermal and solutal marangoni convection in In-Ga-Sb system. *J Cryst Growth* 1999; 197: 811–817.

Crossref

Google Scholar

30. Weingarten C, Buchbinder D, Pirch N, et al. Formation and reduction of hydrogen porosity during selective laser melting of AlSi10Mg. *J Mater Process Technol* 2015; 221: 112–120.

Crossref

Google Scholar

31. Sadeghi N, Aghajani H, Akbarpour MR Microstructure and tribological properties of in-situ TiC-C/Cu nanocomposites synthesized using different carbon sources (graphite, carbon nanotube and graphene) in the Cu-Ti-C system. *Ceram Int* 2018; 44: 22059–22067.

Crossref

Google Scholar

32. Li H, Jia D, Yang Z, et al. Effect of heat treatment on microstructure evolution and mechanical properties of selective laser melted Ti–6Al–4V and TiB/Ti–6Al–4V composite: a comparative study. *Mater Sci Eng A* 2021; 801: 140415.

Crossref

Google Scholar

33. Herzog D, Seyda V, Wycisk E, et al. Additive manufacturing of metals. *Acta Mater* 2016; 117: 371–392.

Crossref

Google Scholar

34. Yap CY, Chua CK, Dong ZL, et al. Review of selective laser melting: materials and applications. *Appl Phys Rev* 2015; 2: 041101.

Crossref

Google Scholar

35. Huang R, Riddle M, Graziano D, et al. Energy and emissions saving potential of additive manufacturing: the case of lightweight aircraft components. *J Clean Prod* 2016; 135: 1559–1570.

Crossref

Google Scholar

36. Neikter M, Akerfeldt P, Pederson R, et al. Microstructural characterization and comparison of Ti-6Al-4Vmanufactured with different additive manufacturing processes. *Mater Charact* 2018; 143: 68–75.

Crossref

Google Scholar

37. Thijs L, Verhaeghe F, Craeghs T, et al. A study of the microstructural evolution during selective laser melting of Ti6Al4V. *Acta Mater* 2010; 58: 3303–3312.

Crossref

ISI

Google Scholar

38. Xu W, Brandt M, Sun S, et al. Additive manufacturing of strong and ductile Ti6Al4V by selective laser melting via in situ martensite decomposition. *Acta Mater* 2015; 85: 74–84.

Crossref

Google Scholar

39. Kumar P, Prakash O, Ramamurty U. Micro-and mesostructures and their influence on mechanical properties of selectively laser melted Ti–6Al–4V. *Acta Mater* 2018; 154: 246–260.

Crossref

Google Scholar

40. Wang S, Zhao Z, Bai P, et al. Effect of in situ synthesis TiC on the microstructure of graphene/Ti6Al4V composite fabricated by selective laser melting. *Mater Lett* 2021; 304: 130715.

Crossref

Google Scholar

41. Xi L, Lu Q, Wang R, et al. Effect of carbon nanotubes on the microstructure and tribological properties of in situ synthesized MWCNTs/Ti6Al4V composites fabricated by selective laser melting. *Opt Laser Technol* 2022; 153: 108176.

Crossref

Google Scholar

42. Zhou W, Kamata K, Dong M, et al. Laser powder bed fusion additive manufacturing, microstructure evolution, and mechanical performance of carbon nanotube-decorated titanium alloy powders. *Powder Technol* 2021; 382: 274–283.

Crossref

Google Scholar

43. Li W, Yang Y, Liu J, et al. Enhanced nanohardness and new insights into texture evolution and phase transformation of TiAl/TiB_2 in-situ metal matrix composites prepared via selective laser melting. *Acta Mater* 2017; 136: 90–104.

Crossref

Google Scholar

44. Bi J, Lei Z, Chen Y, et al. Microstructure, tensile properties and thermal stability of AlMgSiScZr alloy printed by laser powder bed fusion. *J Mater Sci Technol* 2021; 69: 200–211.

Crossref

Google Scholar

45. Leary M, Mazur M, Elambasseril J, et al. Selective laser melting (SLM) of AlSi12Mg lattice structures. *Mater Des* 2016; 98: 344–357.

Crossref

Google Scholar

46. Qi JQ, Sui YW, Chang Y, et al. Superior ductility in as-cast TiC/near-alpha Ti composite obtained by three-step heat treatment. *Vacuum* 2016; 126: 1–4.

Crossref

Google Scholar

47. Wang J, Guo X, Qin J, et al. Morphology evolution of alpha phase in investment cast titanium matrix composites with B4C additions. *J Mater Sci* 2015; 50: 5674–5683.

Crossref

Google Scholar

48. Huang LJ, Geng U, Xu HY, et al. In situ TiC particles reinforced Ti6Al4V matrix composite with A network reinforcement architecture. *Mater Sci Eng A* 2011; 528: 2859–2862.

Crossref

Google Scholar

49. Liu B, Liu Y, He XY, et al. Preparation and mechanical properties of particulate-reinforced powder metallurgy titanium matrix composites. *Metall Mater Trans A Phys Metall Mater Sci* 2007; 38: 2825–2831.

Crossref

Google Scholar

50. Radhakrishnan RM, Ramamoorthi V, Srinivasan R. Experimental investigation on powder processing and its flow properties of AlSi10Mg alloy with niobium carbide for additive manufacturing. *Proc IMechE Part E: J Process Mechanical Engineering* 2022; 236: 1421–1429.

Crossref

ISI

Google Scholar

51. Simonelli M, Aboulkhair NT, Cohen P, et al. A comparison of Ti–6Al–4V in-situ alloying in selective laser melting using simply-mixed and satellited powder blend feed stocks. *Mater Charact* 2018; 143: 118–126.

Crossref

Google Scholar

52. Chen D, Liu B, Xu W, et al. The effect of process parameters on the physical and mechanical properties of Ti fabricated by selective laser melting using ball milled powders. *Opt Laser Technol* 2022; 156: 108548.

Crossref

Google Scholar

53. Wang J, Liu Y, Rabadia CD, et al. Microstructural homogeneity and mechanical behavior of a selective laser melted Ti–35Nb alloy produced from an elemental powder mixture. *J Mater Sci Technol* 2020; 61: 221–233.

Crossref

Google Scholar

54. Jin J, Zhou S, Zhao Y, et al. Refined microstructure and enhanced wear resistance of titanium matrix composites produced by selective laser melting. *Opt Laser Technol* 2021; 4: 106644.

Crossref

Google Scholar

55. Ding X, Wang L, Wang S. Comparison study of numerical analysis for heat transfer and fluid flow under two different laser scan pattern during selective laser melting. *Optik* 2016; 127: 10898–10907.

Crossref

Google Scholar

56. Li J, Wei Z, Yang L, et al. Finite element analysis of thermal behavior and experimental investigation of Ti6Al4V in selective laser melting. *Optik* 2020; 207: 163760.

Crossref

Google Scholar

57. Khan HM, Dirikolu MH, Koç E, et al. Numerical investigation of heat current study across different platforms in SLM processed multi-layer AlSi10Mg. *Optik* 2018; 170: 82–89.

Crossref

Google Scholar

58. Majeed M, Khan HM, Rasheed I. Finite element analysis of melt pool thermal characteristics with passing laser in SLM process. *Optik* 2019; 194: 163068.

Crossref

Google Scholar

59. Wu J, Wang L, An X. Numerical analysis of residual stress evolution of AlSi10Mg manufactured by selective laser melting. *Optik* 2017; 137: 65–78.

Crossref

Google Scholar

60. Hu H, Ding X, Wang L. Numerical analysis of heat transfer during multi-layer selective laser melting of AlSi10Mg. *Optik* 2016; 127: 8883–8891.

Crossref

Google Scholar

61. Xiang Z, Wang L, Yang C, et al. Analysis of the quality of slope surface in selective laser melting process by simulation and experiments. *Optik* 2019; 176: 68–77.

Crossref

Google Scholar

62. Tang Q, Chen P, Chen J, et al. Numerical simulation of selective laser melting temperature conduction behavior of H13 steel in different models. *Optik* 2020; 201: 163336.

Crossref

Google Scholar

63. Song C, Ma G, He A, et al. Multi-phases transformation mechanism of Ti6Al4V/Inconel 718 composite by laser additive manufacturing. *Mater Charact* 2021; 179: 111363.

Crossref

Google Scholar

64. Gao P, Huang W, Yang H, et al. Cracking behavior and control of solidifying Ti-40Al-9V-0.5Y alloy produced by selective laser melting. *J Mater Sci Technol* 2020; 39: 144–154.

Crossref

Google Scholar

65. Morton PA, Taylor HC, Murr LE, et al. In situ selective laser gas nitriding for composite TiN/Ti–6Al–4V fabrication via laser powder bed fusion. *J Mater Sci Technol* 2020; 45: 98–107.

Crossref

Google Scholar

66. Wei ZJ, Cao L, Wang HW, et al. Microstructure and mechanical properties of TiC/Ti–6Al–4V composites processed by in situ casting route. *Mater Sci Technol* 2011; 27: 1321–1327.

Crossref

Google Scholar

67. Zhao S, Shen X, Yang J, et al. Densification behaviour and mechanical properties of nanocrystalline TiC reinforced 316L stainless steel composite parts fabricated by selective laser melting. *Opt Laser Technol* 2018; 103: 239–250.

Crossref

Google Scholar

68. Kang N, Ma W, Heraud L, et al. Selective laser melting of tungsten carbide reinforced maraging steel composite. *Addit Manuf* 2018; 22: 104–110.

Google Scholar

69. Ali M. Review of stir casting technique and technical challenges for ceramic reinforcement particulate and aluminium matrix composites. *Epitoanyag* 2020; 72: 198–204.

Crossref

Google Scholar

70. Sefene EM. State-of-the-art of selective laser melting process: a comprehensive review. *J Manuf Syst* 2022; 63: 250–274.

Crossref

Google Scholar

71. Singh N, Hameed P, Ummethala R, et al. Selective laser manufacturing of Ti-based alloys and composites: impact of process parameters, application trends, and future prospects. *Mater Today Adv* 2020; 8: 100097.

Crossref

Google Scholar

72. Garibaldi M, Ashcroft I, Hillier N, et al. Relationship between laser energy input, microstructures and magneticproperties of selective laser melted Fe-6.9%wt Si soft magnets. *Mater Charact* 2018; 143: 144–151.

Crossref

Google Scholar

73. Yang J, Yu H, Wang Z, et al. Effect of crystallographic orientation on mechanical anisotropy of selective laser melted Ti–6Al–4V alloy. *Mater Charact* 2017; 127: 137–145.

Crossref

Google Scholar

74. Xiao Z, Chen C, Hu Z, et al. Effect of rescanning cycles on the characteristics of selective laser melting of Ti6Al4V. *Opt Laser Technol* 2020; 122: 105890.

Crossref

Google Scholar

75. Li Z, Liu W, Liu B, et al. Difference-extent of microstructure and mechanical properties: simulating multi-laser selective melting Ti6Al4V. *Opt Laser Technol* 2022; 153: 108249.

Crossref

Google Scholar

76. Ji L, Wang S, Wang C, et al. Effect of hatch space on morphology and tensile property of laser powder bed fusion of Ti6Al4V. *Opt Laser Technol* 2022; 150: 107929.

Crossref

Google Scholar

77. Ma Y, Wu M, Duan W, et al. Effect of interlayer rescanning on surface roughness and overhang sinking distance of AlSi10Mg alloy via selective laser melting. *Proc IMechE Part E: J Process Mech Eng* 2022: 1–10. https://doi.org/10.1177/09544089221126779

Google Scholar

78. Singla AK, Banerjee M, Sharma A, et al. Selective laser melting of Ti6Al4V alloy: process parameters, defects and post-treatments. *J Manuf Process* 2021; 64: 161–187.

Crossref

Google Scholar

79. Sadeghi MS, Mohseni M, Etefagh AH, et al. The effect of process parameters and scanning strategies on surface roughness of stainless steel 316L SLM parts. *Proc IMechE Part E: J Process Mech Eng* 2022: 1–10. https://doi.org/10.1177/09544089221138684

Google Scholar

80. Jeyaprakash N, Yang C-H, Karuppasamy SS, et al. Correlation of microstructural with corrosion behaviour of Ti–6Al–4V specimens developed through selective laser melting technique. *Proc IMechE Part E: J Process Mech Eng* 2022; 236: 2240–2251.

Crossref

Google Scholar

81. Liu Y, Li S, Misra RDK, et al. Planting carbon nanotubes within Ti–6Al–4V to make high-quality composite powders for 3D printing high-performance Ti–6Al–4V matrix composites. *Scr Mater* 2020; 183: 6–11.

Crossref

Google Scholar

82. Cai C, Qiu JCD, Shian TW, et al. Laser powder bed fusion of Mo_2C/Ti–6Al–4V composites with alternately laminated α′/β phases for enhanced mechanical properties. *Addit Manuf* 2021; 46: 102134.

Google Scholar

83. Jia D, Wang YM, Ramesh KT, et al. Deformation behaviour and plastic instabilities of ultrafine-grained titanium. *Appl Phys Lett* 2001; 79: 611–613.

Crossref

Google Scholar

84. Yu WH, Sing SL, Chua CK, et al. Particle-reinforced metal matrix nanocomposites fabricated by selective laser melting: a state of the art review. *Prog Mater Sci* 2019; 104: 330–379.

Crossref

Google Scholar

85. Guo S, Li Y, Gu J, et al. Microstructure and mechanical properties of Ti6Al4V/ B_4C titanium matrix composite fabricated by selective laser melting (SLM). *J Mater Res Technol* 2023; 23: 1934–1946.

Crossref

Google Scholar

86. Traxel KD, Bandyopadhyay A. Selective laser melting of Ti6Al4V-B_4C-BN in situ reactive composites. *J Mater Res Technol* 2022; 18: 2654–2671.

Crossref

Google Scholar

87. Liu Y, Chen Z, He J. Nanosized SiC particle reinforced Ti6Al4V matrix composites manufactured by laser melting deposition. *Procedia Struct Integr* 2022; 42: 1249–1258.

Crossref

Google Scholar

88. Hattal A, Mukhtarov K, Djemai M, et al. Effect of hot isostatic pressing on microstructure and mechanical properties of Ti6Al4V-zirconia nanocomposites processed by laser powder bed fusion. *Mater Des* 2022; 214: 110392.

Crossref

Google Scholar

89. Gu D, Ma J, Chen H, et al. Laser additive manufactured WC reinforced fe-based composites with gradient reinforcement/matrix interface and enhanced performance. *Compos Struct* 2018; 192: 387–396.

Crossref

Google Scholar

90. Zhang B, Li Y, Bai Q, et al. Defect formation mechanisms in selective laser melting: a review. *Chin J Mech Eng* 2017; 30: 515–527.

Crossref

Google Scholar

91. Wei Y, Chen G, Li W, et al. Process optimization of micro selective laser melting and comparison of different laser diameter for forming different powder. *Opt Laser Technol* 2022; 150: 107953.

Crossref

Google Scholar

92. Wang Z, Yang S, Peng Z, et al. Effect of defects in laser selective melting of Ti–6Al–4V alloy on microstructure and mechanical properties after heat treatment. *Opt Laser Technol* 2022; 156: 108522.

Crossref

Google Scholar

93. Li W, Liu J, Wen S, et al. Crystal orientation, crystallographic texture and phase evolution in theTi–45Al–2Cr–5Nb alloy processed by selective laser melting. *Mater Charact* 2016; 113: 125–133.

Crossref

Google Scholar

94. Griffiths S, Rossell MD, Croteau J, et al. Effect of laser rescanning on the grain microstructure of a selective laser melted Al–Mg–Zr alloy. *Mater Charact* 2018; 143: 34–42.

Crossref

Google Scholar

95. Wang Z, Xiao Z, Tse Y, et al. Optimization of processing parameters and establishment of a relationship between microstructure and mechanical properties of SLM titanium alloy. *Opt Laser Technol* 2019; 112: 159–167.

Crossref

Google Scholar

96. Wen S, Hu H, Zhou Y, et al. Enhanced hardness and wear property of S136 mould steel with nano-TiB2 composites fabricated by selective laser melting method. *Appl Surf Sci* 2018; 457: 11–20.

Crossref

Google Scholar

97. Xiang Z, Yan R, Wu X, et al. Surface morphology evolution with laser surface re-melting in selective laser melting. *Optik* 2020; 206: 164316.

Crossref

Google Scholar

98. Caia C, Wu X, Liu W, et al. Selective laser melting of near-titanium alloy Ti–6Al–2Zr–1Mo–1V: parameter optimization, heat treatment and mechanical performance. *J Mater Sci Technol* 2020; 57: 51–64.

Crossref

Google Scholar

99. Zhanga W-n, Wangb L-z, Fenga Z-x, et al. Research progress on selective laser melting (SLM) of magnesium alloys: a review. *Optik* 2020; 207: 163842.

Crossref

Google Scholar

100. Qiao G, Zhang B, Bai Q, et al. Machinability of TiC-reinforced titanium matrix composites fabricated by additive manufacturing. *J Manuf Process* 2022; 76: 412–418.

Crossref

Google Scholar

101. He Y, Montgomery C, Beuth J, et al. Melt pool geometry and microstructure of Ti6Al4V with B additions processed by selective laser melting additive manufacturing. *Mater Des* 2019; 183: 108126.

Crossref

Google Scholar

102. Zhou D, Qiu F, Wang H, et al. Manufacture of nano-sized particle-reinforced metal matrix composites: a review. *Acta Metall Sin* 2014; 27: 798–805.

Crossref

Google Scholar

103. AlMangour B, Grzesiak D, Cheng J, et al. Thermal behaviour of the molten pool, microstructural evolution, and tribological performance during selective laser melting of TiC/316L stainless steel nanocomposites: experimental and simulation methods. *J Mater Process Technol* 2018; 257: 288–301.

Crossref

Google Scholar

104. Ozsoy A, Yasa E, Keles M, et al. Pulsed-mode selective laser melting of 17–4 PH stainless steel: effect of laser parameters on density and mechanical properties. *J Manuf Process* 2021; 68: 910–922.

Crossref

Google Scholar

105. Fang Y, Kim M-K, Zhang Y, et al. Particulate-reinforced iron-based metal matrix composites fabricated by selective laser melting: a systematic review. *J Manuf Process* 2022; 74: 592–639.

Crossref

Google Scholar

106. Al Mangour B, Grzesiak D, Yang JM. In-situ formation of novel TiC-particle-reinforced 316L stainless steel bulk-form composites by selective laser melting. *J Alloys Compd* 2017; 706: 409–418.

Crossref

Google Scholar

107. Pantawane MV, Yang T, Jin Y, et al. Thermomechanically influenced dynamic elastic constants of laser powder bed fusion additively manufactured Ti6Al4V. *Mater Sci Eng A* 2021; 811: 140990.

Crossref

Google Scholar

108. Nouri A, Shirvan AR, Li Y, et al. Deformation and energy absorption of additively manufactured functionally graded thickness thin-walled circular tubes under lateral crushing. *Eng Struct* 2021; 226: 11324.

Google Scholar

109. Yang Liu-qing Y-q. Deformed microstructure and texture of Ti6Al4V alloy. *Trans Nonferrous Met Soc China* 2014; 24: 3103–3110.

Crossref

Google Scholar

110. Zhao Z. An investigation of resolved shear stress on activation of slip systems during ultraprecision rotary cutting of local anisotropic Ti–6Al–4V alloy: models and experiments. *Int J Mach Tools Manuf* 2018; 134: 69–78.

Crossref

Google Scholar

111. Duan W, Wu M, Han J, et al. Effect of defocusing distance on the forming quality of inner structure parts manufactured via selective laser melting. *Proc IMechE Part E: J Process Mech Eng* 2022; 236: 1185–1193.

Crossref

ISI

Google Scholar

112. Qi H, Azer M, Ritter A. Studies of standard heat treatment effects on microstructure and mechanical properties of laser net shape manufactured Inconel 718. *Metall Mater Trans A* 2009; 40: 2410–2422.

Crossref

ISI

Google Scholar

113. Shi L, Zhou J, Li H, et al. Evolution of multi pores in Ti6Al4V/AlSi10Mg alloy during laser post-processing. *Mater Charact* 2021; 176: 111109.

Crossref

Google Scholar

114. Wu H, Zhang D, Yang B, et al. Microstructural evolution and defect formation in a powder metallurgy nickel-based superalloy processed by selective laser melting. *J Mater Sci Technol* 2020; 36: 7–17.

Crossref

Google Scholar

115. Fang Z-C, Wu Z-L, Huang C-G, et al. Review on residual stress in selective laser melting additive manufacturing of alloy parts. *Opt Laser Technol* 2020; 129: 106283.

Crossref

Google Scholar

116. Shen XJ, Zhang C, Yang YG, et al. On the microstructure, mechanical properties and wear resistance of an additively manufactured Ti64/metallic glass composite. *Addit Manuf* 2019; 25: 499–510.

Google Scholar

117. Galarraga H, Warren RJ, Lados DA, et al. Effects of heat treatments on microstructure and properties of Ti–6Al–4V ELI alloy fabricated by electron beam melting (EBM). *Mater Sci Eng A* 2017; 685: 417–428.

Crossref

Google Scholar

118. Mukalay TA, Trimble JA, Mpofu K, et al. A systematic review of process uncertainty in Ti6Al4V-selective laser melting. *CIRP J Manuf Sci Technol* 2022; 36: 185–212.

Crossref

Google Scholar

119. Miranda G, Faria S, Bartolomeu F, et al. A study on the production of thin-walled Ti6Al4V parts by selective laser melting. *J Manuf Process* 2019; 39: 346–355.

Crossref

Google Scholar

120. Zhang X, Li D, Zheng Y, et al. In-situ synthesis of Ti5Si3-reinforced titanium matrix nanocomposite by selective laser melting: quasi-continuous reinforcement network and enhanced mechanical performance. *J Mater Process Technol* 2022; 309: 117752.

Crossref

Google Scholar

121. Song J, Wu W, Zhang L, et al. Role of scanning strategy on residual stress distribution in Ti–6Al–4V alloy prepared by selective laser melting. *Optik* 2018; 170: 342–352.

Crossref

Google Scholar

122. Chang K, Liang E, Huang W, et al. Microstructural feature and mechanical property in different building directions of additive manufactured Ti6Al4V alloy. *Mater Lett* 2020; 267: 127516.

Crossref

Google Scholar

123. Long Y, Zhang HY, Wang T, et al. High strength Ti–6Al–4V with ultrafine-grained structure fabricated by high energy ball milling and spark plasma sintering. *Mater Sci Eng A* 2013; 585: 408.

Crossref

Google Scholar

124. Jie W, Ruipeng G, Lei X, et al. Effect of hot isostatic pressing conditions and cooling rate on microstructure and properties of Ti–6Al–4V alloy from atomized powder. *Mater Sci Technol* 2014; 30: 1289.

Crossref

Google Scholar

125. Murr L, Esquivel EV, Quinones SA, et al. Microstructures and mechanical properties of electron beam-rapid manufactured Ti–6Al–4V biomedical prototypes compared to wrought Ti6Al4V. *Mater Charact* 2009; 60: 96–105.

Crossref

ISI

Google Scholar

126. Seifi M, Salem A, Beuth J, et al. Overview of materials qualification needs for metal additive manufacturing. *TMS* 2016; 68: 747–764.

Google Scholar

127. Wang P, Lao CS, Chen ZW, et al. Microstructure and mechanical properties of Al–12Si and Al–3.5Cu–1.5Mg–1Si bimetal fabricated by selective laser melting. *J Mater Sci Technol* 2020; 36: 18–26.

Crossref

Google Scholar

128. Shipley H, McDonnell D, Culleton M, et al. Optimization of process parameters to address fundamental challenges during selective laser melting of Ti–6Al–4V: a review. *Int J Mach Tools Manuf* 2018; 128: 1–20.

Crossref

Google Scholar

129. Leon A, Aghion E. Effect of surface roughness on corrosion fatigue performance of AlSi10Mgalloy produced by selective laser melting (SLM). *Mater Charact* 2017; 131: 188–194.

Crossref

Google Scholar

130. Huang S, Sun B, Guo S. Microstructure and property evaluation of TA15 titanium alloy fabricated by selective laser melting after heat treatment. *Opt Laser Technol* 2021; 144: 107422.

Crossref

Google Scholar

131. Karabulut Y, Tascioglu E, Kaynak Y. Heat treatment temperature-induced microstructure, microhardness and wear resistance of Inconel 718 produced by selective laser melting additive manufacturing. *Optik* 2021; 227: 163907.

Crossref

Google Scholar

132. Kim K-S, Yang S, Kim M-S, et al. Effect of post heat-treatment on the microstructure and high-temperature oxidation behavior of precipitation hardened IN738LC super alloy fabricated by selective laser melting. *J Mater Sci Technol* 2021; 76: 95–103.

Crossref

Google Scholar

133. Ozer G, Khan HM, Tarakçi G, et al. Effect of heat treatments on the microstructure and wear behavior of a selective laser melted maraging steel. *Proc IMechE Part E: J Process Mech Eng* 2022; 236: 2526–2535.

Crossref

Google Scholar

134. Ranjith Kumar G, Sathishkumar M, Vignesh M Metal additive manufacturing of commercial aerospace components – A comprehensive review. *Proc IMechE Part E: J Process Mech Eng* 2022: 1–14.

Google Scholar

135. Butler C, Babu S, Lundy R, et al. Effects of processing parameters and heat treatment on thermal conductivity of additively manufactured AlSi10Mg by selective laser melting. *Mater Charact* 2021; 173: 110945.

Crossref

Google Scholar

136. Zhao X, Li S, Zhang M, et al. Comparison of the microstructures and mechanical properties of Ti6Al4V fabricated by selective laser melting and electron beam melting. *Mater Des* 2016; 95: 21–31.

Crossref

Google Scholar

137. Qiu C, Adkins NJE, Attallah MM. Microstructure and tensile properties of selectively laser-melted and of HIPed laser-melted Ti6Al4V. *Mater Sci Eng A* 2013; 578: 230–239.

Crossref

Google Scholar

138. Cao S, Chu R, Zhou X, et al. Role of martensite decomposition in tensile properties of selective laser melted Ti–6Al–4V. *J Alloys Compd* 2018; 744: 357–363.

Crossref

Google Scholar

139. Niinomi M. Mechanical biocompatibilities of titanium alloys for biomedical applications. *J Mech Behav Biomed Mater* 2008; 1: 30–42.

Crossref

PubMed

ISI

Google Scholar

140. Geetha M, Singh AK, Asokamani R, et al. Ti-based biomaterials, the ultimate choice for orthopaedic implants – a review. *Prog Mater Sci* 2009; 54: 397–425.

Crossref

ISI

Google Scholar

141. Harun WSW, Kamariah MSIN, Muhamad N, et al. A review of powder additive manufacturing processes for metallic biomaterials. *Powder Technol* 2018; 327: 128–151.

Crossref

Google Scholar

142. James W, Rodney RR, et al. Opportunities and issues in the application of titanium alloys for aerospace components. *Metals (Basel)* 2020; 10: 705.

Crossref

Google Scholar

143. Li W, Liu J, Zhou Y, et al. Effect of substrate preheating on the texture, phase and nano hardness of a Ti–45Al–2Cr–5Nb alloy processed by selective laser melting. *Scr Mater* 2016; 118: 13–18.

Crossref

Google Scholar

144. Xiao R, Zhang X. Problems and issues in laser beam welding of aluminium-lithium alloys. *J Manuf Process* 2014; 16: 166–175.

Crossref

Google Scholar

145. Xia M, Gu D, Yu G, et al. Porosity evolution and its thermodynamic mechanism of randomly packed powder-bed during selective laser melting of Inconel 718 alloy. *Int J Mach Tools Manuf* 2017; 116: 96–106.

Crossref

Google Scholar

146. Tana JH, Wonga WLE, Dalgarno KW. An overview of powder granulometry on feedstock and part performance in the selective laser melting process. *Addit Manuf* 2017; 18: 228–255.

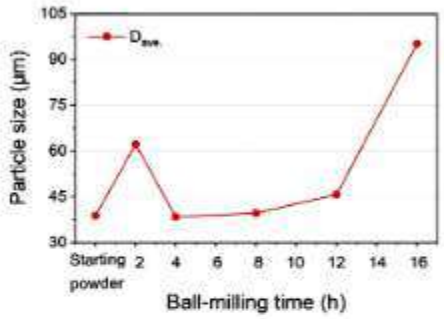
Google Scholar

Supplementary Material

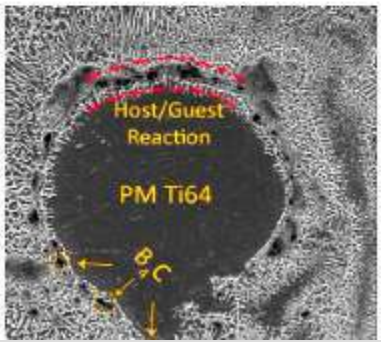
Please find the following supplemental material visualised and available to download via Figshare in the display box below. Where there are more than one item, you can scroll through each tab to see each separate item.

- Supplementary material 2
- Supplementary material 3

SUPPLEMENTARY FIGURES



Supplementary figure 6. Impact of milling time on particle size.[3]



Summary

Supplemental material for this article is available online.

Resources

File (sj-doc-2-pie-10.1177_09544089231169380.doc)

DOWNLOAD | **13.21 MB**

File (sj-docx-3-pie-10.1177_09544089231169380.docx)

DOWNLOAD | **23.34 KB**

Exploring Innovative IoT Solutions for Automated Battery Condition Detection in Electric Vehicles

Publisher: IEEE

Su Sai Leksmi ; K Karthik Kumar ; F Antony Jeffrey Vaz ; M Yuvarani **All Authors**

Abstract: In recent times, the development of Electric Vehicle (EV) batteries has become a hot topic of discussion. The existing literature clearly describes that the conventional ... **View more**

Metadata

Abstract:

In recent times, the development of Electric Vehicle (EV) batteries has become a hot topic of discussion. The existing literature clearly describes that the conventional techniques like various NB-IoT, Bluetooth module were utilized to monitor any particular parameters as well as its performance is poor. With the increase of safety concerns, it is essential to monitor the status of batteries such as voltage, current, temperature, level of charge and surrounding humidity. To facilitate this, Internet of Things (IoT) is used to send data from the device to a mobile device for analysis. This will help the user take appropriate measures to protect the vehicle from any harm. Additionally, the data can be shared with third parties to alert them if the driver is in any danger. For testing purposes, a motor load is used to discharge the battery. If the voltage drops below 5V, the relay automatically disconnects the load to ensure battery efficiency. This paper outlines the design, development and implementation of this system.

Published in: 2023 7th International Conference on Computing Methodologies and Communication (ICCMC)

Date of Conference: 23-25 February 2023 **DOI:** 10.1109/ICCMC56507.2023.10083663

Keywords
Metrics
More Like This

Date Added to IEEE *Xplore*: 04 April 2023
Publisher: IEEE
ISBN Information:
Conference Location: Erode, India

Contents

1. Introduction

The predicted yearly expansion rate of Battery Management Systems (BMSs) from 2021 to 2026 is 10%, as reported in 2020. This is in accordance with the anticipated global appetite for lithium ion batteries. Modernization and better utilization of batteries is the key to a more prosperous and eco-friendly future [1]. A framework has been established to investigate defense tactics, incorporating blockchain technology, to protect against potential assaults [2]. Furthermore, a new suggestion has been presented for low-power System-on-Chip and Internet-of-Things gadgets, particularly those with primary batteries, to terminate power squandering in always-on sections [3]. Research has been conducted to observe the operation of devices when online [4]. As an exemplar, the prerequisite for frequent recharging and substitution of batteries in wearable IoT gadgets has impeded their broad acceptance [5]. A superlative operational framework has been constructed utilizing the least expense of operation and upkeep and the most advantageous scheduling of generation sources [6].

More Like This

Survey of Strategies to Optimize Battery Operation to Minimize the Electricity Cost in a Microgrid With Renewable Energy Sources and Electric Vehicles
IEEE Access
Published: 2024

Performance evaluation of series hybrid and pure electric vehicles using lead-acid batteries and supercapacitors
TENCON 2012 IEEE Region 10 Conference
Published: 2012

Show More

Smart Grid Peer-to-Peer Exchanging Energy System using Block Chain

Publisher: IEEE

P Nirmal Kumar ; B Selvakumar ; Viji R ; K Rajkumar ; K Karthik Kumar ; A S Kamaraja **All Authors**

Abstract: Among the most effective methods Exchanging Energy Management Smart Grid (SG) enhances user involvement in energy production and it creates decentralized power sector sys... **View more**

Metadata

Abstract:
Among the most effective methods Exchanging Energy Management Smart Grid (SG) enhances user involvement in energy production and it creates decentralized power sector systems with peer-to-peer technique (P2P). In Peer to peer, prosumers produce electricity on-site using Sustainable Energy sources. Next it is traded with customers in the surrounding area. Peer-to-peer makes it easier for people to interchange energy in the Transactive Energy Management system's regional micro-energy markets. This study suggests a block chain-based Decentralized and apparent Peer-to-peer Energy Trading (DA-P2PET) to solve the identified issues. Its target is to decrease grid energy generation and raising the gain for both consumer and prosumer by flexible price system. The DA-P2PET system conducts peer-to-peer energy trading using Smart Contracts built on the Ethereum block chain and the Interplanetary File System (IP. In the suggested DA-P2PET system, the Ethereum SCs are created to carry out P2P in real time. In comparison to existing methods, the DA-P2PET scheme is rated based on numerous criteria including profit creation, data transfer speed, networking access

Published in: 2023 7th International Conference on Computing Methodologies and Communication (ICCMC)

Date of Conference: 23-25 February 2023 **DOI:** 10.1109/ICCMC56507.2023.10084032

Date Added to IEEE *Xplore*: 04 April 2023

Publisher: IEEE

ISBN Information:

Conference Location: Erode, India

Contents

1. Introduction

Technology advancements have raised customer interest in power production and regulation in the Smart Grid (SG) system [1]–[4]; including the roof - top Solar Photo - voltaic absorption (SPV) [5] and Distribution Energy Resource (DER) like Battery power storage system and Electric vehicle. P2P expands the use of sustainable energy, manages requirements, and makes system more flexible. In traditional system, consumers purchase energy from the distributor for the time period of usage. Further the prosumers[6] using purchase return rate, sells extra power to the Smart Grid. However, consumer's tariff rate for energy supplies is more expensive than prosumers buy-back rates. By producing renewable power like Solar and wind turbines, P2P also creates decentralized energy market models [7] P2P is a method of trading energy in which 2 or more prosumers and consumers who are linked to the SG do so [8] [9]. Numerous studies have already been conducted in this area [10]–[14]. In a Transactive Energy Management system, [10] examined a completely distributed system for power trade and suggested a P2P trading platform. In a decentralized system, customers get a good service from prosumers at a fair cost.

Authors

Figures

References

Citations

Keywords

Metrics

Published: 2016

Show More

Automatic Billing Trolley for an Enhanced Supermarket using RFID

Publisher: IEEE

Perumal A ; Vinoth A ; Navaneetha Krishnan C ; Sriraman R ; Kumar K **All Authors**

Abstract: Many customers find it challenging to wait in a lengthy line for the billing of their purchases. This results in financial loss and a subpar bill for the incorrect consum... **View more**

Metadata

Abstract:

Many customers find it challenging to wait in a lengthy line for the billing of their purchases. This results in financial loss and a subpar bill for the incorrect consumer. In grocery stores or supermarkets, trolleys are utilised to make shopping easier. By automatically identifying the products being added to the cart and providing the relevant information on the user interface, the suggested smart cart can make the shopping experience easier. Shopping malls are still popular, even if it is common to see individuals getting excited about online shopping via e-commerce websites. There are many different types of shopping carts available in malls and shopping centers. This study presents a technologically-assisted intelligent shopping cart that can recognise products. The primary objective of this effort is to reduce wait times in congested supermarkets and other shopping centres using an innovative cart system that makes use of RFID technology to provide an intelligent approach to the billing process. The project's primary focus is the smart cart gadget. It consists of an RFID reader, a GSM module, an Arduino microcontroller, an LCD display, and a keypad. Every item that is put into the cart will be able to have a bill generated by the system. It will be simpler to skip billing lines in shopping malls with the offered method. The suggested design's conventional queuing system for billing generation makes shopping easy and enjoyable.

Published in: 2023 7th International Conference on Computing Methodologies and Communication (ICCMC)

Date of Conference: 23-25 February 2023

DOI: 10.1109/ICCMC56507.2023.10083555

Date Added to IEEE *Xplore*: 04 April 2023

Publisher: IEEE

ISBN Information:

Conference Location: Erode, India

Contents

The problem of having to spend a lot of time waiting in line to be charged for their goods at various supermarkets or shopping centres is one that many individuals struggle with People's attitudes suffer from line-related stress, which can also cause misunderstandings or conflicts, such as when someone cuts in front of others [1], [2]. This problem can be resolved by offering a faster alternative to Conventional billing methods and cutting costs. People purchase their daily requirements in shopping malls. Due to their busy lives, people in the modern world always expect technology to make their tasks easier rather than completing them themselves [3]. Every mall and supermarket in today's innovative world uses shopping trolleys to assist customers in selecting and buying the things they intend to buy. Smart trolley systems provide customers with quick purchases and excellent convenience [4]. Only customers who have the supermarket's loyalty card can use this system.

2021 IEEE 2nd International Conference on Technology, Engineering, Management for Societal impact using Marketing, Entrepreneurship and Talent (TEMSMET)

Published: 2021

Show More

Smart Attendance System using RFID and Raspberry Pi

Publisher: IEEE

F Antony Jeffrey Vaz ; G AnusuyaDevi ; A Mohana Indhu Priya ; R Yamini Rajam ; Karthik Kumar K **All Authors**

Abstract: Attendance is most important in schools, colleges and also in workplaces. In schools, colleges and educational institutions, attendance plays an important role. In educat... **View more**

Metadata

Abstract:

Attendance is most important in schools, colleges and also in workplaces. In schools, colleges and educational institutions, attendance plays an important role. In educational institutions attendance is used to monitor student activity. Attendance is a key parameter which needs to be monitored which helps in visualizing the student progress in academics in day-to-day life. Attendance is helpful for parents who may notice their child going only to schools or college. In work places attendance plays a key role which enhances the work schedule and determines the workload of the employee and the contribution of the employee in his work. It is very mandatory to decide the salary of the employee based on the number of days he has worked. Logging down the attendance in institutions level is done by instructors, who are responsible to take attendance in each lecture hour. This mark down of attendance on an hourly basis is basically tedious work. In some academic regulations loss of attendance due to manual errors may result in mark reduction or attendance shortage may recorded. To automate the process of logging attendance in an autonomous way, this study has designed an efficient solution to log attendance each and every lecture hour without the intervention of the course instructor. The proposed system helps the educational institutions and instructors to focus on the academics rather than logging attendance manually.

Published in: 2023 Second International Conference on Electronics and Renewable Systems (ICEARS)

Date of Conference: 02-04 March 2023

DOI: 10.1109/ICEARS56392.2023.10085186

Date Added to IEEE *Xplore*: 05 April 2023

Publisher: IEEE

ISBN Information:

Conference Location: Tuticorin, India

Contents

Attendance management is most crucial nowadays and it is more helpful for tracking day to day activities. There are many difficulties in taking attendance in educational institutions. Attendance is very important which helps to track the students learning rate and to calculate the total number of hours attended. Using manual method for taking attendance is very difficult in large industries for this purpose smart attendance system is very helpful for marking the attendance for a particular employee. In educational institution course instructors track the day-to-day activities of the students and hourly attendance is taken. This helps in maintain punctuality in timing. Using a smart attendance system that notices employee's delay list sent to the owner and in schools and colleges they send a absentees list to the instructors and notice their parents. Attendance System is the most common method and is used by all the institutions. In autonomous colleges there are regular and elective courses which may dynamically change in student strength and total number of periods in a week, where the course instructor has to take the attendance manually and to enter in an ERP portal, which is very tedious and considerable loss of valuable time, for taking attendance.

Proposed Smart Attendance System using embedded processor is very useful and it assist the instructor in saving time and tracking the attendance record of students in each period. This is very helpful for hourly attendance marking. By using a smart attendance system, we may find the performance of each student, employee. With their performance measure we may know about employee working hours. Smart attendance has the advantage is they store attendance in a Google firebase database system. The data is transmitted via Wi-Fi to the Google Firebase. The system provides effective and very simple way of hourly attendance for student’s community, the system is undeniable for tampering or any malpractices in marking attendance. No consideration or adjustment in time management can be done. The system clock is decided by the local internet time and setting / resetting time is impossible. Accurate time for the particular region is fetched by the processor via internet time protocol.

More Like This

An Optimal Congestion Scheduling Model of Intraday Market for Promoting the Consumption of Renewable Energy Sources
2020 IEEE 4th Conference on Energy Internet and Energy System Integration (EI2)
Published: 2020

Reducing energy costs by using optimal electric vehicles scheduling and renewable energy sources
2019 18th International Symposium INFOTEH-JAHORINA (INFOTEH)
Published: 2019

Show More

Computation of Electric Field Distribution on 110 kV Polymer Insulator for Different Corona Ring Position

Publisher: IEEE

T. Sukumar ; B. Vigneshwaran **All Authors**

Abstract: The Electric Field (E-Field) and potential distribution plays a major role in deciding the lifetime of an insulator. Different climate and pollution conditions lead to de... **View more**

Metadata

Abstract:

The Electric Field (E-Field) and potential distribution plays a major role in deciding the lifetime of an insulator. Different climate and pollution conditions lead to deterioration and degradation of insulator properties by increasing the electric stress and exceeding the threshold value during long working conditions, leading to failure of the insulator. This article mainly focuses on the reduction of electric stress by using different side positions of the corona ring on a 110 kV AC transmission line composite insulator. The Corona ring plays a significant role in the reduction of electric stress. This study analyses the performance of three different positions of the corona ring: HV and LV side, LV side, and HV side achieving uniform distribution. The obtained results confirm the effectiveness of three different corona ring positions, wherein the HV side highly reduces the electric stress.

Published in: 2023 Third International Conference on Artificial Intelligence and Smart Energy (ICAIS)

Date of Conference: 02-04 February 2023

DOI: 10.1109/ICAIS56108.2023.10073745

Date Added to IEEE *Xplore*: 27 March 2023

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

The future depends on renewing energy sources and developing reliable components in power generation, transmission, and distribution systems. Different insulators are used in transmission lines but nowadays, composite insulators are widely used in transmission lines. The main factors for composite insulators are weight reduction, low price, high mechanical strength, flexible design, and lower maintenance requirements. Composite insulators are made of organic materials, so it's possible to change the chemical properties, and erosion can occur. The corona ring's position improves the insulators' reliability and durability; the corona ring position plays a significant role in reducing electric stress.

Energy Load Forecasting with Demand Side Management in Industrial Sectors using Neuro-Fuzzy Controller and Deep Learning

Publisher: IEEE

D Sabapathi ; Yogesh Shivaji Pawar ; Sumagna Patnaik ; E. Sivanantham ; D. Karthik Prabhu ; N. B. Prakash **All Authors**

Abstract: Load forecasting plays a vital role in generation and distribution sectors in the power system. This helps to obtain optimum load scheduling which helps to predict future... **View more**

Metadata

Abstract:

Load forecasting plays a vital role in generation and distribution sectors in the power system. This helps to obtain optimum load scheduling which helps to predict future consumption to increase reliability in the system. The demand side management helps to optimize the consumption of energy based upon the priority of the consumers. The load forecasting helps to predict the usage of power through the priority scheduling of the loads which helps to minimize and maximize the operating cost. The optimization technique plays a versatile role in the load scheduling based on demand side management in the industrial sectors. The combination of advanced technologies with communication infrastructure makes the system more reliable and smarter. The demand side management is achieved through shifting the loads from peak hours to non-peak hours. Thus, to enhance the automatic scheduling of loads in the industrial sector is achieved by the neuro-fuzzy controller and deep learning techniques.

Published in: 2023 Third International Conference on Artificial Intelligence and Smart Energy (ICAIS)

Date of Conference: 02-04 February 2023 **DOI:** 10.1109/ICAIS56108.2023.10073714

More Like This

Date Added to IEEE *Xplore*: 27 March 2023

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

The electrical power system involves variety of operations which includes generation, transmission and distribution. To have an efficient usage of power consumption, certain advanced technologies with communication systems are employed. This makes the system smarter in nature. To obtain efficient usage of power consumption, energy load forecasting is implemented [1].

Exploiting Reliable Power from Independent PV-Battery Systems by Combining Improved INC with Power Management Circuitry

Publisher: IEEE

K Karthik Kumar ; M Willjuice Iruthayarajan ; A S Kamaraja **All Authors**

Abstract: In distributed power generation systems, the two fundamental issues are generation capacity and sustainability. Recently, these challenges have been greatly impacted by l... **View more**

Metadata

Abstract:
In distributed power generation systems, the two fundamental issues are generation capacity and sustainability. Recently, these challenges have been greatly impacted by lighting loads. DC-fed LED lighting offers a superior approach. The traditional grid requires a rectifier, which comes at a high cost and lower efficiency to obtain DC outputs. To address these issues, this research work presents a dependable Independent PV-Battery (IPVB) systems fed LED load that uses a Power Management Algorithm (PMA) with Maximum Power Point Tracking (MPPT). Employing the different step size- Improved INC method significantly reduces the undesired fluctuations at MPP caused by the traditional Incremental Conductance (INC) technique. With a controlled DC voltage bus of 36 V, the non - isolated dc bilateral converter in the PMA serves as a charge controller that chooses the batteries charging and discharging phase based on the battery's level of capacity, solar irradiance power, and converters output power. Through simulations, the efficiency of three MPPT and PMA has indeed been examined.

Published in: 2023 Third International Conference on Artificial Intelligence and Smart Energy (ICAIS)

Date of Conference: 02-04 February 2023 **DOI:** 10.1109/ICAIS56108.2023.10073825

Date Added to IEEE *Xplore*: 27 March 2023

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

Modeling and Simulation of Selfish Mining Attacks in Blockchain Network using Evolutionary Game Theory

Publisher: IEEE

Kesavan R ; K. Mohaideen Pitchai **All Authors**

Abstract: This paper presents a method of attacking proof of work consensus based on selfish mining. The current mitigation strategies for the blockchain network's egotistical mini... **View more**

Metadata

Abstract:

This paper presents a method of attacking proof of work consensus based on selfish mining. The current mitigation strategies for the blockchain network's egotistical mining are not self-sufficient after a certain number of generations. Additionally, these solutions do not address the network nodes' cooperative and defector behavior. Additionally, more blocks from self-centered nodes are added to the blockchain in this development. This study analyzes to what extent these risks may affect cryptocurrency extraction. Minority mining pools keep some blocks private by deviating from the original mining protocol. An attacking collection aims to increase revenue by wasting other miners' computing power. By adopting a novel approach in this study. To determine whether such attacks are profitable. Using the interaction between pools in this model, mining strategies can be derived using game theory. By analyzing the relative revenue rather than the monetary award, this model simulates the game for a Bitcoin blockchain. This illustrates the usefulness of considering the cost of a strategy when discussing the potential outcomes of selfish mining strategies. The author highlights scenarios where the system might be compromised based on the way the parameters are set up in the game.

Published in: 2023 Third International Conference on Artificial Intelligence and Smart Energy (ICAIS)

Date of Conference: 02-04 February 2023

DOI: 10.1109/ICAIS56108.2023.10073670

Date Added to IEEE *Xplore*: 27 March 2023

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

I. INTRODUCTION

Blockchain networks provide ledger and smart contract (chaincode) services to applications. Users can send transactions and build applications over a decentralized network using blockchain technology without a single server or authority. [7] Blockchain powers platforms like Bitcoin and Ethereum and thousands of useful apps that provide value to sectors as varied as finance, fashion, and gaming. As long as it is constantly improved, blockchain will be a crucial technology in the digital world of the future. Bitcoin mining is the process by which new bitcoins are put into circulation. It is necessary for the construction and upkeep of blockchain ledgers and for the method by which the network confirms recent transactions. [7] The process of solving challenging computational arithmetic problems with powerful gear is known as "mining." The next block of bitcoins is awarded to the first computer that resolves the problem as the process progresses.

Brain-Computer Interface: Using Deep Learning Applications

Chapter 8

Brain–Computer Interface-Based Real-Time Movement of Upper Limb Prostheses Topic

Improving the Quality of the Elderly with Brain-Computer Interface

S. Vairaprakash, S. Rajagopal

Book Editor(s):M.G. Sumithra, Rajesh Kumar Dhanaraj, Mariofanna Milanova, Balamurugan Balusamy, Chandran Venkatesan

First published: 10 February 2023
https://doi.org/10.1002/9781119857655.ch8

Summary

The early development of Human-Computer Interaction (HCI) was limited to a couple of external computer interfaces, like the keyboard, mouse, or graphical user interface, to enable users to communicate easily with the computer. Modern HCI includes input interfaces, including a joystick, bio-sensors, and power-input devices, for example, steering wheel, and electromechanical actuators, biomechanical, and optical/optoelectronic equipment. The BCI interfaces usually bypass the natural neuro-muscular controls and aim to serve as an alternative means of communication/control in the event of a neuronal/motor failure. The chapter covers BCI on cognition, sensors, machine learning, neurophysiology, psychology, signal detection and processing, source localization, pattern recognition, clustering, and classification of the signals. The components of an EEG-BCI are (i) preprocessing, (ii) extraction of the feature, (iii) selection of features, and (iv) classification. In the pre-processing stage, preliminary processing like the filtering of EEG signals takes place. The EEG signals are subsequently processed using one or more extraction methods after pre-processing. This step is designed to extract relevant special signals that match the various mental state of the user. The selection of functionality in a BCI system is an optional step, which mainly seeks to select from the original feature vector (received as a result of the extraction process) the most important differentiable features and to delete redundant

Back

different mental conditions from the incoming EEG by using a classifier. The feature selection, as well as the classification algorithm designed for that purpose, must therefore take into account two important issues: (i) unstable (ii) uncertain nature of EEG. The objective of an ideal BCI system is to produce a recognition rate of 100% in the real world, taking both issues into account. Secondly, different BCI strategies for real-time control of a robot arm have been designed using brain signals such as motor imagery, error-related signals, and P300.

References

Dornhege , G. , del R. Millan , J. , Hinterberger , T. , McFarland , D.J. , Muller , K.-R. , *Towards Brain Computer Interfacing* , MIT Press , MA , 2007 .

View | **Google Scholar**

Tan , D.S. and Nijholt , A. , *Brain-computer interfaces: Applying our mind to human-computer interaction* , London : Springer , 2010 .

View | **Google Scholar**

Wolpaw , J. and Wolpaw , E.W. , *Brain-computer interfaces: Principles and practice* , London : Oxford University Press , 2012 .

View | **Google Scholar**

Hwang , H.-J. , Kim , S. , Choi , S. , Im , C.-H. , EEG-based brain-computer interfaces: A thorough literature survey . *Int. J. Hum. Comput. Interact* ., Taylor & Francis , **29** , 12, 814 – 826 , 2013 .

View | **Google Scholar**

Rao , R.P.N. and Scherer , R. , Brain-computer interfacing [In the Spotlight] . *IEEE Signal Process. Mag.* , **27** , 4 , 150 – 152 , 2010 .

View | **Google Scholar**

Kubler , A. and Muller , K.R. , An introduction to brain-computer interfacing , in: *Toward brain-computer interfacing* , G. Dornhege , J.R. Millan , T. Hinterberger , D.J. McFarland , K.R. Muller (Eds.), pp. 1 – 25 , MIT

Back

Dhanaraj , R.K. , Krishnasamy , L. , Geman , O. , Izdrui , D.R. , Black hole and sink hole attack detection in wireless body area networks . *Comput. Mater. Continua* , Tech Science Press, US, **68** , 2 , 1949 – 1965 , 2021 .

View | **Web of Science®** | **Google Scholar**

Kassubek , J. , Unrath , A. , Huppertz , H.J. , Lule , D. , Ethofer , T. , Sperfeld , A.D. , Ludolph , A.C. , Global brain atrophy and corticospinal tract alterations in ALS, as investigated by voxel-based morphometry of 3-D MRI . *Amyotroph. Lateral Scler. Motor Neuron Dis.* , Springer, **6** , 4 , 213 – 220 , 2005 .

View | **PubMed** | **Web of Science®** | **Google Scholar**

Hanagasi , H.A. , Gurvit , I.H. , Ermutlu , N. , Kaptanoglu , G. , Karamursel , S. , Idrisoglu , H.A. , Emre , M. , Demiralp , T. , Cognitive impairment in amyo-trophic lateral sclerosis: evidence from neuropsychological investigation and event-related potentials . *Cogn. Brain Res.* , Elsevier, **14** , 2 , 234 – 244 , 2002 .

View | **PubMed** | **Google Scholar**

Jurkiewicz , M.T. , Crawley , A.P. , Verrier , M.C. , Fehlings , M.G. , Milkulis , D.J. , Somatosensory cortical atrophy after the spinal cord injury: A voxel-based morphometry study . *Neurology* , American Academy of Neurology, **66** , 5 , 762 – 764 , 2006 .

View | **CAS** | **PubMed** | **Web of Science®** | **Google Scholar**

Hochberg , L.R. , Serruya , M.D. , Friehs , G.M. , Mukand , J.A. , Saleh , M. , Caplan , A.H. , Branner , A. , Chen , D. , Penn , R.D. , Donoghue , J.P. , Neuronal ensemble control of prosthetic devices by a human with tetraplegia . *Nature* , London, **442** , 7099 , 164 – 171 , 2006 .

View | **CAS** | **PubMed** | **Web of Science®** | **Google Scholar**

Huber , H. , The use of virtual realities in psychological treatment . *Psychol. Osterreich* , **25** , 1 , 13 – 200 , 2005 .

Google Scholar

Oum , K. , Ayaz , H. , Shewokis , P.A. , Diefenbach , P. , MindTactics: A brain computer interface gaming platform , in: *2010 International IEEE Consumer Electronics Society's Games Innovations Conference (ICE-GIC)*

Back

Angeloni , C. , Salter , D. , Corbit , V. , Lorence , T. , Yu , Y.-C. , Gabel , L.A. , P300-based brain-computer interface memory game to improve motivation and performance , in: *2012 38th Annual Northeast Bioengineering Conference (NEBEC)* , pp. 35 – 36 , 2012 .

Google Scholar

Parafita , R. , Pires , G. , Nunes , U. , Castelo-Branco , M. , A spacecraft game controlled with a brain computer interface using SSVEP with phase tagging . *2013 IEEE 2nd International Conference on Serious Games and Applications for Health (SeGAH)* , pp. 1 – 6 , 2013 .

Google Scholar

Brumberg , J.S. , Lorenz , S.D. , Galbraith , B.V. , Guenther , F.H. , The unlock project: A python-based framework for practical brain-computer interface communication “app” development , in: *2012 Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)* , pp. 2505 – 2508 , 2012 .

Google Scholar

Ebrahimi , T. , Vesin , J. , Garcia , G. , Brain-computer interface in multimedia communication . *IEEE Signal Process. Mag.* , **20** , 1 , 14 – 24 , 2003 .

View Web of Science® Google Scholar

Biao , Z. , Wang , J. , Fuhlbrigge , T. , A review of the commercial brain-computer interface technology from perspective of industrial robotics , in: *2010 IEEE International Conference on Automation and Logistics (ICAL)* , pp. 379 – 384 , 2010 .

Google Scholar

Garcia , A.P. , Schjolberg , I. , Gale , S. , EEG control of an industrial robot manipulator , in: *2013 IEEE 4th International Conference on Cognitive Infocommunications (CogInfoCom)* , pp. 39 – 44 , 2013 .

Google Scholar

Al-Sagban , M. , El-Halawani , O. , Lulu , T. , Al-Nashash , H. , Al-assaf , Y. , Brain computer interface as a forensic tool , in: *5th International Symposium on Mechatronics and Its Applications (ISMA 2008)* , pp. 1 – 5 , 2008 .

Google Scholar

Back

Google Scholar

A Novel Converter Design for Energy Management in Electrical Vehicles

Publisher: IEEE

G Vasuki ; M Vinothini ; K Karthik Kumar **All Authors** •••

Abstract: In the modern era, electric vehicles play a vital role because of their eco-friendly features. In this proposed study, an EV is equipped with a supercapacitor and battery... **View more**

Metadata

Abstract:

In the modern era, electric vehicles play a vital role because of their eco-friendly features. In this proposed study, an EV is equipped with a supercapacitor and battery. Also, these configurations are powered by solar PV with a quasi- Z source converter. The proposed methodology delivers uninterrupted power to the EV and the braking conditions regenerative energy is stored with the bi-directional converter. The proposed converter doesn't need any additional equipment for bidirectional power flow. A Centre tapped High-Frequency Transformers (HFT) are intended for isolation purposes. The secondary side of HFT provides bi-directional power flow in different ecological conditions. The proposed methodology's performance investigation is obtained with various stages to verify its adequateness. The entire model is developed with the help of Matlab/Simulink. The converter's efficiency depends on its bi-directional power flow and transient conditions.

Published in: 2023 5th International Conference on Smart Systems and Inventive Technology (ICSSIT)

Date of Conference: 23-25 January 2023

DOI: 10.1109/ICSSIT55814.2023.10061018

Date Added to IEEE *Xplore*: 14 March 2023

Publisher: IEEE

More Like This

▸ **ISBN Information:**

Conference Location: Tirunelveli, India

▸ **ISSN Information:**

Contents

Modem-day renewable energy sources are widely used in all sectors to protect the environment from pollution and noise. For example, solar photovoltaic cells play a significant role in depleting fossil fuels. Renewable energy sources have energy storage properties, so they are widely used in power systems for uninterrupted power delivery in distribution. However, the energy storage units (ESUs) need a crucial module, namely converters it will monitor the power flow from the ESUs. Renewable energy stored power is directly transferred to load side devices. Depending on the demand on the load side, the power flow occurs. The power electronic converters manage the charging-discharging of the storage element. Recently, researchers have developed a hybrid model for initiating the power flow from ESUs to RES. However, this would take more space and increase the overall system's cost. To overcome this hitching, multiport DC-DC conversion is intended and is very efficient compared to conventional converters [1]–[3].

More Like This

Performance evaluation of series hybrid and pure electric vehicles using lead-acid batteries and supercapacitors
TENCON 2012 IEEE Region 10 Conference
Published: 2012

Topologies for Interfacing Supercapacitor and Battery in Hybrid Electric Vehicle Applications: An Overview
2021 International Conference on Sustainable Energy and Future Electric Transportation (SEFET)
Published: 2021

Show More

An Automatic Solar Panel Performance Monitoring System and Load Control using IoT Technique

Publisher: IEEE

K Karthik Kumar ; F Antony Jeffrey Vaz ; M Willjuice Iruthayarajan ; A S Kamaraja **All Authors**

Abstract: Nowadays, the solar power generation becomes more common and are facing issues like fault occurrence in panel, partial shading effect, and temperature would decrease the ... **View more**

Metadata

Abstract:

Nowadays, the solar power generation becomes more common and are facing issues like fault occurrence in panel, partial shading effect, and temperature would decrease the maximum power generation from the panel and the disturbs the overall efficiency of the solar Panel. This irregular enactment at the generation side due to improper monitoring system would affects the solar panel efficiency as well as cause load side voltage dip. In order to avoid above such problems, an automated solar panel performance monitoring system and load control using Bolt IOT module is proposed. Here, solar panel is connected to IoT module through electrical elements for regulation purpose which will produce constant maximum power to the module. The module monitors the output from the solar panel with the set point value to be needed to integrate with load using active GUI and notify the user if any fault or mismatch with preset value occurs. The monitored output voltage instantly sends to the user through the bolt ESPS266 IoT along with its characteristics built with respect to time. If the output deviates from the preset value, the load gets tripped out using a standard relay.

Published in: 2023 5th International Conference on Smart Systems and Inventive Technology (ICSSIT)

Date of Conference: 23-25 January 2023

DOI: 10.1109/ICSSIT55814.2023.10060886

Date Added to IEEE *Xplore*: 14 March 2023

Publisher: IEEE

ISBN Information:

Conference Location: Tirunelveli, India

ISSN Information:

Contents

Our daily life is filled with IoT. Now a days the devices are becoming intelligent, It connects various kinds of the physical equipment over intemet to interchange data checking and governing the devices from a the year 2020 (i.e) 5.8 billion intemet connected devices has been increased in 2020.Security mechanisnt battery recharge and computational load was monitored by control unit [4]. Within 40 days the estimated and actual generated energies e 589.59 kWh and 549.00 kWh, correspondingly [3]. This technology has a huge connection overvarious things around us. For example environmental sensing, assistance for physically challenged people, monitoring various field works, etc. The air pollution can be sensed using arrayed sensors [1].

Show More

Performance Analysis of Different Fatty Acid Vegetable Oil using Ranking Method

Publisher: IEEE

P. Arul Kandhan ; N.B. Prakash ; M. Bakrutheen **All Authors**

Abstract: Vegetable oil technology is the most feasible solution for high-voltage liquid dielectrics. For the past few years, conventional mineral oil has been mainly used in trans... **View more**

Metadata

Abstract:

Vegetable oil technology is the most feasible solution for high-voltage liquid dielectrics. For the past few years, conventional mineral oil has been mainly used in transformer protection and coolant applications. According to a recent survey, demand is increasing due to population growth and the limited availability of coal and mineral renewable sources. Researchers can concentrate on environmentally friendly solutions. The objective of this research is to evaluate the effectiveness of liquid insulation using a number of different vegetable oils with fatty acids. The liquid insulation samples for this study will be made from a mixture of saturated and unsaturated vegetable oil. With a particular category of vegetable oil–palm and coconut oil (saturated fatty acids), peanut oil (mono unsaturated fatty acids), sunflower, soy bean, and sesame oil–characteristics such as viscosity, flash point, and pour point have been examined (poly unsaturated fatty acids). The effectiveness of oil sample performance has been classified, and the best sample is determined using the ranking technique.

Published in: 2023 5th International Conference on Smart Systems and Inventive Technology (ICSSIT)

Date of Conference: 23-25 January 2023 **DOI:** 10.1109/ICSSIT55814.2023.10061136

Date Added to IEEE *Xplore*: 14 March 2023 **Publisher:** IEEE

▸ **ISBN Information:**

Conference Location: Tirunelveli, India

▸ **ISSN Information:**

Contents

The effectiveness of the dielectric oils used in electrical equipment like transformers, circuit breakers, and switchgear has been under a great deal of stress due to the rise in power demand. The most common in sulating liquid is mineral oil. Mineral oils have been used in electrical power equipment for a long time, which has improved their production and care. Furthermore, an affordable price means that mineral oils are still the most commonly used insulation liquids, even if alternative liquids are characterized by significantly better environmental and ffie properties [1]. Despite being widely available, mineral oils have the potential to cause environmental issues in the event of a leak. These oils also have lower flash points than natural ester-in sulating oils, which raises questions about ffie safety [2] –[4]. These problems have focused academics' attention on finding mineral oil's replacement. These concerns about environmental issues and safety have encouraged the development of in sulating liquids based on vegetable oil [5– 7]. The use of non-biodegradable liquid dielectrics (mineral oil) may have adverse environmental effects, but the power industry has already taken steps to reduce the effects. Reading distribution and power transformers, natural and synthetic ester fluids with high biodegradability and low toxicity are currently employed in place of standard naphthenic mineral oil. Vegetable oils are made from organic materials like seeds, plants, etc. They contained both saturated and unsaturated fatty acid triglycerides, which will play a significant role in determining the qualities of the oil samples. [8]–[9]. Vegetable oil, on the other hand, has a high kinematic viscosity [10]. A review of electrical (AC and lightning impulse breakdown voltage and dielectric dissipation factor) and physicochemical (viscosity, acidity, and moisture) aspects of palm oil attributes as replacements for mineral oil MOORA has proven to be one of the most beneficial methods for short-listing the best specimen or sample out of the different specimens or samples that are subjected to multiple test conditions. This method is simple, unique properties can be considered, and it is used when conclusions cannot be drawn directly [11– 12]. The purpose of the current paper is to provide a brief overview of certain transformer oil substitutes and to make comments on their various features.

More Like This

Performance Analysis of Hybrid Network of Indian Traction Power System Using Renewable Energy Sources
2016 International Conference on Micro-Electronics and Telecommunication Engineering (ICMETE)
Published: 2016

Performance Analysis of DC Microgrid With Multiple Renewable Energy Sources And Energy Storage System
2023 14th International Conference on Computing Communication and Networking Technologies (ICCCNT)
Published: 2023

Show More

Chapter

Design and Implementation of Cyber Threat Intelligence Data Mining Model

October 2022
DOI:10.1007/978-981-19-1976-3_22
In book: Computer Communication, Networking and IoT (pp.171-185)

Authors:

S. Lakshmi Narayanan **S. Shunmugavel** **R. Prasanth** **M. Satheesh Kumar**

Show all 6 authors

References (14)

Abstract

These days, for every half seconds a cyber-attack is happening in this world. Most of them are hard to manage and mitigate by having appropriate cyber security measures. This article reports how cyber threat intelligence (CTI) can prevent an attack before it strikes, rather than researching about how to repair the damage caused by it. cyber threat intelligence in general refers to information that is collected from an open source or in an organization which mainly focuses on internal threat feeds such as antivirus and system logs. By gathering information about harmful threats earlier to an attack, organizations can develop enhanced CTI and thus protection of their infrastructure is possible. In addition, open threat exchange alien vault provides rich information about the threat data feeds which covers the day-to-day threats information is also considered. Here, an application programming interface is designed which fetches the relevant information from the open source The implementation of application programming interface and threat intelligence in Snort shall provide a greater security to our network and organization. The proposed work will keep organizations secure from the future threats as well.KeywordsCyber threat intelligenceSnortThreat data feeds

No full-text availa

To read the full-text of this research, you can request a copy directly from the authors.

Request full-text PDF

Citations (0) References (14)

A New Threat Intelligence Scheme for Safeguarding Industry 4.0 Systems

Article Full-text available

Jun 2018

Nour Moustafa · Erwin Adi · Benjamin Peter Turnbull · Jiankun Hu

View Show abstract

Exploring Emerging Hacker Assets and Key Hackers for Proactive Cyber Threat Intelligence

Article Full-text available

Oct 2017

Sagar Samtani · Ryan Chinn · Hsinchun Chen · Jay F. Nunamaker

View Show abstract

Probability Risk Identification Based Intrusion Detection System for SCADA Systems

Article Full-text available

Nov 2017

Thomas Marsden · Nour Moustafa · Elena Sitnikova · Gideon Creech

View Show abstract

Identifying mobile malware and key threat actors in online hacker forums for proactive cyber threat intelligence

Conference Paper Full-text available

Jul 2017

John Grisham · Sagar Samtani · Mark Patton · Hsinchun Chen

View

Acquiring Cyber Threat Intelligence through Security Information Correlation

Conference Paper Full-text available

Jun 2017

Giuseppe Settanni · Yegor Shovgenya · Florian Skopik · Roman Fiedler

View

Darknet and deepnet mining for proactive cybersecurity threat intelligence

Conference Paper Full-text available

Sep 2016

Eric Nunes · Ahmad Diab · Andrew Gunn · Paulo Shakarian

View

Collective threat intelligence gathering system

Patent Full-text available

Aug 2014

Joseph C. Magee · Alison M. Andrews · Mark W. Nicholson · Joel Lathrop

View Show abstract

Intrusion Detection in the RPL-connected 6LoWPAN Networks

Conference Paper

Apr 2017

Dharmini Shreenivas · Shahid Raza · Thiemo Voigt

View Show abstract

Securing cyberspace: Identifying key actors in hacker communities

Conference Paper

Jun 2012

Victor Benjamin · Hsinchun Chen

View Show abstract

The cause of action for breach of data? The problem with relying on courts when managing the risks of cloud services

M A Stoolman

Data mining for network intrusion detection: a comparison of data mining algorithms and an analysis of relevant features for detecting cyber-…

R Petersen

Collaborative and adaptive threat intelligence for computer security

J Wang · M-Y Shen · P Palkar · S Ramachandran

Threat intelligence: what it is, and how to use it effectively, a SANS review

M Bromiley

A new threat intelligence scheme for safeguarding industry 4.0 systems

N Moustafa · Adi E Turnbull · B Hu

Recent Advances in Materials Technologies pp 643–652

Effect of Process Parameters on Single Point Incremental Forming of Titanium Grade 5 Sheet Metals and Its Optimization Using Taguchi's Method

C. Veera ajay, S. Elangovan, S. Pratheesh Kumar, R. Mohanraj & K. Manisekar

Conference paper | First Online: 20 September 2022

Part of the Lecture Notes in Mechanical Engineering book series (LNME)

Abstract

Incremental forming is an advanced rapid prototyping process used for fabricating of 3D-sculptured parts on the sheet material without the requirement of dedicated and expensive tools. The main focus of this study work is to examine the

influence of input parameters on maximum formable wall angle and minimum temperature, surface roughness, wall thickness in incremental forming of 0.5 mm thickness titanium grade 5 sheets. Taguchi's design of experiments was selected and L9 orthogonal array has been conducted considering three process variables such as tool feed, step depth, and viscosity of lubricant on the considered response variables. Main effect plots for means and ANOVA have been used to determine optimum process settings parameters and process parameter contribution in percentage of selected responses.

Keywords

Surface roughness **Wall thickness**

Forming force and temperature

Analysis of variance

References

1. Ambrogio G, Filice L, Gagliardi F (2012) Formability of lightweight alloys by hot incremental sheet forming. Mater Des 34:501–508. https://doi.org/10.1016/j.matdes.2011.08.024

2. Leacock AG (2012) The future of sheet metal forming research. Mater Manuf Process 27(4):366–369. https://doi.org/10.1080/10426914.2011.551960

3. Faraji GH, Hashemi R, Mashhadi MM, Dizaji AF, Norouzifard V (2010) Hydroforming limits in metal bellows forming process. Mater Manuf Process 25(12):1413–1417. https://doi.org/10.1080/10426914.2010.499579

4. Djavanroodi F, Abbasnejad DS, Nezami EH (2011) Deep drawing of aluminum alloys using a novel hydroforming tooling. Mater Manuf Process

26(5):796–801. https://doi.org/10.1080/10426911003720722

5. Kim YH, Park JJ (2002) Effect of process parameters on formability in incremental forming of sheet metal. J Mater Process Technol 130–131:42–46

6. Kopac J, Kampus Z (2005) Incremental sheet metal forming on CNC milling machine tool. J Mater Process Technol 162–163:622–628

7. Liu Z, Li Y, Meehan PA (2013) Experimental investigation of mechanical properties, formability and force measurement for AA7075-O aluminum alloy sheets formed by incremental forming. Int J Precis Eng Manuf 14:1891–1899

8. Vahdani M, Mirnia MJ, Gorji H, Bakhshi-Jooybari M (2019) Experimental investigation of formability and surface finish into resistance single-point incremental forming of Ti–6Al–4V titanium alloy using taguchi design. Trans Indian Inst Metals 72:1031–1041

Author information

Authors and Affiliations

Department of Mechanical Engineering, National Engineering College, Kovilpatti, 628503, India

C. Veera ajay & K. Manisekar

Department of Production Engineering, PSG College of Technology, Coimbatore, 641004, India

S. Elangovan, S. Pratheesh Kumar & R. Mohanraj

Corresponding author

Correspondence to C. Veera ajay .

Editor information

Editors and Affiliations

Department of Mechanical Engineering, Sri Sivasubramaniya Nadar College of Engineering, Chennai, Tamil Nadu, India

K. Rajkumar

Faculty of Engineering, Computing and Science, Swinburne University of Technology Sarawak Campus, Kuching, Sarawak, Malaysia

Elammaran Jayamani

Department of Mechanical Engineering, Indian Institute of Technology Madras, Chennai, Tamil Nadu, India

P. Ramkumar

Rights and permissions

Copyright information

About this paper

Cite this paper

ajay, C.V., Elangovan, S., Kumar, S.P., Mohanraj, R., Manisekar, K. (2023). Effect of Process Parameters on Single Point Incremental Forming of Titanium Grade 5 Sheet Metals and Its Optimization Using Taguchi's Method. In: Rajkumar, K., Jayamani, E., Ramkumar, P. (eds) Recent Advances in Materials Technologies. Lecture Notes in Mechanical Engineering. Springer, Singapore. https://doi.org/10.1007/978-981-19-3895-5_52

.RIS .ENW .BIB

DOI	Published	Publisher Name
https://doi.org/10.1007/978-981-19-3895-5_52	20 September 2022	Springer, Singapore

Print ISBN	Online ISBN	eBook Packages
978-981-19-3894-8	978-981-19-3895-5	Engineering Engineering (R0)

Publish with us

Policies and ethics

2023 | OriginalPaper | Chapter

Study on the Wear Behaviour of Magnesium Metal Matrix Composites Reinforced with Titanium Dioxide (TiO_2)

Authors : J. Yadu Krishnan, K. Thoufiq Mohammed, C. Veera Ajay, K. Manisekar

Published in: Recent Advances in Materials Technologies

Publisher: Springer Nature Singapore

Abstract

In this research work, the mechanical properties and the tribological behaviour of pure magnesium and its Nanocomposites Mg/TiO_2 in various proportions of TiO_2 Particles (0.5, 1.5 and 2.5 Vol. %), fabricated by powder metallurgy techniques are investigated. The wear experiments were carried out using a pin on disc equipment against the steel disc counter face under various loading conditions 10, 20, 30 and 40 N, respectively with constant sliding speed of 1 m/s and sliding distance of 1500 m. The hardness of the composites increases with the addition of reinforcement material. The wear rate increases with increase in applied normal loads and also the pores presented inside the composites increase the wear rate. It is identified that the combination of 1.5% of TiO_2 with Magnesium has provided the higher ultimate compressive strength and higher wear resistance compared with other combinations.

Metals | Design + Development | Natural scientific basics | Materials Development

Please log in to get access to your license.

Log in

Register for free

previous chapter next chapter

Literature

Metadata

Premium Partners

IOT security system to avoid botnet threats for mobile application

Keerthika, S. ; **Praisy, K. Christina** ; **Kolekar, Swetha Popat** ; **Shrri, A. Lakshmi** ; **Devi, V. Anusuya** ; **Kalaivani, V.**

Botnet is a collection of internet-connected devices infected by malware which allows hackers to control them. Cyber criminals use botnets to instigate botnet attacks, which include malicious activities such as credentials leaks, unauthorized access, data theft and DDoS attacks. Botnets can also affect mobile phones and the bot which attacks a mobile is called a mobile bot. A mobile bot is a type of malware that runs automatically once installed on a mobile device without mobile antivirus software. It gains complete access to the device and its contents, and starts communicating with and receiving instructions from one or more command and control servers. Mobile botnet also includes a major threat which is Distributed Denial Of Service (DDoS) attack. A DDoS attack is a type of Botnet which is used to overwhelm a target website with fake traffic. This attack aims at disrupting the normal functioning of a server, network or mobile phones by means of trafficking. Here, trafficking means overwhelming the device by sending multiple repeated malicious requests from various IP Addresses. This proposed work aims at avoiding trafficking which is the root cause of the DDoS attack and avoiding trafficking of the malicious unknown IP addresses. The proposed system "Firewall Security Application using Command and Control method" which allows only the IP Addresses that are of interest to the device and denies all the malicious requests targeting the device. This security application when installed in a device checks and detects if there is any unknown IP address entering the device, thereby denying the unknown requests.

Publication:	AIP Conference Proceedings, Volume 2444, Issue 1, id.050001, 8 pp.
Pub Date:	March 2022
DOI:	10.1063/5.0078354
Bibcode:	2022AIPC.2444e0001K

Efficient management of files in the cloud using a desktop application

Gayathri, M. ; **Bagavathy, S.** ; **Andal, V.** ; **Sundari, G. Sivakama**

Cloud computing is a computing service that includes servers, storage, databases, networking, software, etc., over the internet to offer faster innovation, flexible resources, and economies of scale. Utilizing dynamic resource allocation for load balancing is considered a vital optimization process in cloud computing. Here, we used a virtual machine serving maximum resource efficiency and scalability. Also, the creation of a desktop application for managing files in the cloud gives higher scope. The resource slicing and allocation problem use two-time scales, including an extensive period for inter-slice resource pre-allocation and a small-time slot for intra-slice resource scheduling. The application consists of two major modules - admin and users. The admin can upload the files, view user details, view log history, view storage, and download details. Also, the admin can approve the files for download on request. The user can register their account, view or update their details, view the files in the cloud, request and download a file from the cloud. The application uses a cryptographic algorithm for ensuring authentication and scheduling algorithm for allocating files to the cloud in an optimal way. The priority for the files is given based on the Grey Wolf Optimization Algorithm and Priority Based Optimization technique. The focus is given to the highly requested file to reduce the time of approval. For cloud storage services, the storage resources become virtualized and can form a storage pool. The cloud storage services use the internet to allow the data to be accessed and backed up on the local storage. Here, we use three cloud storage for file allocation. As a result, this application is better and efficient for write-in under low-cost circumstances.

Publication:	AIP Conference Proceedings, Volume 2444, Issue 1, id.020002, 15 pp.
Pub Date:	March 2022
DOI:	10.1063/5.0078351
Bibcode:	2022AIPC.2444b0002G

Sales prediction using machine learning

Praveen, R. ; **Kumar, D. Praveen** ; **Sam, A. Prince** ; **Sundari, G. Sivakama**

This sales prediction project aims to set the sales target to give a better result. The primary use of sales prediction is to establish sales performance goals for the concern and maintain inventory products. This project offers accurate results and helps in estimating the number of raw materials for future purposes. In this project, the sales are predicted for the products which are bought in a combination. By knowing the better inventory products, a retailer or a shop keeper can improve their business in terms of profit. Based on the dataset of the company, this can predict the future sales of that sales or products of that concern.

Publication:	AIP Conference Proceedings, Volume 2444, Issue 1, id.040001, 8 pp.
Pub Date:	March 2022
DOI:	10.1063/5.0078390
Bibcode:	2022AIPC.2444d0001P

RESEARCH ARTICLE | MARCH 31 2022

Air quality prediction using remote sensing

R. Raja Selvi; M. Shruthi; G. Nithya; S. Kalaiselvi ✉; M. Jayalakshmi; V. Gomathi

+ Author & Article Information

AIP Conf. Proc. 2444, 040005 (2022)
https://doi.org/10.1063/5.0078338

Monitoring and protecting air quality has become one of the essential activities for every human in many urban and industrial areas today. The burning of fossil fuels, meteorological factors, traffic factors, and mechanical parameters are the primary sources of air pollutants. Due to the many adverse health effects on a large number of people, $PM_{2.5}$ is considered as one of the major air pollutants and closely related to the higher range of Air quality index. In this project, the primary product of satellite remote sensing, Aerosol optical depth (AOD) data is used. The aerosol optical depth value is a good indicator of $PM_{2.5}$ concentration in air. Aerosol optical depth tells us how much direct sunlight gets prevented from reaching the ground by these aerosol particles. From the dataset, AOD data is extracted, and the $PM_{2.5}$ value calculated. Air quality maps are created for the resultant values, and possible health effects in humans are predicted. Thus this work creates awareness among people about the air quality degradation and its health effects. The proposed system also supports environmentalists, the government, and the pollution control board to frame regulations air quality standards based on issues of toxic air exposure and health-related hazards for human welfare.

Topics

Fossil fuels, **Aerosols**, **Remote sensing**, **Air pollution**, **Space instruments**, **Outreach**, **Public and occupational health and safety**

REFERENCES

1. Abdou, W. A. et al Comparison of coincident Multiangle Imaging Spectroradiometer and Moderate Resolution Imaging Spectroradiometer aerosol optical depths over land and ocean scenes containing Aerosol Robotic Network sites. *J. Geophys. Res. Atmos.* 110, D10S07 (2005).
https://doi.org/10.1029/2004JD004693
Google Scholar Crossref

2. Fu D, Xiangao Xia, Jun Wang, Synergy of AERONET, and MODIS AOD products in the estimation of PM 2.5 concentrations in Beijing. *Scientific Report* - 8(1), 10174 (2018).
https://doi.org/10.1038/s41598-018-28535-2
Google Scholar Crossref

3. H. S. Lim, M. Z. MatJafri, K. Abdullah and C. J. Wong Air Pollution Determination Using Remote Sensing Technique DOI:
https://doi.org/10.5772/8319 (2012)
Google Scholar

4. Huang, J. et al Possible influences of Asian dust aerosols on cloud properties and radiative forcing observed from MODIS and CERES. *Geophys. Res. Lett.* 33, L06824 (2006)
Google Scholar

5. Kahn, R. A. et al Satellite-derived aerosol optical depth over dark water from MISR and MODIS: Comparisons with AERONET and implications for climatological studies. *J. Geophys. Res. Atmos.* 112(D18) (2007). https://doi.org/10.1029/2006JD008175
Google Scholar

6. Kaufman, Y. J., Tanré, D. & Boucher, O. A satellite view of aerosols in the climate system. *Nature* 419, 215–223 (2002).
https://doi.org/10.1038/nature01091
Google Scholar Crossref PubMed

7. Levy, R. C. et al Te Collection 6 MODIS aerosol products over land and ocean. *Atmos. Meas. Tech.* 6(11), 2989–3034 (2013). https://doi.org/10.5194/amt-6-2989-2013
Google Scholar Crossref

8. Li, Z. et al Aerosol optical properties and their radiative effects in northern China. *J. Geophys. Res. Atmos.* 112, D22S01 (2007).
Google Scholar

9. Luo, Y., Zheng, X., Zhao, T. & Chen, J. Climatology of aerosol optical depth over China from the recent ten years of MODIS remote sensing data. *Int. J. Climatology.* 34(3), 863–870 (2014).
https://doi.org/10.1002/joc.3728
Google Scholar Crossref

10. Zang, Z., Pan, X., Zhang, L. & Chen, D. Estimating PM 2.5 in Xi'an, using aerosol optical depth AOD: A comparison between the MODIS and MISR retrieval models. *Sci. Total Environ.* 505, 1156–1165 (2015).
https://doi.org/10.1016/j.scitotenv.2014.11.024
Google Scholar Crossref PubMed

Forecasting the outbreak and spread of COVID-19 in India and Tamilnadu using logistic growth and SIR models

Geetha, S. ; **Rajeswari, S.** ; **Gomathi, V.** ; **Latha, V.**

The whole world faces an uncommon situation in its history due to the spread of the novel coronavirus (COVID- 19). First impacted its existence during December 2019 in Wuhan City, Hubei Province, China. However, the spread of the disease is marginally visible and resulting in an epidemic distribution across capital cities of India. As of June 15, 2020, in India, 368705 are the confirmed cases, and 12280 people have deceased their lives. Collecting the statistics of daily infections, deaths and recovery data and predicting epidemic trends of COVID-19 in India has the most significant importance for developing and measuring the impacts of public intervention strategies. Based on India and Tamil Nadu's initial 105 days of COVID-19 statistics of (one of its states), we built the logistic growth model and compared their accuracy with the R2 coefficient measure. Based on the lockdown periods and severe protection measures, a scenario-based analysis of four different SIR models predicts the confirmed cases. This proposed scenario-based analysis is helpful to pre-estimate the maximum infection rate and maximum peak day of infection with the total percentage of the population being infected by the COVID-19 outbreak in India. This analysis suggests that the severe control measures are working well in India, despite the exponential growth of the outbreak situation.

Publication:	AIP Conference Proceedings, Volume 2444, Issue 1, id.020004, 13 pp.
Pub Date:	March 2022
DOI:	10.1063/5.0078248
Bibcode:	2022AIPC.2444b0004G

Fruit quality detection and classification: A survey

Mirra, K. B. ; **Rajakumari, R.**

Fruit quality is the most important factor in protecting humans from health problems. Automatic detection is particularly significant in the food industry and agriculture in that field. It saves time and protects you from health problems. Fruit quality detection and classification is done using various algorithms and image processing techniques. The image processing technique used in this study helps farmers, buyers, and shopkeepers identify fruit quality and classify fruits from a collection of diverse fruits. Several methods were employed by the researchers for the classification and detection of fruits quality. Support vector machine(SVM), k-nearest neighbor(KNN), Deep convolution neural network(DCNN), convolution neural network (CNN) are the algorithms examined for fruit classification and detection. For fruit detection, the CNN algorithm provided the highest accuracy. The aim of this work is to prevent health risks associated with consuming tainted fruit. The CNN algorithm is the most effective at detecting and classifying fruit flaws.

Publication:	AIP Conference Proceedings, Volume 2444, Issue 1, id.040004, 6 pp.
Pub Date:	March 2022
DOI:	10.1063/5.0078329
Bibcode:	2022AIPC.2444d0004M

RESEARCH ARTICLE | MARCH 31 2022

Road segmentation from remote sensing images using fuzzy based convolutional neural network

J. Hepzibah ; S. Kalaiselvi; V. Anitha; V. Gomathi

+ Author & Article Information

AIP Conf. Proc. 2444, 040007 (2022)
https://doi.org/10.1063/5.0078336

Object segmentation of remotely sensed aerial (or very-high resolution, VHS) and satellite (or high- resolution, HR) pictures has been used in a variety of applications, most notably in road extraction, where segmented objects are used as a required layer in geographic databases. Several attempts have been made to extract roads from remote sensing pictures using the convolutional neural network (CNN); nevertheless, the accuracy is still restricted. In this study, we offer an improved CNN system incorporating fuzzy that uses fuzzy logic in the CNN to extract roads from remote sensing pictures. The fuzzy logic is used in our network to enhance the CNN by removing the ambiguities present in the input images, resulting in a greater number of and still more accurate extracted roads. The tests used data from the Bavaria, Aerial KITTI, Vaihingen, and Potsdam data sets. On any type of remote sensing data, our suggested approach proves to be a better object segmentation technique, in most situations.

Topics

Remote sensing, **Artificial intelligence**, **Space instruments**, **Fuzzy logic**

REFERENCES

1. M. Darweesh, S. Al Mansoori, and H. Alahmad, “Simple Roads Extraction Algorithm Based on Edge Detection Using Satellite Images,” 2019 IEEE 4th Int. Conf. Image, Vis. Comput. ICIVC 2019, pp. 578–582, 2019, doi: https://doi.org/10.1109/ICIVC47709.2019.8981118.
Google Scholar Crossref

2. N. S. Kumar, B. Sukanya, B. Mohan, and G. Prathibha, “Extraction of Roads from Satellite Images Based on Edge Detection,” *Int. J. Eng. Dev. Res.*, vol. 5, no. 2, pp. 187–190, 2017.
Google Scholar

3. J. Hormese, “Architectures for Road Classification from Satellite,” *2018 Int. Conf. Inven. Res. Comput. Appl.*, no. Icirca, pp. 354–359, 2018.
Google Scholar

4. H. R. R. Bakhtiari, A. Abdollahi, and H. Rezaeian, “Semi automatic road extraction from digital images,” *Egypt. J. Remote Sens. Sp. Sci.*, vol. 20, no. 1, pp. 117–123, 2017, doi: https://doi.org/10.1016/j.ejrs.2017.03.001.
Google Scholar Crossref

5. J. Hormese and C. Saravanan, “Automated Road Extraction From High Resolution Satellite Images,” *Procedia Technol.*, vol. 24, pp. 1460–1467, 2016, doi: https://doi.org/10.1016/j.protcy.2016.05.180.
Google Scholar Crossref

6. A. Constantin, J. J. Ding, and Y. C. Lee, “Accurate Road Detection from Satellite Images Using Modified U-net,” *2018 IEEE Asia Pacific Conf. Circuits Syst. APCCAS 2018*, pp. 423–426, 2019, doi: https://doi.org/10.1109/APCCAS.2018.8605652.
Google Scholar

7. A. Buslaev, S. Seferbekov, V. Iglovikov, and A. Shvets, “Fully convolutional network for automatic road extraction from satellite imagery,” *IEEE Comput. Soc. Conf. Comput. Vis. Pattern Recognit. Work.*, vol. 2018-June, pp. 197–200, 2018, doi: https://doi.org/10.1109/CVPRW.2018.00035.
Google Scholar Crossref

8. L. Caltagirone, S. Scheidegger, L. Svensson, and M. Wahde, "Fast LIDAR-based road detection using fully convolutional neural networks," *IEEE Intell. Veh. Symp. Proc.*, no. Iv, pp. 1019–1024, 2017, doi: https://doi.org/10.1109/IVS.2017.7995848.
Google Scholar Crossref

9. Y. Wei, K. Zhang, and S. Ji, "Road Network Extraction from Satellite Images Using CNN Based Segmentation and Tracing," *Int. Geosci. Remote Sens. Symp.*, pp. 3923–3926, 2019, doi: https://doi.org/10.1109/IGARSS.2019.8898565.
Google Scholar

10. S. Oehmcke, C. Thrysoe, A. Borgstad, M. A. V. Salles, M. Brandt, and F. Gieseke, "Detecting Hardly Visible Roads in Low-Resolution Satellite Time Series Data," *Proc. - 2019 IEEE Int. Conf. Big Data, Big Data 2019*, pp. 2403–2412, 2019, doi: https://doi.org/10.1109/BigData47090.2019.9006251.
Google Scholar

11. T. Li, M. Comer, and J. Zerubia, "Feature Extraction and Tracking of CNN Segmentations for Improved Road Detection from Satellite Imagery," *Proc. - Int. Conf. Image Process. ICIP*, vol. 2019-Septe, pp. 2641–2645, 2019, doi: https://doi.org/10.1109/ICIP.2019.8803355.
Google Scholar Crossref

12. Y. Nachmany and H. Alemohammad, "Detecting Roads from Satellite Imagery in the Developing World," *2019 IEEE Conf. Comput. Vis. Pattern Recognit.*, no. June, pp. 83–89, 2019.
Google Scholar

13. Z. Zhong, J. Li, W. Cui, and H. Jiang, "Fully convolutional networks for building and road extraction: Preliminary results," *Int. Geosci. Remote Sens. Symp.*, vol. 2016-Novem, pp. 1591–1594, 2016, doi: https://doi.org/10.1109/IGARSS.2016.7729406.
Google Scholar Crossref

14. Q. Shi, X. Liu, and X. Li, "Road Detection from Remote Sensing Images by Generative Adversarial Networks," *IEEE Access*, vol. 6, no. c, pp. 25486–25494, 2017, doi: https://doi.org/10.1109/ACCESS.2017.2773142.
Google Scholar Crossref

15. Z. Hong, D. Ming, K. Zhou, Y. Guo, and T. Lu, “Road extraction from a high spatial resolution remote sensing image based on richer convolutional features,” *IEEE Access*, vol. 6, pp. 46988–47000, 2018, doi: https://doi.org/10.1109/ACCESS.2018.2867210.
Google Scholar Crossref

16. R. Alshehhi and P. R. Marpu, “Hierarchical graph-based segmentation for extracting road networks from high-resolution satellite images,” *ISPRS J. Photogramm. Remote Sens.*, vol. 126, pp. 245–260, 2017, doi: https://doi.org/10.1016/j.isprsjprs.2017.02.008.
Google Scholar Crossref

17. I. Grinias, C. Panagiotakis, and G. Tziritas, “MRF-based segmentation and unsupervised classification for building and road detection in peri-urban areas of high-resolution satellite images,” *ISPRS J. Photogramm. Remote Sens.*, vol. 122, pp. 145–166, 2016, doi: https://doi.org/10.1016/j.isprsjprs.2016.10.010.
Google Scholar Crossref

18. Z. Zhang, Q. Liu, Y. Wang, and S. Member, “Deep Residual Network ***Jii***IMa - D-¥1z***.pdf,” pp. 1–5, 2018.
Google Scholar

19. Z. Miao, W. Shi, P. Gamba, and Z. Li, “An Object-Based Method for Road Network Extraction in VHR Satellite Images,” *IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.*, vol. 8, no. 10, pp. 4853–4862, 2015, doi: https://doi.org/10.1109/JSTARS.2015.2443552.
Google Scholar Crossref

20. R. Kestur, S. Farooq, R. Abdal, E. Mehraj, O. Narasipura, and M. Mudigere, “UFCN: a fully convolutional neural network for road extraction in RGB imagery acquired by remote sensing from an unmanned aerial vehicle,” *J. Appl. Remote Sens.*, vol. 12, no. 01, p. 1, 2018, doi: https://doi.org/10.1117/1.jrs.12.016020.
Google Scholar Crossref

21. C. Henry, S. M. Azimi, and N. Merkle, “Road segmentation in SAR satellite images with deep fully convolutional neural networks,” *IEEE Geosci. Remote Sens. Lett.*, vol. 15, no. 12, pp.

1867–1871, 2018, doi: https://doi.org/10.1109/LGRS.2018.2864342.
Google Scholar Crossref

22. M. Saati and J. Amini, “Road network extraction from high-resolution sar imagery based on the network snake model,” *Photogramm. Eng. Remote Sensing*, vol. 83, no. 3, pp. 207–215, 2017, doi: https://doi.org/10.14358/PERS.83.3.207.
Google Scholar Crossref

23. M. Karaduman, A. Çınar, and H. Eren, “UAV Traffic Patrolling via Road Detection and Tracking in Anonymous Aerial Video Frames,” *J. Intell. Robot. Syst. Theory Appl.*, vol. 95, no. 2, pp. 675–690, 2019, doi: https://doi.org/10.1007/s10846-018-0954-x.
Google Scholar Crossref

This content is only available via PDF.

A comprehensive survey of data collection methods and tools for research novices

Priya, G. Lakshmi ; **Rajeshkumar, S.** ; **Gomathi, A. Sankara** ; **Sindhu, R.**

The World consists of an enormous amount of data in various aspects. Generally, data is receiving from heterogeneous sources like healthcare, the global economy, Education and more. Most of the data are remains unused around the globe. The research world says each data has various critical insights that can be used to the World's welfare through finding valuable insights for human social welfare. Primarily globalization in Education economy, healthcare has provided tremendous opportunities for data collection and data processing. In that way lot of technologies and research, provisions have arrived in the twenty and twenty-first centuries. Though many application tools and technologies available for data collection, our Research article provide a comprehensive study on that to give healthier tools and applications, which are highly helpful for research beginners.

Publication:	AIP Conference Proceedings, Volume 2444, Issue 1, id.040003, 8 pp.
Pub Date:	March 2022
DOI:	10.1063/5.0078971
Bibcode:	2022AIPC.2444d0003P

Intelligent sales prediction using ARIMA techniques

Manikandan, K. N. ; **Saranya, A.** ; **Deetshiha, D. Jothi** ; **Sushmitha, K.** ; **Dharani** ; **Anitha, V.** ; **Kalaiselvi, S.**

ARIMA model is revolutionizing its applications in every sector of life including computer vision, text and speech analysis, gaming, cyber security and has become a foremost contributor in physical world. This work is aimed at developing an intelligent deep learning model that entails incorporation of both decision analysis and future predictions. In the past many machine learning models have influenced the purpose of such sales prediction for business organizations as there evolved a rapid requisite for analyzing colossal volumes of data in bringing out efficient predictive patterns in sales. In this work, we examined the notion of sales data and estimation. The various techniques and measures for sales predictions are described and in accordance with an accurate performance evaluation. Using that, an appropriate predictive model is proposed for the sales trend forecast. The results are capitulated with reference to precision and reliability of proficient approaches acquired for prediction. Considering the customers' intuition, nature of target audience and their purchasing patterns, this deep learning model helps to perk up future sales prediction and marketing overcoming the pits and falls of the conventional approaches.

Publication:	AIP Conference Proceedings, Volume 2444, Issue 1, id.040006, 9 pp.
Pub Date:	March 2022
DOI:	10.1063/5.0078379
Bibcode:	2022AIPC.2444d0006M

Kafka based LSTM model for streaming data prediction

Geetha, S. ; **Kalaivani, V.**

In the current technological world, the data is getting generated abundantly through various sources. The time dependent data generated through sensors is one among them. The most of the time dependent or time series data is streaming in real-time onfixed flow rates and sometimes, it will be on variation. When there is a change or no change in the flow of data, the existing state of the art prediction models provides low accuracy of prediction. Hence, it is proposed to have better accuracy of prediction on the streaming data with LSTM and Kafka Framework. The Kafka-LSTM model performed much better than the other conventional models. The models were evaluated using mean absolute error and root mean square error. The proposed method performs with better accuracy and reduced error rate than the other conventional models.

Publication:	AIP Conference Proceedings, Volume 2444, Issue 1, id.020001, 6 pp.
Pub Date:	March 2022
DOI:	10.1063/5.0078348
Bibcode:	2022AIPC.2444b0001G

RESEARCH ARTICLE | MARCH 31 2022

An MRI based approach for measuring the size of brain tumors

J. Gokul Raja; K. Palraj; V. Kalaivani

+ Author & Article Information

AIP Conf. Proc. 2444, 060001 (2022)
https://doi.org/10.1063/5.0078330

A brain tumor is a gathering of tissue that is requested by a trudging amassing of irregular cells and it is critical to arrange cerebrum tumors from the magnetic resonance imaging (MRI). MRI have a more measure of commotion added to the pictures by the specialist, contraption, and the environment. It is difficult to get accurate result with the noisy images. Rough Set Theory based Bilateral Filtering have been proposed and applied to remove Rician noises and increase signal-to-noise ratio (SNR). The filtering algorithm is edge preserving smoothing and preserve sharp edges. It removes Rician noise which affects intensity of image. Then, the de-noised image can be segmented by using K-means algorithm, in which time complexity is less and it produces tight cluster. Then features are extracted by using Discrete Wavelet Transform (DWT) and the resultant features are classified by the K-nearest neighbor algorithm. KNN is strong even for noisy training data set, time complexity is less and suited for multi model classification. The proposed framework groups the brain tumors to be specific Benign and Malignant. Based on classification, the cancerous brain tumor is detected. Benign is non-cancerous tumor and malignant is cancerous tumor. After classified tumor, tumor size will be calculated based on the count of white pixels in the image. Based on prediction of size of tumor, severity of disease is detected. Size detection is useful for the diagnosis about tumor is critical or not

Artificial intelligence, **Discrete wavelet transform**, **Signal-to-noise ratio**, **Set theory**, **Diseases and conditions**, **Organs**, **Magnetic resonance imaging**, **Neuroanatomy**

REFERENCES

1. Jun Zhang, Mingxia Liu, Le An, Yaozong Gao, Dinggang Shen : Alzheimer Disease Diagnosis using Landmark-based Features from Longitudinal Structural MR Images, *IEEE Journal of Biomedical and Health Informatics*, 2017.
Google Scholar

2. Ameer Mohammed, Majid Zamani, Richard Bayford, and Andreas Demosthenous : Towards On-Demand Deep Brain Stimulation Using Online Parkinson's Disease Prediction Driven by Dynamic Detection, *IEEE Transactions on Neural Systems*, 2017.
Google Scholar

3. Jun Zhang, Yue Gao, Yaozong Gao, Dinggang Shen : Detecting Anatomical Landmarks for Fast Alzheimer's Disease Diagnosis, *IEEE Transactions on Medical Engineering*, 2016.
Google Scholar

4. S Darsana, LizyAbraham :Multistructure brain registration using multimodal neuroimaging for the detection of Alzheimer's disease, *IEEE Intenational Conference on Computer Communication and Network*, 2016.
Google Scholar

5. Jiaqing Qiu, Wenqiang Cheng : Brain Tissues Extraction Based on Improved Brain Extraction Tool Algorithm, *IEEE International conference on Computer and Communicatons*, 2016.
Google Scholar

6. Pham N.H. Tra, Tran T. Mai, Nguyen T. Hai : Image Segmentation for Detection of Benign and Malignant Tumors, IEEE 978-1-5090-1099-8/16, 2016.
Google Scholar

7. Bing Wang, Liyan Du, Jun Zhang, Peng Chen : A Hierarchical Model for Identifying Mild Cognitive Impairment, *International Conference on Natural Computation(ICNC)*, 2015.
Google Scholar

8. Yogita Sharma, Parminder Kaur : Detection and Extraction of Brain Tumor from MRI images using K-means Clustering and Watershed algorithms, *International Journal of Computer Science Trends and Technology*, 2015.
Google Scholar

9. Muthukumar Subramanyam : An Automatic Brain Tumor Detection and Segmentation Scheme for Clinical Brain Images, *International Journal of Emerging Technologies in Computational and Applied Sciences*, 2014.
Google Scholar

10. Saima Farhan, Muhammad Abuzar Fahiem, and Huma Tauseef : An Ensemble-of-Classifiers Based Approach for Early Diagnosis of Alzheimer Disease Classification Using Structural Features of Brain Images, *Computational and Mathematical Methods in Medicine*, 2012.
Google Scholar

11. Rajkumar Goel, Vineet Kumar, Saurabh Srivastava, A. K. Sinha : A Review of Feature Extraction Techniques for Image Analysis, *International Journal of Advanced Research in Computer and Communication Engineering*, 2017.
Google Scholar

12. Sunihua wang, Yin Zhang, TiamminZhan : Pathological Brain Detection by Artificial Intelligence in Magnetic Resonance Imaging Scanning Progress In Electromagnetics Research, Vol. 156, 105–133, 2016.
Google Scholar

13. G.Santhosh Krishnan, K. Sivanarulselvan, P. Betty : Survey on Brain Tumour Detection and Classification using Image Processing, *ELK Asia Pacific Journal of Computer Science and Information Systems*, 2016.
Google Scholar

14. Rohan K. Gajre, Savita A. Lothe, Santosh G. Vishwakarma : Identification of Brain Tumor using Image Processing Technique:

Overviews of Methods, *SSRG International Journal of Computer Science and Engineering (SSRG-IJCSE)* – volume 3 Issue 10, 2016.
Google Scholar

15. AndreiaV.Faria, Kenichi Oshi : An image searching engine and population based analysis to utilize past clinical data for future diagnosis, *ELSEVIER-NeuroImage: Clinical* (2015) 367–376.
Google Scholar

16. D. Selvaraj : MRI Brain Image Segmentation Techniques- A Review, *IJCSE*, 2013.
Google Scholar

17. Neelima Bagri and Punit Kumar Johari : A Comparative Study on Feature Extraction using Texture and Shape for Content Based Image Retrieval, 2015.
Google Scholar

18. B.D. James, S.E. Leugrans, L.E. Hbeert : *Contribution of Alzheimer disease to mortality in United states*, Vol 82, 2014.

19. Dr. PSJ Kumar, Mr. Anirban Saha : Digital Image Processing based Detection of Brain Abnormality for Alzheimer's disease, *International Journal of Engineering and Computer Science*, Volume 3, Issue 12, 2014.
https://doi.org/10.18535/ijecs/v7i12.03
Google Scholar

20. Bing Wang, Liyan Du, Jun Zhang : A Hierarichal model for identifying Mild Cognitive Impairment, ICNC, 2015.

21. Carolyn Asbury : Brain Imaging Technologies and Their Applications in Neuroscience, *The Dana Foundation*, 2011.
Google Scholar

22. Dr. K. Vijayarekha : NPTEL – Electronics & Communication Engineering -FEATURE EXTRACTION – Pattern Recognition Joint Initiative of IITs and IISc.

23. M. Vasantha, Dr.V. Subbiah Bharathi, R. Dhamodharan : Medical Image Feature, Extraction, Selection And Classification, *International Journal of Engineering Science and Technology*

Vol. 2(6), 2010.
Google Scholar

24. Rajesh C. Patil, Dr. A. S. Bhalchandra : Brain Tumour Extraction from MRI Images Using MATLAB, *International Journal of Electronics, Communication & Soft Computing Science and Engineering* ISSN: , Volume 2, Issue 1.

25. Haralick RM, Shanmugam K., Dinstein I. (1973) Textural features for image classification. *IEEE Trans Syst Man Cybern* 3(6):610–621.
Google Scholar

26. Shinde MV et al (2014) Brain tumor identification using MRI images. *Int J Recent Innov Trends ComputCommun* 2(10), ISSN:
Google Scholar

27. Gonzalez and Woods : *Digital Image Processing*, 3rd edition.

Institution Management System: Student Module

Publisher: IEEE

R. Srimathi ; J. Naskath ; B. Anandha Mathavan ; T Archana Pown ; M. Syed Rabiya **All Authors**

Abstract: Student Information Report System provides an interface for maintaining student records, academic details, admission details, etc. The maj or goal of this system is to cr... **View more**

Metadata

Abstract:

Student Information Report System provides an interface for maintaining student records, academic details, admission details, etc. The maj or goal of this system is to create a college portal that can assure an organization's seamless operation. Nowadays, an automated system is demanded in our daily lives, which expanded computers and applications. The educational infrastructures like colleges and other institutions need to operate their manual functions on a computer system. This Institution Management System (IMS) helps institutions like colleges and other small scale institutions to function the online management of their resources. This project deals with part of an institution of information of student details using placement training and events attended details, academic details and other non-academic details. Using this system, any institution can maintain computerized records without any redundancy of student information. That means no one needs to be distracted by the non-relevant information while reaching out for specific data. Its services customize the projects that align with a particular client's objectives, goals and requirements. Student module, one can manage all institution management works for student records like project works, publishing papers/journals moreover, student promotion, student record maintenance. Student information includes admission details, transfer details, promotion details, course details, internship details, project details, higher studies, etc. This system ultimately allows any institution for better management of student information.

Published in: 2022 Fourth International Conference on Cognitive Computing and Information Processing (CCIP)

Date of Conference: 23-24 December 2022

DOI: 10.1109/CCIP57447.2022.10058674

Date Added to IEEE *Xplore*: 31 March 2023

Publisher: IEEE

ISBN Information:

Conference Location: Bengaluru, India

Contents

Nowadays, an automated system is demanded in our daily lives, which expanded computers and applications. The educational infrastructures like colleges and other institutions need to operate their manual functions on a computer system. This Institution Management system helps institutions like colleges and other small scale institutions to function the online management of their resources. This project deals with the direction of the content of an institution using placement training and events attended details, academic details and other non-academic details. The main goal of this system is to automate the current system using computer hardware and comprehensive computer software, fulfilling the requirements so that the vital information can be saved and maintained for a longer period of time with simple data handling and storage. Using this system [22], any institution can maintain computerized records without any redundancy. That means no one needs to be distracted by the non-relevant information while reaching out for specific data. This software supports eliminating the issues, and in some scenarios, it effectively reduces the hardships faced by this existing or manual system. The application [17] is designed to avoid errors during data entry on both the administrator and client side in an effective manner. Also, it shows an error message or warnings while entering invalid data. Whether big or small, every institution has challenges to overcome and manage the information of users' records. This approach is intended to aid in maintenance and guarantee that an institution has the correct level of knowledge and details on future objectives. All the records of the students are maintained [1] by the administrator in the institution once the students get enrolled into that institution. Each student's progress and other academic details are updated for each semester/academic year. Also the day to day activities of a student and the events conducted and organized by the students are recorded. Students' participation and individual certifications are also updated from time to time. Staff information is also updated, maintained on institution side and can be viewed by any person for reference. Course details like when is that course scheduled, timetable, credits and study materials can be updated and maintained for reference of students and other applicants who are all eligible to apply for that course. Students' attendance report can be maintained and the overall attendance percentage can be generated for any courses that the student has taken. Library management is also carried out in this system by performing the basic operations like displaying the availability of books, fine money calculation, book renewal, requesting a book, etc.

More Like This

Evaluation the Efficacy of Computer - Based Training Using Tangible User Interface for Low-Function Children with Autism
2008 Second IEEE International Conference on Digital Game and Intelligent Toy Enhanced Learning
Published: 2008

Are Computer Science and Engineering Graduates Ready for the Software Industry? Experiences from an Industrial Student Training Program
2018 IEEE/ACM 40th International Conference on Software Engineering: Software Engineering Education and Training (ICSE-SEET)
Published: 2018

Show More

Investigation of High Voltage dielectric barrier and their effect on breakdown voltage using Numerical method

Publisher: IEEE

Ramya. J ; A. Mohammed Asif ; L Priya Dharshini ; Wahid.T.S Mohamed Althaf ; K Kumar ; R.V Maheswari **All Authors**

Abstract: In high-voltage equipment, unpressurized air is utilized generally as the principal insulating medium. Unfortunately, the tendency for the system to grow physically big i... **View more**

Metadata

Abstract:
In high-voltage equipment, unpressurized air is utilized generally as the principal insulating medium. Unfortunately, the tendency for the system to grow physically big is a flaw in the air-insulated design. However, using dielectric barriers might increase the breakdown voltage while also making the equipment smaller. Problems in high voltage techniques are mostly field oriented electrostatic problems. Many researchers have employed many numerical methods to solve the Laplace and Poisson equations for the fields among complicated electrode configurations. The breakdown properties of gases are widely studied using the needle-plane gap. The field pattern and distribution of voltage in a needle-plane gap with a vertical orientation were quantitatively analysed in this work using the finite element method (FEM). To determine the discharge phenomenon, the greatest field in the gap was tested for various with and without barriers concerning various locations between electrodes. Additionally, an approximate breakdown voltage simulation model is suggested and supported by the experimental findings.

Published in: 2022 4th International Conference on Circuits, Control, Communication and Computing (I4C)

Date of Conference: 21-23 December 2022 **DOI:** 10.1109/I4C57141.2022.10057682

Date Added to IEEE *Xplore*: 07 March 2023

Publisher: IEEE

ISBN Information:

Conference Location: Bangalore, India

Print on Demand(PoD) ISSN: 2381-4128

Contents

Unpressurized atmosphere (air) is usually employed as the predominant insulation medium in gas-insulated high-voltage (HV) systems. The air-insulated designs are substantial in size, nevertheless. Sulphur-hexafluoride (SF6), contrasted with it is an natural, translucent, also unscented replacement for non-pressurized air that has a better dielectric strength than air. [1]. The size of HV systems may be decreased dramatically because of this quality [1], [2]. However, due to several drawbacks, including environmental problems, complex construction, and challenging maintenance, the use of SF6 and its combinations in HV systems will diminish. Dielectric barriers have been discussed as a potential SF6 substitute in air-insulated systems [3], [4]. When dielectric barriers are employed in high-voltage systems, exterior charges on the barrier can be exploited to their advantage to enhance the disintegrated performance in air-insulated systems. [5], [6].

Investigation of Electric field distribution on a 33kV polymeric insulator under polluted conditions using Finite Element Method

Publisher: IEEE

Jenithra M ; Sudalaimani G ; Raja Sekaran E ; Swathi D ; Kumar K ; Maheswari R. V **All Authors**

Abstract: In areas with high levels of pollution and vandalism, one remedy suggested is to place polymeric insulators on high-voltage transmission networks.. They are widely used a... **View more**

Metadata

Abstract:
In areas with high levels of pollution and vandalism, one remedy suggested is to place polymeric insulators on high-voltage transmission networks.. They are widely used although having some advantages compared to their light weight and ease of handling, which is an appealing aspect, they also come with a wide range of financial and operational issues. The electric field distribution simulation results for medium voltage composite insulators that have been constructed ideally are presented in this work in both polluted and unpolluted environments. The Comsol Multiphysics tool conducted simulations for both standard and optimized insulators. This paper's major goal was to examine the impact of electric field distributions in relation to pollution circumstances. The influence of the pollution layer's conductivity and thickness was examined together with the electric field's dispersion. According to the modelling findings, significantly contaminated ecosystems had higher maximal electrical field stresses than clean or slightly polluted ones did. The outcome of this investigation will further our understanding of how polymeric insulators behave in diverse contaminated settings.

Published in: 2022 4th International Conference on Circuits, Control, Communication and Computing (I4C)

Date of Conference: 21-23 December 2022

DOI: 10.1109/I4C57141.2022.10057935

Date Added to IEEE *Xplore*: 07 March 2023

Publisher: IEEE

ISBN Information:

Conference Location: Bangalore, India

Print on Demand(PoD) ISSN: 2381-4128

Contents

The high voltage distribution system cannot function without insulators. They had a straightforward design and were initially employed as insulators in telegraph lines. Due to how they have developed and how long they will survive in use, insulators are one of the most crucial components before they are placed since electricity has become one of the most fundamental requirements in human existence [1], [2]. Glass, ceramic, and plastic are examples of dielectric materials used to make insulators (polymer). They not only offer electrical hold up by isolating the conductors in the power system transmission and shielding them from towers or poles, but they also provide mechanical support by maintaining the weight in the transmission line [3], [4]. Transmission line conductors from the towers can be protected using a variety of insulating materials. Since it offers superior performance over porcelain and glass, silicon rubber insulators are at the present often utilised. Due to its hydrophobic nature, lightweight, comparatively cheap installation cost, ease of handling, and low maintenance requirements, composite insulators perform well in contaminated environments [5], [6].

Sign in to Continue Reading

2011 1st International Conference on Electric Power Equipment - Switching Technology
Published: 2011

Show More

Recognition of Partial Discharge Signatures using Convolution Neural Network

Publisher: IEEE

R. Harshini ; S.R. Vishnu Rajeesh ; M.D. Kiruthikathangarathi ; V.M. Mohamed Musab ; M. Vasanth ; B. Vigneshwaran **All Authors**

Abstract: This research work mainly focuses on classifying the different types of faults located in high voltage (HV) transformers using a convolution neural network (CNN). The stu... **View more**

Metadata

Abstract:

This research work mainly focuses on classifying the different types of faults located in high voltage (HV) transformers using a convolution neural network (CNN). The study mainly focused on classifying the types of faults in HV transformers using partial discharge (PD) signatures without human-interpreted feature extraction approaches. In this proposed study, two different types of the database with six different types of faults include needle tip fault (S1), free metal particle fault (S2), and floating electrode fault (S3). PD can happen in single or several signatures in reality. A measured PD signal from the laboratory is transformed into 3-Dimensional given fed as input to deep learning approaches. Totally 3000 signatures are considered in this work for recognition. Using the two databases (DB1 and DB2), three different scenarios are considered to strengthen the proposed algorithm. The performance of the CNN is increased by tuning the
identifying the various

Published in: 2022 4t

Date of Conference:

Date Added to IEEE

ISBN Information:

Conference Location: Bangalore, India

Print on Demand(PoD) ISSN: 2381-4128

Contents

PD occurs repeatedly over time and causes permanent damage to the insulation of the dielectric scheme in the power apparatus [1]. To investigate the remaining lifespan of the dielectric system a benchmark system can be introduced for detecting the type of fault with appropriate classification for safety measures. Based on the signature of each fault in the HV transformer, it may categorize and determine the severity of the fault. In the last decades, various researchers have presented various approaches for analyzing and categories the fault based on the PD signature [2]–[5].

Recognition of Power Transformer Fault Based on Dissolved Gas Analysis using Fuzzy Logic Approach

Publisher: IEEE

L. Bharath ; P. Apsara Vahini ; T. Sukumar ; M. Sathish Kumar ; S. Mohana Krishnan ; B. Vigneshwaran **All Authors**

Abstract: The primary goal of the proposed study is to identify the fault type in the high voltage transformer using a fuzzy logic technique with tuned hyperparameters based on pat... **View more**

Metadata

Abstract:
The primary goal of the proposed study is to identify the fault type in the high voltage transformer using a fuzzy logic technique with tuned hyperparameters based on pattern search optimization. Based on the dissolved gas analysis results, fault types in the transformer are identified (DGA). For DGA analysis, this suggested study employs the conventional methodology, the International Electrotechnical Commission ratio (IEC), and the Duval triangle technique. There are transformer faults utilized. The fuzzy logic approach's hyperparameters are optimized using the pattern search optimization technique to improve the performance of the proposed work. In addition, four different fuzzy inference systems are used in this proposed work for further investigation. An intelligent maintenance approach is advised for efficient planning to prevent significant damage to the power transformer.

Published in: 2022 4th International Conference on Circuits, Control, Communication and Computing (I4C)

Date of Conference: 21-23 December 2022

DOI: 10.1109/I4C57141.2022.10057869

Date Added to IEEE *Xplore*: 07 March 2023

Publisher: IEEE

More Like This

▸ **ISBN Information:**

Conference Location: Bangalore, India

Print on Demand(PoD) ISSN: 2381-4128

Contents

Comparing the cost of the power transformer to other parts of the power transmission and distribution system, it is the most expensive. During transformer working operation, in both normal and abnormal conditions, many more losses occur in the transformer. It's like core and copper losses heated to the transformer insulating oil. As a result, the power transformers are highly protected from normal operating conditions. Different diagnostic tests are conducted; the first is the traditional diagnostic method, and the second is non-traditional. Operator testing, winding resistance testing, turns ratio, oil quality, and dissolved gas analysis are examples of traditional procedures. Unconventional methods used to collect data from the diagnostic tests needed to evaluate the transformer's health include internal temperature, frequency response, and partial discharge measurements.

More Like This

Power transformer fault diagnosis using fuzzy logic technique based on dissolved gas analysis and furan analysis

2017 International Conference on Optimization of Electrical and Electronic Equipment (OPTIM) & 2017 Intl Aegean Conference on Electrical Machines and Power Electronics (ACEMP)

Published: 2017

Diagnosis of power transformer incipient faults using Fuzzy Logic-IEC Based Approach

2014 IEEE International Energy Conference (ENERGYCON)

Published: 2014

Show More

A Novel Object Detection Framework using Convolutional Neural Networks (CNN) and RetinaNet

Publisher: IEEE

Archana V ; Kalaiselvi S ; Thamaraiselvi D ; Gomathi V ; Sowmiya R **All Authors**

Abstract: Object detection is a computer vision technique that received high significant attention in recent decades. Object detection algorithms typically employ machine learning ... **View more**

Metadata

Abstract:

Object detection is a computer vision technique that received high significant attention in recent decades. Object detection algorithms typically employ machine learning or deep learning to produce valid results. People can quickly recognize and locate objects of interest in the provided input images or videos. Object detection aims to use a computer to mimic this intelligence. Deep learning techniques have significantly improved the cure for object detection. This research aims to incorporate radical object detection techniques to achieve high accuracy. This research study covers a variety of factors and algorithms used in object detection methods using deep learning techniques detection algorithms, datasets and software hardware requirements used in the detection of objects. Benchmark datasets for object detection were discussed. The discussed method uses CNN with RetinaNet (Residual Networks and Feature Pyramid Networks) was implemented with benchmark dataset COCO. RetinaNet provides low loss and high accuracy (96%) Object Detection has a variety of applications like Autonomous driving, Traffic monitoring and Maintenance, People Counting and Video safety applications.

Published in: 2022 International Conference on Automation, Computing and Renewable Systems (ICACRS)

Date of Conference: 13-15 December 2022

DOI: 10.1109/ICACRS55517.2022.10029062

Date Added to IEEE *Xplore*: 07 February 2023

Publisher: IEEE

ISBN Information:

Conference Location: Pudukkottai, India

Contents

Object detection aims to recognize all sample items from given classes in an image, like people, automobiles, or faces. Just a few things are visible in the image, but there are many alternative positions and scales at which they might occur that must be investigated in some way [1]. Object detection and recognition are essential components of visual recognition with various applications, including recognition of characters and analysis of videos. Detection of objects is detailed in medical, sports, security, video, and other industries. Object detection will become more common due to recent research and rapid advancement in deep learning and computational image interpretation [2].

Fuzzy based Pollution Severity Prediction in Polymer Insulator using Harmonic Analyzer

Publisher: IEEE

B. Sajeena Ponmani ; R. V. Maheswari ; B. Vigneshwaran **All Authors**

Abstract: Comparing the composite polymeric insulator (CPI) to glass and porcelain insulators, additional benefits are identified. Even though it is deemed to be affected by the ta... **View more**

Metadata

Abstract:

Comparing the composite polymeric insulator (CPI) to glass and porcelain insulators, additional benefits are identified. Even though it is deemed to be affected by the taint from the environment. Leakage current is present in almost every high voltage apparatus including insulators, bushings, cables and lines even in clean and polluted conditions. As the pollution level rises, the harmonics caused by the leakage current become more pronounced, which is now the challenge faced in many of the insulator maintenance. This condition on the CPI can be used in this study to assess how contaminated the insulators are above them, which over time can cause breakage, flashover, and even transmission line failure. The odd harmonic component, such as the third, fifth, seventh, and ninth along with the breakdown voltage of the insulator is used as an indication, and the value of the ratio between them is fed to the fuzzy network. This computation model allows the prediction of an accurate pollution level on the insulators.

Published in: 2022 International Conference on Automation, Computing and Renewable Systems (ICACRS)

Date of Conference: 13-15 December 2022 **DOI:** 10.1109/ICACRS55517.2022.10029001

Date Added to IEEE *Xplore*: 07 February 2023 **Publisher:** IEEE

ISBN Information: **Conference Location:** Pudukkottai, India

Contents

In recent research Power system substations, which transport high voltage supply along the transmission line, include those for generation, transmission, sub-transmission, and distribution. The transmission system uses high-voltage insulators, which act as the essential insulation between the conductors and the support[1][13]. These transmission lines pass through a variety of terrain, including deserts, coastal regions, and industrial locations. The effectiveness of outside insulators has a significant impact on how reliable these transmission lines are[2]. Glass, porcelain, and composite polymer materials are used to make the insulators needed for high voltage power transmission. Glass and porcelain insulators were used with dielectric strengths of at least 4–10 KV/mm. Due to some of these recent disadvantages, CPI is now commonly used. It has an outer shell made of silicone rubber or Ethylene Propylene Diene Monomer (EPDM) rubber and a centre rod made of reinforced plastic. CPI are more affordable, lighter, and have superior hydrophobic qualities. This makes them perfect for working in a contaminated environment, however they are not entirely pollution-free[3],[14],[15].

Show More

A Sentimental Analysis of Legal Documents using Deep Learning Approach

Publisher: IEEE

Department of Computer Science and Engineering, National Engineering College, Tuticorin, Tamil Nadu, India

Shunmuga Lakshmi Priya. K ; Thamarai Selvi. D ; Kalaiselvi. S ; Gomathi. V **All Authors** •••

Abstract: Automatically identifying logical patterns from complicated legal documents can improve the efficiency of legal systems by enhancing case processing time and case clearan... **View more**

Metadata

Abstract:

Automatically identifying logical patterns from complicated legal documents can improve the efficiency of legal systems by enhancing case processing time and case clearance rate. The most important job in accomplishing this is automatically categorizing sentences in legal documents depending on their substance. This research proposes a deep learning model for breaking down the legal text and generating judgments based on sentiment analysis. Sentiment analysis is the practice of analyzing natural language to identify emotions associated with a text. Sentiment analysis is commonly used to monitor consumer opinion on social media and brand and campaign monitoring. The automated treatment of text's opinions, sentiments, and subjectivity is called SA. Bi-directional Long Short Term (Bi-LSTM), Long Short-Term Memory (LSTM) and Gated Recurrent Unit (GRU) are three of the most prominent deep learning approaches used in the Sentimental analysis legal document. These techniques are used in aggregate or stand-alone based on sentimental analysis of legal documents. This working point of interest is the diverse flavors of the deep mastering methods used in special sentiment analysis programs at the sentence stage and goal level. Moreover, the advantages and downsides of strategies are discussed alongside their overall performance parameters. Basically, the determining patterns from the numerical findings is more difficult in text analytics than it is in text analysis because of the difficulty of human language. In Sentiment analysis, Machines must be programmed to evaluate and comprehend emotions in precisely the same way that even the human brain does. Utilizing this type of method such as LSTM, GRU, Bi-LSTM makes it much easier to identify the output.

Published in: 2022 International Conference on Automation, Computing and Renewable Systems (ICACRS)

Date of Conference: 13-15 December 2022

DOI: 10.1109/ICACRS55517.2022.10029322

Date Added to IEEE *Xplore*: 07 February 2023

Publisher: IEEE

ISBN Information:

Conference Location: Pudukkottai, India

Contents

I. Introduction

The procedure of acquiring and examining people's sentiments is called sentiment analysis and their impressions regarding various topics, products, subjects, and services [1]. The most common text categorization tool is sentiment analysis, which evaluates incoming information and identifies whether the essential viewpoint is favorable or unfavorable. The study of personal writings with sentiment aspects to categorize and tag their sentiment connotation and attitudes is known as text sentiment analysis. It is a crucial application of natural language processing (NLP) [2]. For sentiment analysis, many levels of the range will be used. Text-level sentiment analysis can identify the overall sentiment of a document or paragraph. Sentiment analysis at the sentence level yields data for a single sentence. Sentiment analysis at the sub-sentence level identifies sub-expressions outcomes within the same sentence. The manner in which sentiment (ve/+ve) is expressed in textual information relies on how people think. [3]. Sentiment analysis is necessary because 80% of all data on the world is unstructured and not arranged in a certain way. Most of this is based on text data from sources, including reviews, articles, emails, conversations, social media, polls, documents, Etc. Most of the time, these writings require significant research and effort. The organization can make sense of this massive amount of unstructured text because of the sentiment analysis technology, which automates business processes, reduces the time needed for human processing, and yields insightful results Effective text categorization as positive, neutral, or negative is necessary for sentiment analysis to reach its full potential [4]. Scalable data sorting, real-time analysis, and uniform standards are advantages of sentiment analysis A legal document is any document submitted in a court, judiciary or administrative tribunal that affects someone's legal rights, such as a trust instrument, mortgage, or contract.. Extended short-term memory networks, or LSTM, are utilized in deep learning. Recurrent neural networks (RNNs) are particularly adept at learning long-term dependencies in sequence prediction issues. Compared to regular RNNs, LSTM networks are made to more accurately store sequential (temporal) inputs and their long-term relationships. In deep learning applications like stock predicting, voice recognition, natural language processing etc., they are frequently employed; For including gate units and memory cells in the neural network design, LSTM addresses the problem of determining how to remember the data over a period of time.

More Like This

Sentiment Analysis of the COVID-19 Epidemic Based on Deep Learning
2023 International Conference on Pattern Recognition, Machine Vision and Intelligent Algorithms (PRMVIA)
Published: 2023

Comparative Analysis of Deep Learning Models for Aspect Level Amharic News Sentiment Analysis
2022 International Conference on Decision Aid Sciences and Applications (DASA)
Published: 2022

Show More

Facial Emotion Recognition using Deep Learning Approach

Publisher: IEEE

Sowmiya R ; Sivakamasundari G ; Archana V **All Authors**

Abstract: Human facial emotion recognition pays a variety of applications in society. The basic idea of Facial Emotion Recognition is to map the different facial emotions to a vari... **View more**

Metadata

Abstract:
Human facial emotion recognition pays a variety of applications in society. The basic idea of Facial Emotion Recognition is to map the different facial emotions to a variety of emotional states. Conventional Facial Emotion Recognition consists of two processes: extracting the features and feature selection. Nowadays, in deep learning algorithms, Convolutional Neural Networks are primarily used in Facial Emotion Recognition because of their hidden feature extraction from the images. Usually, the standard Convolutional Neural Network has simple learning algorithms with finite feature extraction layers for extracting information. The drawback of the earlier approach was that they validated only the frontal view of the photos even though the image was obtained from different angles. This research work uses a deep Convolutional Neural Network along with a DenseNet-169 as a backbone network for recognizing facial emotions. The emotion Recognition dataset was used to recognize the emotions with an accuracy of 96%.

Published in: 2022 International Conference on Automation, Computing and Renewable Systems (ICACRS)

Date of Conference: 13-15 December 2022

DOI: 10.1109/ICACRS55517.2022.10029092

Date Added to IEEE *Xplore*: 07 February 2023

Publisher: IEEE

▸ **ISBN Information:**

Conference Location: Pudukkottai, India

Contents

The rapid growth of Computer Vision and artificial intelligence emotion recognition plays an efficient mode in communication and the foundation of mutual understanding, unity, and collaboration among people. Human emotion study in video and pictures has become a hot issue in deep learning and pattern recognition. Human computer interaction will become more efficient, intelligent, fluent, and fast. Computers can perceive, capture, and distinguish human emotions and emotional changes, allowing them to make efficient and thoughtful responses, effectively giving machines "brains." Allow engines to perceive and identify feelings to meet human needs daily. The creation and application of computer networks, software, and systems are expanding rapidly. These systems play a significant part in daily living and greatly simplify people's lives. In the modern era, facial emotion recognition systems are essential for recording human activities, emotions, intentions, etc. The usual techniques are slower and less accurate than the deep learning-based emotion recognition systems. This research aims to create a Convolutional Neural Network along with a DenseNet-169 as a backbone network that can identify the seven different facial emotions. This Model may be applied to medical fields, face unlocking and customer feedback analysis, among others. One of the cutting-edge breakthroughs in computer science, deep learning, is predicted to have a 90% influence over the next four years. Artificial neural networks, a type of machine learning that draws inspiration from the human brain, are used in deep understanding. Convolution is the mathematical operation in the Convolutional Neural Network (CNN) Architecture. The proposed methodology uses the Convolutional Neural Network and DenseNet-169 as the backbone network is trained to classify the different facial emotions. Here Convolutional neural networks, activation functions, ReLU, and feature extraction are employed to enhance the Model's potential for convergence. The simulation study below confirms that the proposed facial emotion recognition method achieves recognition better than the most sophisticated approach.

More Like This

Real-Time Implementation of Face Recognition and Emotion Recognition in a Humanoid Robot Using a Convolutional Neural Network
IEEE Access
Published: 2022

Bimodal System for Facial Emotion Recognition Based on Deep Learning Neural Networks
2022 International Conference Automatics and Informatics (ICAI)
Published: 2022

Show More

Fuzzy Logic Based Efficient Blending of Mineral and Vegetable Oil as Alternate Liquid Insulation

Publisher: IEEE

M. Ganesh Kumar ; R.V. Maheswari ; M. Bakrutheen ; B. Vigneshwaran **All Authors**

Abstract: In the present decade, biodegradability is the most preferable and viable alternative solution for all kind of applications, which is also true for high voltage applicati... **View more**

Metadata

Abstract:
In the present decade, biodegradability is the most preferable and viable alternative solution for all kind of applications, which is also true for high voltage applications. In recent upgrades, researchers can suggest using natural oils for environmental concerns. This paper deals with the idea of blending petroleum based mineral oil (PBMO) and comestible corn oil (CCO) for high voltage liquid insulation. Conventional insulating oil has a high breakdown voltage, low viscosity and pour point, and a high flash and fire point. The main goal of the work is to navigate the blend oil ratio concentration to enhance the performance and improve the dielectric properties of insulating oil. As per standards, in order to verify the suitability of the fundamental oil test, it is taken and analyzed in all proportions. When compared to conventional oil, a blend oil ratio has exhibits the desired performance. Furthermore, the result of the fuzzy logic approach (FLA) is determined to improve the compactness of the research.

Published in: 2022 6th International Conference on Electronics, Communication and Aerospace Technology

Date of Conference: 01-03 December 2022 **DOI:** 10.1109/ICECA55336.2022.10009050

Date Added to IEEE *Xplore*: 16 January 2023 **Publisher:** IEEE

ISBN Information: **Conference Location:** Coimbatore, India

Contents

A transformer is an integral part of power conversion systems. It plays a superior role in high-voltage networks. Around 75% of transformer failures are reported to be caused by increased electric demand, increased power requirements, and inadequate dielectric insulation [1]–[2]. Liquid transformer insulating materials are current challenges, but they have optimistic outcomes and characterize a crucial range of applications like coolant and heat transfer properties. The key factors contributing to mineral transformer oil's success are its affordability, availability, and superior cooling and dielectric properties [3]. Traditionally, conventional mineral oil is mostly used as an electric insulation medium. In the presence of ecosystems, researchers can focus on renewable sources for environmental aspects. Even if the environment is currently receiving considerable attention, when petroleum supplies run out in the future, there may be severe shortages even by the middle of the twenty-first century. Renewable resources are a viable insulating medium solution; similarly, comestible corn oils are less flammable, low cost, and environmentally friendly because they are derived from green systems and sustainable resources [4]–[5]. Many researchers around the world are still investigating the evolution of high-voltage natural esters-based liquid insulation. Breakdown Voltage and viscosity are important factors in insulating oil reliability and efficiency [6]–[8]. Due to their environmental incidents, they have drawbacks for insulation, and this changes their dielectric properties and reduces their shelf life, like their higher viscosity and lower breakdown. Generally, fundamental measurements were performed with respect to the IEC 60156 standard for breakdown voltage, the ASTM D445 standard for viscosity, and the ASTM D92 standard for flash and fire point [8]–[12]. Eventually, the blending of oil technique provides an extended oil lifetime and strengthens the dielectric properties with respect to the mixture concentration; furthermore, it reduces the negative impact on conventional mineral oil. Therefore, this paper is affirmative towards the usage of blended investigations as an alternative to fully petroleum-based mineral oils [13]–[15]. For this research, when compared to the usage of fully mineral oils, blend oils justify better performance and improve life at an optimum level. which are analyzed in the fuzzy logic approach.

More Like This

Dielectric and physicochemical properties of mineral and vegetable oils mixtures
2017 IEEE 19th International Conference on Dielectric Liquids (ICDL)
Published: 2017

Analysis of critical parameters of vegetable oil as an alternate dielectric fluid to mineral oil
2016 10th International Conference on Intelligent Systems and Control (ISCO)
Published: 2016

Show More

Smart Health Care Monitoring and Indoor Occupancy Control System using Arduino

Jassim Mohamed S ; Rahul R ; M. Gengaraj ; Suseel Raja P ; Jegan Raj G ; L. Kalaivani **All Authors**

Abstract: The recent COVID-19 pandemic has necessitated the need to develop effective COVID-19 pandemic control strategies. One of the crucial steps for individual protection is to... **View more**

Metadata

Abstract:
The recent COVID-19 pandemic has necessitated the need to develop effective COVID-19 pandemic control strategies. One of the crucial steps for individual protection is to stop the virus spread by the wearing face masks. The proposed method is developed to monitor the infected people in the crowded public areas like shopping centers, wedding hall, workplace, school or college. The abnormal temperature is detected by using sensor and the obtained signal will then be sent to the Arduino device connected to the controller. In order to stop the spread of COVID 19 viruses, this study intends to design and develop a novel system to automatically limit the room capacity based on temperature. The proposed Atmega328 microcontroller-based body temperature detection and a room capacity measuring device is connected with the android smart phone of the user.

Published in: 2022 6th International Conference on Electronics, Communication and Aerospace Technology

Date of Conference: 01-03 December 2022 **DOI:** 10.1109/ICECA55336.2022.10009584

Date Added to IEEE *Xplore*: 16 January 2023 **Publisher:** IEEE

▸ **ISBN Information:**

Conference Location: Coimbatore, India

Contents

More Like This

A framework of multi-point infrared temperature screening system for COVID-19 pandemic
2021 4th International Symposium on Advanced Electrical and Communication Technologies (ISAECT)
Published: 2021

A Solar Powered Kiosk for Contactless Body Temperature Sensor and Hand Sanitizer Dispenser to Monitor and Control Covid-19 Disease
2021 International Conference on Recent Trends on Electronics, Information, Communication & Technology (RTEICT)
Published: 2021

Show More

Recognition of Power Transformer Defect Identification Based on Dissolved Gas Analysis using Support-Vector Machine Approach

Publisher: IEEE

J. Subalakshmi ; J. Joyslin Janet ; J. Jey Shree Lakshmi ; T. Sukumar ; B. Vigneshwaran **All Authors**

Abstract: The primary purpose of the proposed research is to identify the different types of defects in high voltage transformers using a support vector machine (SVM) technique wit... **View more**

Metadata

Abstract:

The primary purpose of the proposed research is to identify the different types of defects in high voltage transformers using a support vector machine (SVM) technique with tuned hyperparameters employing artificial bee colony (ABC) optimization, particle swarm optimization (PS 0), and genetic algorithms (GA) optimization. Based on the dissolved gas measurement, several fault types in the transformer can be indented to improve the accuracy of defect prediction using the Duval triangle and conventional methods. Performance of the transformer improvement and future defect identification is employed; in the support-vector machines method, the hyperparameters are optimized using three distinct optimization techniques. This proposed study also uses four unique SVM kernel functions for more research. An intelligent maintenance approach is advised for efficient planning to prevent significant damage to the power transformer.

Published in: 2022 6th International Conference on Electronics, Communication and Aerospace Technology

Date of Conference: 01-03 December 2022 **DOI:** 10.1109/ICECA55336.2022.10009258

Date Added to IEEE *Xplore*: 16 January 2023

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

Compared to other parts of the power transmission and distribution system, the power transformer is the costliest, the transformer experiences significantly more losses during operation under typical and unusual conditions. The power transformers are hence well-protected from up to typical operating conditions. The first test is a conventional diagnostic procedure, while the second is a non -conventional one. Practices include operator testing, winding resistance testing, turns ratio tes ting, oil quality testing, and detection of dissolved gases. Unconventional approaches used to get information from the diagnos tic tes ts needed to evaluate the transformer's health include measurements of internal temperature, frequency response, and partial discharge.

Computational Model for Transformer Bushing using Advanced Finite Element Method

G. Deepanraj ; L. Kalaivani **All Authors**

Abstract: Overheating in high-voltage equipment is detrimental to its reliability. Insulated equipment such as bushings plays a predominant role in transformer applications. In bus... **View more**

Metadata

Abstract:
Overheating in high-voltage equipment is detrimental to its reliability. Insulated equipment such as bushings plays a predominant role in transformer applications. In bushing, thermal characteristics are a key factor, and they act significantly in various conditions. During abnormal conditions, it experiences thermal stress due to dielectric loss, fault current, natural disasters, etc. This paper emphasizes the idea of designing the thermal model of porcelain bushing, analysing the temperature site, and then overcoming the negative impact of the HV bushing. Finding the bushing's maximum low temperature location and analyzing solutions to this issue are the papers goals. Stationary and time-dependent effects were studied using the advanced finite element method (AFEM). The proposed heat transfer model is examined at 11 kV, 273A in an 11 kV porcelain bushing. To the suggested thermal model's accuracy or predicted reading as well as the parameter responsible for the temperature increase are the problems of this work.

Published in: 2022 6th International Conference on Electronics, Communication and Aerospace Technology

Date of Conference: 01-03 December 2022 **DOI:** 10.1109/ICECA55336.2022.10009207

Date Added to IEEE *Xplore*: 16 January 2023 **Publisher:** IEEE

ISBN Information: **Conference Location:** Coimbatore, India

Contents

In Recent research, power grid is significant in all over the world. The transformer is one of the most essential parts of the transmission and distribution system. Based on the demand in power system, It is used to step up and step down the AC voltage. Transformer bushing is the insulating material, and it allows conductors to pass through a transformer tank from the outer surface. Transformer performance results from the transformer bushing's performance. Without bushings, high voltage transformers are unthinkable [1], [2]. Pollution, fault current, natural disasters, and other factors all have an impact on the transformer bushing. The most essential factor affecting the transformer bushing's properties is the temperature rise [3], [5], [6]. Temperature rise at the transformer or conductor; an abnormal condition states that if the bushing overheats or is exposed to high temperatures for an extended period of time, it may affect the properties of the transformer bushing [7], [8]. The thermal site of the transformer bushing affected the bushing's performance. The capacity and voltage of the electrical grid would increase along with the heat emission. The operation of transformer bushings makes thermal concerns one of the most important problems [9], [10]. It is presented to predict the transformer bushing temperature distribution of the 11 kV porcelain bushing model. Observing the temperature distribution throughout the whole bushing.

Published: 2017

Show More

An improved Dual Active Bridge Power Converter for EV batteries

Publisher: IEEE

A S Kamaraja ; P Anitha ; K Karthik Kumar ; G Ramesh Pandi **All Authors**

Abstract: The dual active bridges Power converter is indeed a versatile power converter that can be utilized inside a variety of uses. Many studies have been conducted to look at s... **View more**

Metadata

Abstract:
The dual active bridges Power converter is indeed a versatile power converter that can be utilized inside a variety of uses. Many studies have been conducted to look at such a conversion from various perspectives. In this research, an optimum DAB converter's structure is given that provides minimal reactive component while also reducing the weights and sizes of the converters inductors, ensuring the Dc converters step of electric car drive systems. To meet this need while minimizing the converter's reactive element (circulating current or conduction inefficiencies), dual modes of operation were taken into account: an optimum extended phase shift (EPS) modulations and an ideal triangle phase shifting (TrgPS) modulator. A trajectory tracking controllers are used to control the functioning of the DAB conversion in both states. The DAB converter's performance with such an application is ideal while running beneath efficient (TrgPS) modulating technique, according to simulated data reported in the study utilizing MATLAB Simulink. It addresses several other difficulties, including such transitory load oscillation and source voltage disruption impacts, and designed for ease of controlling, in addition to the standard characteristics.

Published in: 2022 3rd International Conference on Smart Electronics and Communication (ICOSEC)

Date of Conference: 20-22 October 2022 **DOI:** 10.1109/ICOSEC54921.2022.9951950

Keywords

Metrics

More Like This

Date Added to IEEE *Xplore*: 22 November 2022 **Publisher:** IEEE

ISBN Information: **Conference Location:** Trichy, India

Contents

There are three primary sorts of electric vehicles [1]. Hybrid electric vehicles (HEVs) are an initial step towards completely EVs since its drivetrains combine an internal combustion engine (ICE) and an electrically powered technology that minimize gasoline consumptions endurance and effectiveness [2]. While always this EV technologies accounts for the largest share of the economy but is now regarded the much more advanced EV system, Hybrid vehicles still consume fuels and oils, and hence cannot be recognized an entirely ecologically sound innovation. Fuel cell electric vehicles (FCEVs), on either hand, were battery autonomous cars that are fueled by a fuel cell that could be paired with just a battery pack or a super - capacitors [3]. Nevertheless, again for time being, this sort of EV has a number of limits and drawbacks; because fuel cells have such a small market share, they are indeed a developing new technology, resulting in greater expenses and numerous distribution challenges [3]. Pure electric vehicles (PEV) are a whole other kind of Electric vehicle, in which the drivetrain is solely supplied by a battery system as the primary fuel. In compared towards the preceding innovations, such form of Electric vehicle is thought to become the most appropriate towards addressing ecological threats and the resource scarcity because that is the most economical car that emits zero gases [4]. As a result, the current discussion would concentrate on PEVs. To develop PEV drivetrains, scientists were focused on three primary disciplines: electric drivetrains, super capacitors, and power converter. A dc / dc converter is used in an electric propulsion system that regulate and monitor the energy flow between the battery system (BS) and the propulsion motors [5]. A dual-stage power converters is used to accomplish this power regulation. To connect the voltage level towards the Dc link voltage, a boost DC-DC power converters was employed firstly. The Dc link voltage would be utilized to operate the power source that is normally an AC machines, via an inverter. An effective system of this power conversion contributes to a prolonged Energy storage lifespan, improved motor performances, optimized Energy storage system and propulsion motor usage, and, lastly, significantly improved drivetrain performance. Model predictive-based system engineering has been used by several academics to develop charging stations [6] –[8]. The researchers of [9], [10] proposed a generic concept again for functional perspective of an electrically powered power system using integrated Energy storage system. DAB converter is indeed a viable architectural for satisfying the criteria of the DC-DC phase conversions of a power electronic converter for electrical vehicles using integrated Energy storage system, according to the study completed [11], [12]. In reality, the DAB features power flow, electrolytic insulation (which ensures optimal protection), and a configurable amplifying ratio to meet the higher Dc link voltage from a significantly reduced supply voltage. As a result, the purpose of this article is to examine how such a conversion works, including its capability and effectiveness in meeting the DC-DC phase conversions criteria of a dc converter devoted to PEV powertrains. The following is how the article is structured: In Section 2, the DAB DC-DC converters is introduced, including its many switching states. Section 3 examines the operation of this converters through randomly picking a trajectory tracking regulator, as well as the various stages involved in designing such a control system that operate the DAB Converter operates and its features. Lastly, Section 4 suggests an ideal operations, layout, and controls of the diode active bridge DC-DC converter to meet lightweight, capacity, effectiveness, and flexibility of controller requirements, making the power converters more suited for Battery EV drivetrains.

Continue Reading

Authors

Figures

References

Keywords

Metrics

More Like This

Novel High Frequency Planner Transformer Linked Soft Switching DC-DC Power Converter with Secondary Side-Phase Shifted PWM Active Rectifying Switches

2005 International Conference on Power Electronics and Drives Systems

Published: 2005

Robust Multiple-Phase Switched-Capacitor DC–DC Power Converter With Digital Interleaving Regulation Scheme

IEEE Transactions on Very Large Scale Integration (VLSI) Systems

Published: 2008

Show More

Fire Fighting Robotic Vehicle using Arduino

Publisher: IEEE

S. Dina ; M. Mahalekshmi ; V. Kokila ; R. JeyaPreetha ; S. Sankarakumar **All Authors**

Abstract: It is a well-known fact that, fire can spread quickly in the presence of flammable materials. There is a significant risk of the destruction of entities and lives. Furthe... **View more**

Metadata

Abstract:
It is a well-known fact that, fire can spread quickly in the presence of flammable materials. There is a significant risk of the destruction of entities and lives. Furthermore, there is a chance that the firefighters, who are exposed to fire will get permanent injuries. Hence, to reduce the impact of fire on firefighters, this research study has developed a fire fighting vehicle, which will automatically extinguish a fire in the event of any firer-elated accident. When the flame sensors detect a fire, a signal will be sent to Arduino. The water pump will be operated by the Arduino's built-in program to pump water. As a result, the proposed design will extinguish a fire without any human intervention.

Published in: 2022 3rd International Conference on Electronics and Sustainable Communication Systems (ICESC)

Date of Conference: 17-19 August 2022

DOI: 10.1109/ICESC54411.2022.9885362

Date Added to IEEE *Xplore*: 19 September 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

A fire accident will result in an extensive damage to both living and non-living things. The major challenge faced after fire accidents is coming back to a normal life. The firefighters also get injuries while saving people from fire and extinguishing a fire. So, many robots are designed to rescue from the fire without involving the workforce. The robots can go to places where humans cannot be able to go. Thus, the best solution for extinguishing a fire is using a firefighting robot. Many robots are given the task of remotely extinguishing flames or tracking the fire scenario. There are numerous robot models. Some examples include flying robots, wheeled robots, legged robots, humanoid robots, and underwater robots. The proposed study has designed the wheeled robot to extinguish the fire.

Secure Cloud-based E-Health System using Advanced Encryption Standard

Publisher: IEEE

Dharangan B ; Praveen J ; Selva Chandru M ; S. Rajagopal ; B. Jegajothi **All Authors**

Abstract: As a result of cloud-based healthcare computing, healthcare has changed dramatically. The scalability of the desired service and the flexibility to scale up or down data ... **View more**

Metadata

Abstract:

As a result of cloud-based healthcare computing, healthcare has changed dramatically. The scalability of the desired service and the flexibility to scale up or down data storage, as well as Artificial Intelligence (AI) and machine learning collaboration, are the main advantages of cloud computing in healthcare. The existing system looked at a variety of research papers to see how intelligent techniques may be employed in health systems, with a particular emphasis on security and privacy issues in modern technologies Despite the numerous advantages of cloud computing for healthcare, Management, technological, security, and legal issues must all be evaluated and addressed. The Advanced Encryption Standard (AES) is one of the most widely used encryption algorithms in cloud computing (AES). While data deduplication is more effective in protecting any type of database from data influence. This study's current system is based on Health Care Systems. A huge number of data bases may be saved and retrieved on a daily basis with this technology. As a result, the issue emerges in the privacy and storage modules. Because the structure of data in the healthcare system has been substantially stored in recent times. In this study, the proposed approach solves the issues of privacy and storage in health-care systems. The easiest solution to avoid privacy issues is to use the Advanced Encryption Standard with data deduplication.

Published in: 2022 3rd International Conference on Electronics and Sustainable Communication Systems (ICESC)

Date of Conference: 17-19 August 2022

DOI: 10.1109/ICESC54411.2022.9885501

Date Added to IEEE *Xplore*: 19 September 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

Cloud storage is the greatest alternative for massive data since it is less expensive than upgrading hardware and reorganizing infrastructure. With the explosion of digital image applications, we need more storage capacity than ever Now, image-based data is becoming increasingly significant in applications such as face and object recognition, requiring more storage than text-based data. Cloud computing for image processing applications minimizes the storage strain on local hardware by outsourcing massive picture databases to the cloud. The cloud may be a good place to store images, but pictures typically contain personal and confidential information. Images uploaded to the cloud must be encrypted to protect sensitive data. The issue is that consumers can't directly change cloud data since it's encrypted. To preserve security, a third party can access the data over a secure gateway. Encrypting images is useful in hospitals when uploading doctor's prescriptions to the cloud [1]-[5].

Published: 2022

Show More

Monitoring RO Plant using Virtual HMI and PLC with Visual Programming Tool

Publisher: IEEE

Bagawathi R ; Sharmie V ; Anuraga J ; Anusuya Devi G ; Jaanu A S N ; Rajamani M P E **All Authors**

Abstract: Human machine interface is a link between the machine and the operator. In other words, HMI – Human machine interface is the point of contact to interact and get the stat... **View more**

Metadata

Abstract:
Human machine interface is a link between the machine and the operator. In other words, HMI – Human machine interface is the point of contact to interact and get the status of the process. HMI is used to display the status of inputs and outputs. The process can be monitored continuously without any intervention. HMI has the ability to receive the data from a programmable logic controller. The communication between the industrial controller and human machine interface can be by RS485 or RS232 communication protocol. In this project, a simulation of reverse osmosis process/plant using Delta HMI and Delta PLC is executed. Reverse osmosis plant contains solenoid valves and pumps. The solenoid valves can be operated by AC voltage or DC voltage. The pumps can be turned on and off using contactors. DOPSoft4.0 and ISPSoft3.15 software's are used to design the components and program.

Published in: 2022 3rd International Conference on Electronics and Sustainable Communication Systems (ICESC)

Date of Conference: 17-19 August 2022

DOI: 10.1109/ICESC54411.2022.9885570

Date Added to IEEE *Xplore*: 19 September 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

More Like This

Contents

Human machine interfaces are electronic devices which has the ability to talk to industrial controllers, field devices and other intelligent electronic devices which are termed as IED's. The HMI panel has an advantage of switching into manual as well as auto depending on the requirement. It is easy to initiate and terminate any process since the interface is programmed and connected with the controller. The main advantage of human machine interface is the capability to communicate to more than one industrial controller. The operators interact with the HMI and the data are encrypted with a username and password based on the nature of the content. Human machine interface can give visual applications and control strategies of the machines with a touch screen facility. Software integration of interface depends on the make of the HMI.[1] Each companies used their own software to design and implement the visualization of user's graphical user interface.

Machine Learning-based Short Term Wind Speed Prediction of Aeroelastic Model

F. Antony Jeffrey Vaz ; M. Willjuice Iruthayarajan All Authors

Abstract: Generally, the performance and motion of wind turbines is dependent on speed prediction. In particular, predicting the wind speed improves the pitch activity, and extreme... **View more**

Metadata

Abstract:
Generally, the performance and motion of wind turbines is dependent on speed prediction. In particular, predicting the wind speed improves the pitch activity, and extreme gusts may become defective before reaching the turbine. To avoid the consequences of the irregularities, appropriate actions must be taken. Wind prediction has two stages: estimation and prediction. An extended Kalman filter is designed to estimate the turbine. This extended Kalman filter is developed by using a three-dimensional non-linear rotor model. Prediction, extrapolation, and machine learning all goes through two different performance stages. The proposed methodology is practically experienced by using the data attained from a hi-fi aeroelastic version.

Published in: 2022 7th International Conference on Communication and Electronics Systems (ICCES)

Date of Conference: 22-24 June 2022

DOI: 10.1109/ICCES54183.2022.9835790

Date Added to IEEE *Xplore*: 29 July 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

Wind speed measurement and estimation depend on the standard or classical controllers [1]. The gain scheduling method is more precisely used in wind speed estimation [2], [3];sometimes, the switching detects the accurate wind speeds. Typically, wind speed is calculated with the help anemometer which is located at the top of the wind turbine but it gives unsatisfactory results every time. Therefore, it is objective to ensure accurate wind speed in the various ecological conditions with maintaining the efficiency within the operating range of the wind turbine.

Design and Implementation of a Solar Energy-Supported Standalone Electric Vehicle Charging Point/Panel using MVO Optimization

Publisher: IEEE

K Karthik Kumar ; M Willjuice Iruthayarajan ; C Akash ; G Jegan Raj **All Authors**

Abstract: Battery-powered car manufacturing and use are already advancing rapidly. This produces zero pollutants, seems to be very efficient, produces little disturbance, and requi... **View more**

Metadata

Abstract:
Battery-powered car manufacturing and use are already advancing rapidly. This produces zero pollutants, seems to be very efficient, produces little disturbance, and requires minimal servicing. The charging points, which are necessary to charge the autonomous car battery packs, nevertheless, place tremendous power requirements just on the power system. Using renewable energy sources like solar technology becomes a solution to overcome power system stress. Furthermore, freestanding charging points are beneficial to the electric grid. Nonetheless, the design and installation among those networks employ a variety of methodologies and maybe somewhat complicated at points. This research presents a novel, straightforward planning and optimization of a photo voltaic-powered standalone charging point/panel. The system is therefore modelled and simulated with the Matlab Simulink environment. In addition, the instrumentation is created that experimentally test the technology. The suggested system's analytical and modelling outcomes are presented to the parametric study. The study demonstrates that for all Photovoltaic irradiance disruptions, the charging time of the EV battery remains perfectly stable. Furthermore, the battery management of an electric battery system adapts flawlessly to collect and balance changes in Photovoltaic panels.

Published in: 2022 7th International Conference on Communication and Electronics Systems (ICCES)

Keywords

Metrics

More Like This

Date of Conference: 22-24 June 2022

Date Added to IEEE *Xplore*: 29 July 2022

ISBN Information:

DOI: 10.1109/ICCES54183.2022.9835900

Publisher: IEEE

Conference Location: Coimbatore, India

Contents

1. Introduction

Regional populations have difficulties due to a lack of accessibility to coal and oil. A viable strategy for reducing reliance on non - renewable would be to depend mainly on battery technology. Furthermore, widespread acceptance of Electric Vehicles enhances the environment in distant areas due to EVs' reduction of greenhouse gas emissions. Quite an environmental factor has lately gained prominence concerned about the effects of Greenhouse gases on wellness, crop production, and the accompanying ecological disasters rising temperatures [1]. Minimizing the operating costs associated with customer satisfaction when regulating actual market dynamics through changing the ideally timed state-of-charge of Electric vehicle mobile or local energy storage, power system supply, and deferred loads [2], [3]. Two different solutions for addressing the load distribution and recharging difficulties of plugged-in Vehicles [4]. The functioning of the double charging point as a network model containing various hosts and heterogeneity social welfare and an examination of the link between the charging channel's service dropping rate and Electric vehicle decision [5], [6]. The required to charge system integration methodology of every charging point is used to maximize its revenue and profits by taking into consideration the cost, purchase, and bargain rates in part related towards the response of Vehicle drivers and suitable of minimizing the difference between the varying complexities of getting charged requirements and the restrained produce of charging assets when the relationship between the derived from human operations and the ability to charge method is considered [7], [8]. A 13stage inverter system with a decreased auxiliary circuit is used [9]. The solar-connected bldc motors are used in stable and dynamic circumstances [10]. The improved A-source chopping converters are built and modelled in electric vehicle charging stations [11], [12]. A soft-switching boosting design provides high voltage gain for fuel cell and Electric vehicle rechargeable battery applications [13], [14]. For electric car charging stations, high efficiency isolated dc to dc phase-shifted converters is conceived and built [15]. The limitation of power system stress, disturbances and inefficiency can be overcome with the proposed system with MVO optimization which ultimately becomes the research motivation of this study.

Authors

Figures

References

Keywords

Metrics

More Like This

Implementation of Electric Vehicles Charging Station and Battery Management System
2023 2nd International Conference for Innovation in Technology (INOCON)
Published: 2023

Considerations for a reliable telecommunication power system at remote facilities utilizing valve regulated lead-acid battery management system technologies
Proceedings of Intelec 94
Published: 1994

Show More

IEEE Account

- Change Username/Password
- Update Address

Purchase Details

- Payment Options
- Order History
- View Purchased Documents

Profile Information

- Communications Preferences
- Profession and Education
- Technical Interests

Need Help?

- **US & Canada:** +1 800 678 4333
- **Worldwide:** +1 732 981 0060
- Contact & Support

About IEEE *Xplore* | Contact Us | Help | Accessibility | Terms of Use | Nondiscrimination Policy | Sitemap | Privacy & Opting Out of Cookies

A not-for-profit organization, IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity.

Analysis of significant parameters of miscellaneuos insulating fluids with Antioxidants

Publisher: IEEE

Dhanya ; Helan Gethse ; Diana Hyden ; Muthu Selvi ; Samuel Pakianathan All Authors

Abstract: Transformer have long used mineral oil as an insulant. Mineral oils impact on the environment has been well documented throughout the last century. For such a reason an a... **View more**

Metadata

Abstract:

Transformer have long used mineral oil as an insulant. Mineral oils impact on the environment has been well documented throughout the last century. For such a reason an alternative source of mineral oil is used. Antioxidants are the materials which improve the performance of the vegetable oils in power transformers. Biodegradability, and environmentally friendly in nature are two of the advantages of using vegetable oil. In this work, it is used to select and mix natural fatty acids like sunflower seed oil, Rice bran oil and corn oil in various proportions are used as per the IEC standards. By using IECD standards various critical parameters are determined such as breakdown voltage, Flash point, Fire point and Viscosity.

Published in: 2022 IEEE International Conference on Nanoelectronics, Nanophotonics, Nanomaterials, Nanobioscience & Nanotechnology (5NANO)

Date of Conference: 28-29 April 2022

DOI: 10.1109/5NANO53044.2022.9828974

Date Added to IEEE *Xplore*: 18 July 2022

Publisher: IEEE

Keywords

Metrics

More Like This

ISBN Information:

Conference Location: Kottayam, India

Contents

A transformer is a critical component of any electrical system. Transformers use mineral oils as an insulating fluid. When used at very high temperatures, mineral oil performs three primary functions: proper insertion, corona compression, and arcing. Crude petroleum is the primary source of mineral oils. Much research has been done on various protective fluids instead of mineral oils

Authors

Figures

References

Citations

Keywords

Metrics

More Like This

Analysis of critical parameters of vegetable oil as an alternate dielectric fluid to mineral oil
2016 10th International Conference on Intelligent Systems and Control (ISCO)
Published: 2016

A study of electrical characteristics of mineral transformer oils with reduced and increased viscosity
2003 Annual Report Conference on Electrical Insulation and Dielectric Phenomena
Published: 2003

Show More

Efficient Routing in Smart Grid Communication by Secured ABC – ANN Algorithm

Publisher: IEEE

M. Manimegalai ; K. Sebasthiarani **All Authors**

Abstract: Emerging use of Information and Communication technology in traditional grid leads to the introduction to smart grid. In smart grid, two way communications of electricity... **View more**

Metadata

Abstract:

Emerging use of Information and Communication technology in traditional grid leads to the introduction to smart grid. In smart grid, two way communications of electricity and information is possible by the different types of network, HAN (Home Area Network), NAN (Neighborhood Area Network), WAN (Wide Area Network). Data initially collected in smart meter and traversed through these networks and stored in distributor site. The proposed method, concentrates on routing protocol ANN (Artificial Neural Networks) – ABC (Artificial Bee Colony) to provide efficient packet transmission starting from smart meter to HAN, HAN to NAN and NAN to distributor site. The ANN-ABC algorithms provides better learning of neighboring nodes, and make decisions according to the working behavior of node. The proposed method, will avoid unnecessary routing complications like, time delay in failure node, loss of packets etc. additionally the packets will be delivered with secured key generated by NTRU key Management. The algorithm was simulated in NS2 (Network Simulator), performance of routing was evaluated by different parameters like throughput, End to End delay, Packet Delivery Ratio, Packet Loss Ratio.

Published in: 2022 IEEE 7th International conference for Convergence in Technology (I2CT)

Date of Conference: 07-09 April 2022 **DOI:** 10.1109/I2CT54291.2022.9824016

Date Added to IEEE *Xplore*: 18 July 2022

Publisher: IEEE

ISBN Information:

Conference Location: Mumbai, India

Contents

A Critical Review Analysis of the Opportunities and Potential of Implementing Cloud Computing System for Large Scale Ad Hoc Network

Publisher: IEEE

Gowtham M S ; A. Shenbagharaman ; B. Shunmugapriya ; Sateesh Nagavarapu ; Antonyuk Olga All Authors

Abstract: The increase in the usage of various computing and mobile devices has resulted in implementing large scale ad hoc networks as the user demand is on the rise and companies... **View more**

Metadata

Abstract:

The increase in the usage of various computing and mobile devices has resulted in implementing large scale ad hoc networks as the user demand is on the rise and companies' find it difficult to invest more in the IT infrastructure to meet the surging demand. The traditional model of networking enables the mobile devices to face various issues like lower bandwidth, mobility, security and storage et. Hence, in order to meet the overall service requirement and to enhance the overall efficiency of the network, cloud computing was introduced. The implementation of these devices tends to support in every node, it enhances better communication in a better range towards another nodes. There is a critical administration and support devices from everywhere in an effective manner. Hence the new paradigm of implementing cloud computing support the computing and medical devices in the neighbouring network. The ad hoc network supports in covering larger area base and hence cloud computing supports them in enhancing the effectiveness of operations. This study covers in addressing the critical determinants of analysing the overall opportunities and potential in implementing cloud computing for ad hoc networks. The major factors considered are enhancing the processing capabilities using cloud computing, scalability of network and autonomous and independent networking support. These aspects promote enhanced ad hoc networking for enhancing communication between the devices, enable the organisation to spend less on the IT infrastructure

Published in: 2022 2nd International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE)

Date of Conference: 28-29 April 2022

DOI: 10.1109/ICACITE53722.2022.9823732

Date Added to IEEE *Xplore*: 18 July 2022

Publisher: IEEE

ISBN Information:

Conference Location: Greater Noida, India

Contents

The ad hoc network is considered as a self-configuring network which enables in connecting various devices like computers, mobiles through the wireless link. A mobile ad hoc network tends to apply these aspects for enhanced connectivity and communication. The devices in the mobile adhoc network (MANET) are poised to access independently and therefore the it changes its links to other devices. [1]. Each of the device in the network are more focused in moving the traffic to unrelated aspects for its own use and hence could as a router. In the recent decade, mainly dynamic devices like smartphone, PDA, laptops etc are being enhanced with more improved configuration in terms of processing the data and information, storage etc. however the threshold level is more fixed for these devices. [2]. Hence, these devices face major drawback as they are mainly operated through batteries and needs to be replaced.

Show More

Insulator Crack Detection Using Soft Computing Techniques

Publisher: IEEE

Y. Sheeba ; N. B. Prakash **All Authors**

Abstract: The edge extraction technique in image processing was used to identify and classify micro-cracks on the composite insulator material in order to extract the shed's micro-... **View more**

Metadata

Abstract:
The edge extraction technique in image processing was used to identify and classify micro-cracks on the composite insulator material in order to extract the shed's micro-cracks. The composite insulator has a significant impact on the operation and even power lines, so faults in the composite insulator must be identified. From the standpoint of image processing, the proposed approach for this project includes an image of a composite insulator, including micro-cracks. To extract the micro-crack on the insulator, first preprocess the image to extract the insulators after graying and edge-detecting. Image analysis refers to the process of altering the features of an image by executing various adjustments or alterations utilizing various functions. The Sobel operator, the Canny operator, the Prewitt operator, and the Laplace operator are all edge extraction operators that use this concept. Finally, images of composite insulators were extracted using different methodologies and compared, and the images were assessed using composite insulator features.

Published in: 2022 8th International Conference on Advanced Computing and Communication Systems (ICACCS)

Date of Conference: 25-26 March 2022

DOI: 10.1109/ICACCS54159.2022.9785341

Date Added to IEEE *Xplore*: 07 June 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

ISSN Information:

Contents

The insulator is an important factor of a transmission line that is frequently used to support the conductor. Because of their lower weight, composite insulators are commonly used well developed technology and high-quality product, and hydro phobicity is the best. The hydro phobicity is also utilized to ensure that they operate safely. Thresholding is utilized to provide a more precise result while avoiding the disadvantages. The process of extracting useful information from images, such as detecting structures, counting objects, recognizing colour, or measuring object properties, is known as image analysis.

Optimal Cost And Energy Scheduling of Polyphase Energy Management System-Machine Learning Approach

Publisher: IEEE

S. Abarna ; K. Gowsalya ; M. Ravindran ; K. V Brindha ; P. Jesmila Jasmin **All Authors**

Abstract: The energy crisis has paved the way for the usage of a variety of alternative energy sources that have a lower environmental impact. Solar and wind energy are two viable ... **View more**

Metadata

Abstract:

The energy crisis has paved the way for the usage of a variety of alternative energy sources that have a lower environmental impact. Solar and wind energy are two viable alternative energy sources with stochastic behavior in nature. These renewable energy sources can be integrated with a diesel generator to create a poly-phase energy management system that can meet demand while keeping the important continuous load connected to it at a low cost. Due to their intermittent nature, these sources cannot provide a constant output because they are weather and time-dependent. As a result, having appropriate backup diesel generators to provide continuous power output throughout the day is always thought required. The stand-alone or grid-connected mode of operation for the poly-phase energy system with backup is available. Both of these modes necessitate careful selection and sizing of system components in order to meet demand on a continual basis, resulting in lower costs and greater reliability. So, in this paper, an attempt is made to design and develop a Machine Learning-based grid-connected polyphase energy management system that includes a combination of wind turbines and photovoltaic cells, as well as diesel generators, and is characterized by several objectives, including Loss of Power Supply Probability (LPSP) and Annualized Cost of System (ACS).

Published in: 2022 6th International Conference on Intelligent Computing and Control Systems (ICICCS)

Keywords

Metrics

More Like This

Date of Conference: 25-27 May 2022

DOI: 10.1109/ICICCS53718.2022.9788352

Date Added to IEEE *Xplore*: 08 June 2022

Publisher: IEEE

ISBN Information:

Conference Location: Madurai, India

ISSN Information:

Contents

Globally, growing energy consumption has resulted from fast increasing industry and population expansion. Traditional fossil fuel resources, which are decreasing, are unable to supply rising energy demands due to intrinsic restrictions such as limited availability and greenhouse gas emissions. In this setting, rising energy demand has redirected research toward replacing conventional energy sources with more cost-effective and ecologically benign alternatives. [1] Renewable energy sources are those Sustainable Alternative Energy sources that can meet rising demand without causing significant environmental harm. [2] Poly-phase Energy Management Systems are created by combining renewable energy sources with diesel generator backup (PPEMS). These PPEMS can be linked as both an off-grid and a grid-tied system. [3] Various combinations of renewable hybrid energy systems with diesel generator backup exist depending on geography and resource availability to meet load demand at cheap cost.

More Like This

Generation Cost Optimization of an Islanded Microgrid System with Distributed Generators and Renewable Energy Sources
2021 IEEE 2nd International Conference on Smart Technologies for Power, Energy and Control (STPEC)
Published: 2021

Autonomous power supply system based on a diesel generator and renewable energy sources for remote rural areas
2018 19th International Scientific Conference on Electric Power Engineering (EPE)

Published: 2018

Show More

Accelerometer Based Hand Gesture Recognition and Control of Motor Powered Trolley

Publisher: IEEE

M. Rajagopalaswamy ; M. Sivapalanirajan ; D. Vairamuthu ; S. Prince Joshwa ; T. Vigneshkumar ; M. Willjuice Iruthayarajan All Authors

Abstract: The passengers and workers always prefer the wheeled trolley due to its ease of transporting goods. It is still challenging for the old people to manage themselves and th... **View more**

Metadata

Abstract:

The passengers and workers always prefer the wheeled trolley due to its ease of transporting goods. It is still challenging for the old people to manage themselves and the trolley. This paper presents the insight of the hand gesture-based smart control of trolley with speed variation to match the user requirements. There is a lot of scope in this area to improve the smartness of control, but this work gives a complete description of the hardware equipment's design idea and experimental values. It uses an accelerometer (ADXL-335) to sense the hand gesture and sends them to the receiver through a wireless RF transmitter. An L293D driver drives the motors in the receiver with proper motor wiring to ensure the progression of the trolley as per the command received by the RF receiver.

Published in: 2022 10th International Conference on Emerging Trends in Engineering and Technology - Signal and Information Processing (ICETET-SIP-22)

Date of Conference: 29-30 April 2022

DOI: 10.1109/ICETET-SIP-2254415.2022.9791565

Date Added to IEEE *Xplore*: 15 June 2022

Publisher: IEEE

Metrics
More Like This

▸ **ISBN Information:**

▸ **ISSN Information:**

Conference Location: Nagpur, India

Contents

Artificial intelligence is the trending area of research that is applicable for almost all applications where sophistication is required. The tasks automatically controlled by robots, autonomous vehicles, and humanoids are developing faster in the current situation [1]. But human intelligence is unmatched with the current artificial intelligence developments. So human gesture control becomes more popular and realistic to take up tough decision-making. It provides path guidance, collision evasion, and other assistance in making our daily activities easily. It serves the old people, physically abled and injured people who need assistance. It facilitates the security applications for unmanned surveillance, logistics applications in warehouses and excavators, etc.

More Like This

An Ultra-Low-Power Injection Locked Transmitter for Wireless Sensor Networks
IEEE Journal of Solid-State Circuits
Published: 2006

Real-time system for monitoring activity among the elderly using an RF SoC device with triaxial accelerometer data over a wireless sensor network
2014 IEEE MTT-S International Microwave Workshop Series on RF and Wireless Technologies for Biomedical and Healthcare Applications (IMWS-Bio2014)
Published: 2014

Show More

Fuzzy Logic Controlled Solar Integrated Standalone Charging Station for Electric Vehicles Applications

Publisher: IEEE

Nirmal Sintha Abraham J ; Shanmuga Bharathi S ; Shriguruvishnu V ; Mohammed Raziek A ; Nirmal Kumar P ; Prakash N B **All Authors**

Abstract: In the modern era, Electrical vehicles play a significant role in roadways. The major merits of EVs have pollutant-free, highly efficient, eco-friendly, less maintenance ... **View more**

Metadata

Abstract:

In the modern era, Electrical vehicles play a significant role in roadways. The major merits of EVs have pollutant-free, highly efficient, eco-friendly, less maintenance and less noise in nature. Moreover, charging stations are the heart of EVs, and they can be placed in an adequate place for charging. On the other hand, real-time transmission lines have nature's voltage fluctuations and voltage stress. To overcome these hitches, renewable energy-based charging stations were introduced, and they improved the system's efficiency and can be located in remote areas. This paper deals with the Fuzzy Logic Controller (FLC) based Solar integrated charging station to deliver uninterrupted power. The entire system modelling is done with the help of Matlab/Simulink. The investigation results clearly state that the Solar irradiation variations do not affect EVs' charging process. Additionally, the proposed methodology is compared with the traditional PI controller for validating its performance.

Published in: 2022 6th International Conference on Trends in Electronics and Informatics (ICOEI)

Date of Conference: 28-30 April 2022 **DOI:** 10.1109/ICOEI53556.2022.9777124

Metrics

More Like This

Date Added to IEEE *Xplore*: 24 May 2022

Publisher: IEEE

ISBN Information:

Conference Location: Tirunelveli, India

Contents

In the older days, traditional IC engines were used in roadways; they caused more noise and pollutants and required massive maintenance[1]. Therefore, researchers have developed Electric vehicles to overcome the problems mentioned above in the modem era. Initially, the design of the EV was very complex and the major snag was the location of the charging station and the time required for charging the vehicle. On the other hand, DC charging is rapid in speed compared to the other techniques [2], [3]. However, this technique negatively affects the electrical load and utility grid. In addition, more charging station causes instability in the distribution system[4]. An efficient way of making distribution stable is Energy Storage System and it will give good performance with economic benefits [5].

More Like This

A real-time smart charging station for EVs designed for V2G scenario and its coordination with renewable energy sources
2016 IEEE Power and Energy Society General Meeting (PESGM)
Published: 2016

PI, PID and fuzzy logic controlled SSSC connected to a power transmission line, voltage control performance comparison
4th International Conference on Power Engineering, Energy and Electrical Drives
Published: 2013

Show More

IoT based Smart Home with Voice Controlled Appliances using Raspberry Pi

Publisher: IEEE

Nandhini S ; Rubla H ; Petchiammal P ; Sivalakshmi K ; Antony Jeffrey Vaz F ; Venkatasamy B **All Authors**

Abstract: In the modern world, there are several sophisticated systems to complete our basic needs, one of such is the Internet of Things. For physically challenged people and disa... **View more**

Metadata

Abstract:

In the modern world, there are several sophisticated systems to complete our basic needs, one of such is the Internet of Things. For physically challenged people and disabled people needs more care and more new gadgets needed for them. Specially visually challenged people needs and people who rely on others for their activities need more care than others. For controlling home appliances, they need a person to toggle the appliances like fan and light on and off in the home. turn on and turn off the basic electrical appliances like light and fan. In our project “Voice-Controlled Home Appliances using Raspberry Pi” is developed. This project will mostly benefit the elderly and disabled, specifically those who are unable to execute simple tasks without asking help of others. The major goal of this project is to make it simple, and easy to use with and to control the household appliances, even disabled people can also can control the house hold appliances with voice. The goal is to receive human instructions to operate electrical home appliances with the help of Raspberry Pi, make use Wi-Fi as a communication mechanism between our Pi and the Google cloud framework. Raspberry Pi is min computer board is chosen because of its low cost, standalone, higher processing power and scripts can be executed in popular python coding. Raspberry Pi 3B+ is chosen to meet the above criteria. The programing language used for voice processing is Python.

Published in: 2022 6th International Conference on Trends in Electronics and Informatics (ICOEI)

Date of Conference: 28-30 April 2022

DOI: 10.1109/ICOEI53556.2022.9777141

Date Added to IEEE *Xplore*: 24 May 2022

Publisher: IEEE

ISBN Information:

Conference Location: Tirunelveli, India

Contents

I. Introduction

Now a day's, for domestic as well as commercial needs people move towards the smart equipment. Smart Home automation with wireless devices and internet of things is the latest trends. Various types of wireless and internet based controlling techniques are discussed from the literature. In a Bluetooth-based home automation system [1] the proposed work of the author depends on interfacing the electrical appliances with internet of things using an electrical relay. The system uses a node MCU esp8266 which runs a embedded program and connect with node.js server. User of the system can change the state of theelectrical appliances from their remote location. The remote user can able to control the system by communicating with the remote node.js server. The user of the mobile device needs to login into the remote server with valid authentication, before communicating with the home appliances. The authentication is secured by cryptographic SHA algorithm, so only the user can authenticate and access the home appliances. The microcontroller needs to initialize a Wi-Fi communication, the internet assess is very much required and the device and the automation system won't work. This modal needs a device which can be integrated with existing home appliances and can be controlled from anywhere.

A Smart Home Appliances Power Management System for Handicapped, Elder and Blind People
2018 4th International Conference on Computer and Information Sciences (ICCOINS)
Published: 2018

Show More

Design of Earthing Grid using ETAP

Publisher: IEEE

S. Nandhini ; S.Sankara Kumar ; M.Willjuice Iruthayarajan **All Authors**

Abstract: During ground-fault situations, the fault current will flow through the system, in addition to that voltage gradients will be created inside and in the surroundings of su... **View more**

Metadata

Abstract:

During ground-fault situations, the fault current will flow through the system, in addition to that voltage gradients will be created inside and in the surroundings of substation. It is created among the structures and adjacent earth points and also in the ground layer. The necessity forground grid study is to provide safety and well-being of anyone exposed to the potential differences that can exist in a station during a severe fault. In this paper, the ground grid is designed in ETAP using IEEE 80 & 2000/2013 methods. Three grids based on IEEE method are designed, and the results are discussed in this paper. In each method, the grids are designed in an optimized way. The number of conductors and rods used in this design is optimized for grids and cost wise also. Here the ground fault current can modify by the user or from the bus through short circuit analysis also updated. Some of the factors that are considered in a ground-grid study are Fault-current magnitude and duration, Geometry of the grounding system, Soil resistivity, Probability of contact, Body resistance, Standard assumptions on physical conditions of the individual.

Published in: 2022 6th International Conference on Trends in Electronics and Informatics (ICOEI)

Date of Conference: 28-30 April 2022

DOI: 10.1109/ICOEI53556.2022.9777168

Date Added to IEEE *Xplore*: 24 May 2022

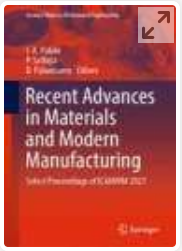
Publisher: IEEE

▸ **ISBN Information:**

Conference Location: Tirunelveli, India

Contents

In designing and construction of an electric substation, one of the most important issues that must be considered is designing of protective system to the earth. Flow of the earth current, cause voltage gradients at ground level which can be different parts of the earth and the reference (ground point).



Recent Advances in Materials and Modern Manufacturing pp 327–336

Prediction and Analysis of Transformer Oil Using Fuzzy Logic Algorithm

M. Rajalakshmi & N. B. Prakash

Conference paper | First Online: 27 May 2022

Part of the Lecture Notes in Mechanical Engineering book series (LNME)

Abstract

Transformer oil takes a vital place in the performance of transformers. It has high electrical insulating property. Mineral oil is mainly used as transformer oil. The mineral oil has some drawbacks. It has few fire points compared to other insulating oils and has the property of biodegradability with moisture. Therefore, we have to move on with other oils for insulating purpose. Coconut oil, palm oil and some

other vegetable oils are used for insulating purpose in recent years. In this paper, the material characteristic and chemical characteristics of vegetable oils like coconut oil, sunflower oil, palm oil, rapeseed oil and their properties were taken into account to choose the suitable alternate for mineral oil. Fuzzy logic is employed for the selection of alternative oil for mineral oil.

Keywords

Insulating oil **Liquid insulator**

Transformer liquid insulation **Fuzzy logic**

Mineral oil **Insulator properties** **Prediction**

References

1. IEEE standard general requirements for liquid-immersed distribution, power, and regulating transformers. In: IEEE Std C57.12.00-2006 (Revision of IEEE Std C57.12.00-1999), vol 28 (2007), pp 1–68

2. IEEE guide for loading mineral-oil-immersed transformers and step-voltage regulators. In: IEEE Std C57.91-2011 (Revision of IEEE Std C57.91-1995), vol 7, March 2012, pp 1–123

3. Madavan R, Balaraman S (2016) Failure analysis of transformer liquid—solid insulation system under selective environmental conditions using Weibull Statistics method. Eng Fail Anal 65:26–38

4. Pollitt AA (1943) Mineral oils for transformers and switchgear. J Inst Electric Eng Part II Power Eng 90(13):15–22

5. Reddy JR, Pandian A, Dhanasekharan R, Reddy CR, Lakshmi BP, Devi BN (2020) Islanding detection of integrated distributed generation with advanced controller. Indonesian J Electric Eng Comput Sci 17(3):1626–1631. https://doi.org/10.11591/ijeecs.v17.i3.pp1626-1631.2020

6. Mehta DM, Kundu P, Chowdhury A, Lakhiani VK, Jhala AS (2016) A review on critical evaluation of natural ester vis-a-vis mineral oil insulating liquid for use in transformers: Part 1. IEEE Trans Dielectr Electr Insul 23(2):873–880

7. Rycroft M (2014) Vegetable oil as insulating fluid for transformers. Energize, 37–40

8. Zaidi AAH, Hussin N, Jamil MKM (2015) Experimental study on vegetable oils properties for power transformer. In: 2015 IEEE conference on energy conversion (CENCON), pp 349–353

9. Rao BL, Kumar PPS (2018) Mitigation of unbalanced voltage sags and swells of power system in utility side by using Sen Transformer. Int J Eng Technol 7:267–273

10. Hosier L, Guushaa A, Westenbrink EW, Rogers C, Vaughan AS, Gswingler S (2011) Aging of biodegradable oils and assessment of their suitability for high voltage applications. IEEE Trans Dielectr Electr Insul 18(3):1621–1627

11. Chaithanya VK, Pandian A, Prakash RBR, Rami Reddy C (2019) Analysis of closed loop control of cascaded three phase grid tied inverter using fuzzy logic controller. Int J Adv Trends Comput Sci Eng 8(4):1123–1127. https://doi.org/10.30534/ijatcse/2019/19842019

12. Arunkumar P, Nandhakumar S, Pandian A (2010) Experimental investigation on mobile robot drive system through resonant. In: 2010 International conference on computer and communication technology, ICCCT-2010 (pp 699–705). https://doi.org/10.1109/ICCCT.2010.5640443

13. Prasad Rao KP, Srinivasa Varma P (2017) Five phase DVR with fuzzy logic controller. J Adv Res Dyn Control Syst 9(Special Issue 18):212–222

14. Vinay Kumar T, Kiran Kumar M (2019) A solar powered SRM drive for EVS using fuzzy controller. Int J Innov Technol Explor Eng

8(10):413–418.
https://doi.org/10.35940/ijitee.I8442.0881019

15. Sudharshan Reddy K, Sai Priyanka A, Dusarlapudi K, Vijay Muni T (2019) Fuzzy logic based iUPQC for grid voltage regulation at critical load bus, Int J Innov Technol Explor Eng 8(5):721–725

16. IEEE standard for general requirements for liquid-immersed, power and regulation transformers. IEEE standard C57.12.00-2015

17. Oommen TV (2002) Vegetable oils for liquid filled transformers. IEEE Electr Insul Mag 18(1):6–11

Author information

Authors and Affiliations

National Engineering College, Kovilpatti, Tamil Nadu, India

M. Rajalakshmi & N. B. Prakash

Editor information

Editors and Affiliations

Department of Mechanical Engineering, Indian Institute of Technology Indore, Indore, Madhya Pradesh, India

I. A. Palani

National Institute of Technology, Tiruchirappalli, India

P. Sathiya

Adhi College of Engineering and Technology, Kanchipuram, India

D. Palanisamy

Rights and permissions

Copyright information

About this paper

Cite this paper

Rajalakshmi, M., Prakash, N.B. (2022). Prediction and Analysis of Transformer Oil Using Fuzzy Logic Algorithm. In: Palani, I.A., Sathiya, P., Palanisamy, D. (eds) Recent Advances in Materials and Modern Manufacturing. Lecture Notes in Mechanical Engineering. Springer, Singapore. https://doi.org/10.1007/978-981-19-0244-4_32

DOI	Published	Publisher Name
https://doi.org/10.1007/978-981-19-0244-4_32	27 May 2022	Springer, Singapore

Print ISBN	Online ISBN	eBook Packages
978-981-19-0243-7	978-981-19-0244-4	Engineering Engineering (R0)

Publish with us

Policies and ethics

Ultrasonic Sensor based Water Management system for Domestic Appliances

Publisher: IEEE

Nandhini M ; Priyatharshini R ; Suganthi R ; Sushmitha J ; M. Ravindran **All Authors**

Abstract: The consuming water disaster in India is achieving alarming proportions. It may very quickly obtain the character of worldwide disaster. Hence, it's far more important to... **View more**

Metadata

Abstract:
The consuming water disaster in India is achieving alarming proportions. It may very quickly obtain the character of worldwide disaster. Hence, it's far more important to keep water. The one trouble may be very not unusual place to us that the manipulate of water stage of overhead tank, as a end result the wastage of water is growing day via way of means of day. This trouble may be managed via way of means of a easy digital circuit is composed with a few reasonably-priced digital components. The operation of water stage controller works upon the truth that water conducts electricity. So water may be used to open or near a circuit. As the water stage rises or falls, exceptional circuits within the controller ship exceptional alerts. These alerts are used to exchange ON or transfer OFF the motor pump as consistent with our requirements. Water stage indicator is a current manner of measuring the water stage the usage of present day technology like sensors, Arduino, the principle purpose of the mission is to calculate the water stage at any immediately of time and to buzz the buzzer if the tank is stuffed completely, we would really like to apply Arduino and ultrasonic sensor to make it possible, this can be beneficial to preserve water and allows us now no longer to waste water.

Published in: 2022 6th International Conference on Trends in Electronics and Informatics (ICOEI)

Date of Conference: 28-30 April 2022

DOI: 10.1109/ICOEI53556.2022.9777179

Date Added to IEEE *Xplore*: 24 May 2022

Publisher: IEEE

ISBN Information:

Conference Location: Tirunelveli, India

Contents

Many companies, farms, hostels, hotels, and offices have requirements for an above water tank, which is normally fed by an electric pump that is turned off. When the tank is full, it is turned on, and when it is empty, it is turned off. As a result, the most common means of determining when the tank is full is to watch for when it overflows. Overfilling of tanks can be costly, relying on the kind of elixir being handled, can consequences in important elixir material detriment ranging in the thousands of naira per week, depending on the scope of the application. These losses can be avoided if the tank is automatically monitored by incorporating a feedback system.

Simulation of Pick and Place Factory Automation Process using Application Programming Interface

Publisher: IEEE

Balu P ; Godwin Ahil ; Kamatchi K ; Durga Selva Ganesh ; Rajamani M P E **All Authors**

Abstract: Industry 4.0 or I4.0 is an advanced technology which can upgrade the facilities in small to large scale industries. It is possible to monitor and access date from any mac... **View more**

Metadata

Abstract:

Industry 4.0 or I4.0 is an advanced technology which can upgrade the facilities in small to large scale industries. It is possible to monitor and access date from any machine or a process from a remote place through internet. The smart industrial sensors used in various process can send the data from a server to the client via modern machine to machine communication protocol like Modbus, Message queuing telemetry transport (MQTT) and Open platform communication - unified architecture (OPC-UA). The controllers installed and commissioned in industries several years before might not able to utilize these communication protocols. It needs an IIoT (Industrial Internet of Things) device to overcome the technical glitch. In this project, a new approach is proposed to implement opc-ua communication protocol to communicate between an industrial controller and an application programming interface.

Published in: 2022 6th International Conference on Trends in Electronics and Informatics (ICOEI)

Date of Conference: 28-30 April 2022

DOI: 10.1109/ICOEI53556.2022.9777202

Date Added to IEEE *Xplore*: 24 May 2022

Publisher: IEEE

Metrics

More Like This

▸ **ISBN Information:**

Conference Location: Tirunelveli, India

Contents

Automation is categorized into several groups based on the application and the area of utilization. In general, the automation is divided into two major subjects. The first one being factory automation deals with machines used in manufacturing industries and the control strategy of it. The second one deals with process automation where the food, beverages are processed. Industrial automation includes both factory automation and process automation. It is the combination of both process control and information technology.[1] The manufacturers and managers had noticed the growth of industrial automation going in an exponential manner every year. The growth of Industrial automation includes the number of users, software update, innovations in electronics and technology and precision in machining process.

More Like This

Organizational Capabilities as the Critical Determinants for a Successful Adoption and Implementation of Fourth Industrial Revolution Technologies in Manufacturing Industries

2022 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)

Published: 2022

Internet of Things (IoT) Protocols, Communication Technologies, and Services in Industry

2021 3rd International Conference on Advances in Computing, Communication Control and Networking (ICAC3N)

Published: 2021

Show More

Smart Attendance Marking System using Face Recognition

Publisher: IEEE

R Azhaguraj ; P Arjun Kumar ; S Kadalarasan ; K Karthick ; G Shunmugalakshmi **All Authors**

Abstract: This paper deals with facial based recognition attendance management. Face recognition is becoming one of the most widely used technologies and important features of comp... **View more**

Metadata

Abstract:

This paper deals with facial based recognition attendance management. Face recognition is becoming one of the most widely used technologies and important features of computer vision. It identifies a person spontaneously from a still snap or reel frame. It is used in monitoring the attendance of students and staff in an educational organisation since it is very important to manage the attendance of the students. There are a few issues springing up whilst reflecting on the consideration of the conventional technique for taking attendance in a magnificence room, which consumes a whole lot of time to take the attendance and additionally it's far tough to maintain. So, the automated attendance control machine is proposed. In this project, the attendance for scholars marked the use of face detection and face reputation through open laptop imaginative and prescient without human interference. A concept of switching from conventional manner of attendance to virtual face reputation and detection strategies with the aid of the use of gadget mastering algorithms has been discussed. The proposed approach routinely detects the scholar whilst he enters withinside the magnificence room and marks the attendance with the aid of spotting him. For this, a Dataset of individualities for discovery, recognition and attendance marking has been created. This concept is completely grounded on preferred motive language, via which the idea of open laptop vision is used. According to the proposed method, the digital digicam is

Metrics

More Like This

constant within the study room, and it'll seize the photograph, then the faces are detected after which it's far identified with the database and in the end the attendance is marked. If the attendance is marked as on leave, the message about the students on leave can be dispatched to their parents. There are many techniques for evaluating faces. Here, haar cascade is used for face detection and LBPH version for face recognition. Moreover, the schooling of person students...

(Show More)

Published in: 2022 6th International Conference on Trends in Electronics and Informatics (ICOEI)

Date of Conference: 28-30 April 2022

DOI: 10.1109/ICOEI53556.2022.9776879

Date Added to IEEE *Xplore*: 24 May 2022

Publisher: IEEE

ISBN Information:

Conference Location: Tirunelveli, India

Contents

More Like This

Face Recognition Based on Fusion of Multiple Masks Local Feature Sets Using Wavelet Transform
2021 6th IEEE International Conference on Recent Advances and Innovations in Engineering (ICRAIE)
Published: 2021

Illumination compensation and normalization for robust face recognition using discrete cosine transform in logarithm domain

IEEE Transactions on Systems, Man, and Cybernetics, Part B (Cybernetics)
Published: 2006

Show More

Chapter

Numerical Investigation on the Flexural Behaviour of CFRP Strengthened Steel Pipes

May 2022
DOI:10.1007/978-981-19-0189-8_48
In book: Recent Advances in Civil Engineering (pp.589-599)

Authors:

Cyril Thomas A
SASTRA University

Mubashir Qayoom

S. Manoranjith

K. Madhan Kumar

Show all 5 authors

References (9)

Abstract

Pipe is the main component of a liquid and gas transport system. Steel is widely used in the pipe manufacturing process. But encounters the common problem of corrosion. Traditional steel structure strengthening processes like welding and bolting are executed under hot-conditions. Heat generated during these processes affects the inherent properties of the steel pipes resulting in catastrophic failures. The main intention of this study is to propose an effective cold-condition strengthening method for steel pipes. A detailed numerical study was executed to understand the behaviour of CFRP strengthened steel pipes using the commercial Finite Element (FE) tool ABAQUS. In total, 100 FE models were developed with two different pipe diameters, thicknesses, and lengths, six stages of corrosion, and three types of strengthening techniques. To understand flexural behaviour, the FE models were analysed under a four-point loading system. From the numerical test results, it was observed that the load carrying capacity of the Type 3 strengthened steel pipes increased by 80 to 90% (Avg.). On the other hand, the load carrying capacity of Type 1 and Type 2 strengthened steel pipes increased by 60 to 70%. Thus the proposed strengthening technique improved the flexural behaviour of the steel pipes under cold-conditions without changing or modifying their original properties.

No full-text available

To read the full-text of this research, you can request a copy directly from the authors.

Request full-text PDF

Citations (0) References (9)

Behaviour of thin-walled castellated beams strengthened using CFRP

Article Full-text available

Apr 2021

Cyril Thomas A · KALIYAMOORTHY Baskar

View Show abstract

Tensile Fracture Behavior of Corroded Pipeline: Part 1—Experimental Characterization

Article Full-text available

Feb 2020

Yuchao Yang · Feng Liu · F. Xi

View Show abstract

Experimental Investigation on Corrosion Effect on Mechanical Properties of Buried Metal Pipes

Article Full-text available

Jan 2016

Yingbo Hou · Deqing Lei · Shujin Li · Chun Qing Li

View Show abstract

Corrosion problems during oil and gas production and its mitigation

Article Full-text available

Aug 2013

Lekan Taofeek Popoola · Alhaji Shehu Grema · Kayode Latinwo · Adebori Saheed Balogun

View Show abstract

Chapter

Effect of Steel–Polyester Fiber Combination on the Fresh and Mechanical Properties of Concrete

May 2022

DOI:10.1007/978-981-19-0189-8_33

In book: Recent Advances in Civil Engineering, Proceedings of the 2nd International Conference on Sustainable Construction Technologies and Advancements in Civil Engineering (ScTACE 2021) (pp.397-409)

Authors:

S. Sathish

Chella Gifta
National Engineering College

K. Sharmila Devi

References (15)

Abstract

Concrete is good in compression, and its poor tensile capacity is the major problem in conventional concrete. Fiber reinforced concrete is an effective measure to improve the tensile characteristics of concrete, and hybrid fiber reinforced concrete is the recent technology in which the fibers are added in combination in the same system. This article mainly explores the strength aspects of M30 grade hybrid fiber reinforced concrete. Compressive strength, split tensile strength, flexural tensile strength, and impact strength tests were conducted to understand the influence of single and combinations of fibers in the concrete. In addition to the strength criteria dry density, fresh properties like slump flow and micro structural characteristics are also examined. HyFRC compressive strength increases in the range of 8–12% when compared to control concrete. Split tensile strength and impact strength results show excellent performance in HyFRC. Among all strength values, the improvement in flexural strength is dominant in hybrid FRC series and this composite is exclusively suitable for the performance-based design of structures and special applications.KeywordsFiber reinforced concreteSteel fiberPolyester fiberCompressive strengthSplit tensile strengthFlexural strength impact strength

Citations (0) References (15)

Mechanical and durability properties of hybrid fiber reinforced foam concrete

Article Full-text available

Mar 2020 · CONSTR BUILD MATER

Bhagyasree Raj · Dhanya Sathyan · K M Mini · Amritha Raj

View Show abstract

Constitutive behavior of hybrid fiber reinforced concrete subject to uniaxial cyclic tension: Experimental study an…

Article

Aug 2021 · CONSTR BUILD MATER

Deng Fangqian · Yin Chi · Lihua Xu · Xuan Hu

View Show abstract

Experimental investigation on the mechanical behavior of hybrid steel-polypropylene fiber reinforced concrete und…

Article

Jul 2021 · CONSTR BUILD MATER

Kuan Meng · Lihua Xu · Yin Chi

View Show abstract

Hybrid steel/glass fiber-reinforced self-consolidating concrete considering packing factor: Mechanical and…

Article

Dec 2020

ScienceDirect

Materials Today: Proceedings

Volume 59, Part 1, 2022, Pages 305-308

Multiple response optimization of WEDM parameters using grey relational method

S. Sudharsan [a], R. Arul [a], C. Veera ajay [b], S. Veerakumar [a]

Show more

https://doi.org/10.1016/j.matpr.2021.11.164

Get rights and content

Abstract

Wire electrical discharge machining is a better choice for machining hard materials with very high accuracy which are difficult to machine. This work consists of optimizing the parameters of WEDM for better surface finish and diameter accuracy of tungsten carbide material. The grey relational analysis technique is used for the optimization of the process parameters. Three input variables of WEDM such as Current, Pulse off time, and Voltage were selected for finishing process. The parameters for the roughing process were current – 6 A, voltage – 8 V, Pulse off time – 3 µs and voltage gap – 55 V. Design of experiments has been developed using Taguchi method. The optimum machining parameters from the grey relational analysis was discharge current – 2 A, voltage – 5 V and pulse off time – 8 µs. The confirmation tests were carried out to validate the results.

Introduction

Wire electrical discharge machining is the un-conventional machining process used to machine hard materials and manufacture complicated profiles. The spark can be developed between the workpiece and wire electrode to remove the material from the workpiece. The wire has been guided between the upper and lower guides. The workpiece and wire electrode has been separated by dielectric fluid, which is continuously fed by a servo pump.

A new method has been developed by installing a high speed spindle to the micro WEDM equipment to manufacture a complex rotary structure. The impact of the process parameters over surface roughness and material removal rate were studied [1]. A new feeding strategy has been developed to manufacture precise cylindrical parts by installing a rotary spindle on EDM machine. This setup can able to manufacture a micro pin electrode of a diameter 220 µm with an error of ± 2 µm and an aspect ratio is more than 60 [2]. A new hybrid technique combined using wire electro-discharge grinding (WEDG) technology and one-pulse electro discharge (OPED), to fabricate microprobes. Micro probe of diameter 40 µm was manufactured and surface roughness was compared with the probe manufactured using EDM [7]. A micro-electrode of diameter 78.19 µm and length of 4.70 mm was fabricated using novel fabricating processes called horizontal moving block electrical discharge grinding [HMBEDG] [4].

The rotary spindle installed in the five-axis CNC WEDM machine to produce micro holes of diameter 0.4 mm on tungsten as work material. From the ANOVA results, spindle speed is the most influent parameter on diameter accuracy [10]. The tungsten carbide micro electrode of diameter 40 µm, 50 µm and 60 µm was successfully manufactured using micro EDM [3]. The tungsten carbide micro rotating structure was manufactured with 30 mm diameter using micro wire electrical discharge machining processes. Process parameters like voltage, discharge capacitance and revolving speed were the most effective parameters on the material removal rate [6]. The miniature spur gear manufacture using electrical discharge machining and optimized the process parameters to get a minimum error in profile and pitch of the spur gear [5].

Machining of 2601 cold worked tool steel has been conducted as per taguchi design of experiments. From the ANOVA results, power and pulse off time having the most effect on the surface roughness and material removal rate [8]. SAE 4140 steel used as work material to study the

effect of process parameters on surface roughness. From the results, an increase pulse duration, open circuit voltage and wire speed results in higher surface roughness value, but vice versa with the dielectric fluid pressure. From the ANOVA results, it was identified that voltage and pulse duration were the most effective parameter on surface roughness [9].

Machining of Inconel X-750 has been done using wire electrical process with the taguchi's design of experiments method. The pulse duration, gap voltage and current have a significant effect on the surface roughness. Optimized the process parameters for a better surface finish and MRR using grey relational analysis [11]. Grey relational analysis used to optimize the process parameters to achieve better surface finish and kerf width. Based on the ANOVA results, pulse on time have the high impact on the surface finish. An increase in pulse on time and current value will increase the surface roughness value [12].

Industrial products like micro shaft, micro probe, ejector pins, and micro electrode are mostly used in bio medical industries [2]. Micro probes have been widely used in variety of industrial application such as scanning electron microscope, surface non-destructive measurement device, Medical detection device and Coordinate measuring machine (CMM). In general, these products have the diameter range from 50 µm to 2 mm with high aspect ratio and curved profiles for few applications. Hence it is difficult to produce these parts with high accuracy in the conventional machining process, so that wire electrical discharge machining process is the best option to fabricate the micro probe with good accuracy and surface finish.

This article reports about the optimum WEDM process parameters for better diameter accuracy and surface finish were identified using the grey relational analysis method. Diameter was measured using an optical micro scope and the surface roughness was measured using both contact and non-contact surface roughness testing equipment.

Section snippets

Work material and model

In choosing a probe material both hardness and toughness should be considered to prevent the tool breakage and bending. The carbide material was used as work material in this process because of its hardness. The micro probe will be braked, while small value of force applied, knowing these facts, tungsten carbide which has a good balance, toughness and can machined by EDM, was selected as a probe material. The raw work material was purchased in the dimension of 220 mm length and 2.2 mm diameter. …

Results

The experiments are conducted based on the Taguchi design of experiments. Diameter of the probe, diameter error and Surface finish values are shown in the Table 2. The optical microscope image of the micro probe which is having the diameter 0.502 mm is shown in Fig. 3.

The optimization of the process parameters of the Wire Electric Discharge Machining process using GRA. Responses such as Surface roughness and Diameter accuracy were selected to analyze the effect of the machining parameters.…

Conclusion

Experimentation was conducted based on the design of experiments. The roughness of the micro probe was measured using roughness tester in both stem and probe. The diameter of the micro probe was measured using an optical microscope. The paper described the effect of various process parameters on the response parameter. The experimentation is summarized as under.

- The diameter accuracy achieved in the experimentation is 2 µm and surface roughness measured as 0.3435 µm…
- The optimum values for…

…

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.…

Special issue articles Recommended articles

References (12)

W. Yukui *et al.*
Complex rotary structures machined by micro-WEDM
Conf. Electro Phys. Chem. Mach. (ISEM XVIII) (2016)

D Sheu
Multi-spherical probe machining by EDM Combining WEDG technology with one-pulse electro-discharge
J. Mater. Process. Technol. (2004)

Y. Zhu, T. Liang, L. Gu, W. Zhao. Machining of Micro Rotational Parts with Wire EDM Machine. 44th Proceedings of the...

M.P. Jahan, M. Rahman, Y.S. Wong, L. Fuhua. On-machine fabrication of high-aspect-ratio micro-electrodes and...

M. Hourmand, A.D. Sarhan, N.D. Yusof. Proposing new fabrication and measurement techniques of micro-electrodes with...

K. Gupta *et al.*
Analysis and optimization of micro-geometry of miniature spur gears manufactured by wire electric discharge machining
Precision Eng. (2014)

There are more references available in the full text version of this article.

Cited by (2)

Wire Electrical Discharge Machining of AISI304 and AISI316 Alloys: A Comparative Assessment of Machining Responses, Empirical Modeling and Multi-Objective Optimization ↗
2023, Journal of Manufacturing and Materials Processing

Multi-objective Optimization of Non-circular Gear Through Orthogonal Array and Fuzzy Comprehensive Evaluation Method in WEDM ↗
2023, Arabian Journal for Science and Engineering

View full text

ScienceDirect

Materials Today: Proceedings

Volume 66, Part 3, 2022, Pages 1168-1174

Investigation on thermal energy aware routing in integrated network for efficient energy storage

S. Syed Jamaesha [a], M.S. Gowtham [a], S. Gopinath [a], A. Shenbagharaman [b], K. Vinoth Kumar [c]

Show more

https://doi.org/10.1016/j.matpr.2022.04.980

Abstract

Mobile Ad hoc Network is one of most efficient and emergency networks where we can apply it for both commercial and domestic applications. It consists of mobile nodes where it transmits the packets without any administrator. Due to mobility, paths may be broken and attackers in the network may discover the unreliable routes to misroute the packets. In this research, a Dynamic Efficient Energy Load based Multi-hop Protocol (DEELMHP) is introduced for reliable path selection. In first phase, cluster region is formed and reliable node selection is done. In second phase, reliable routes are obtained based on packet delivery rate and path reliability cost metric. In third phase, both localization and data transmission phase was implemented to locate efficient node for packet transmission which is nearer to the destination node. The proposed protocol is evaluated and outperforms with parameters like packet delivery rate (25–86 pkts/sec), end to end delay (5.9–11.9 msec), throughput (58–21 pkts) and packet loss rate (4–21 pkts/sec).

Introduction

Remote specially appointed organizations don't need any pre-established network framework. They are more appropriate for arrangement in regions where a proper spine network framework is firm as well as financially nonviable. Mobile Ad hoc Networks (MANETs) have assortment of uses, for example, crisis correspondence administrations, military correspondence, furthermore ecological observing. Nonetheless, they endure from many difficulties like capricious versatility, confined battery power, restricted data transfer capacity, multichip directing, furthermore security. Endeavours are being made to address the abovementioned issues. As hubs in MANETs are battery worked, energy productivity is significant plan rules for the life span of the network. On the off chance that a hub runs out of battery, its capacity to course the network traffic gets impacted which thus unfavourably influences the organization lifetime. Network lifetime of MANETs can be upgraded by either expanding the battery force of hubs or on the other hand limiting the absolute power utilization in the organization. However an extensive headway has been made in the battery advancements lately, it is exceptional with the headway made in semiconductor innovation yet. This distinction has made a hole between how much energy expected to work in a remote climate and the battery limit that controlled the hubs. Subsequently, it requires the prerequisite of force preservation strategies to upgrade the organization lifetime. Such procedures can be applied at various layers of convention stack. Portable Ad Hoc Network (MANET) is an assortment of at least two remote gadget/node(s) that can powerfully structure an organization to trade data without utilizing any current fixed foundation [1]. All hubs in such a network go about as a switch or have and the availability between them might differ with time because of consideration and rejection of the hubs. MANETs have unmistakable benefits over conventional organizations as they can without much of a stretch be set up and destroyed (see Fig. 1).

A bunch based steering in MANET is proposed here to get a superior organization lifetime in the organization. In request to acquire bunches of the hubs, the maximum pile bunching is involved by appointing need for each of the hubs. Such need is characterized as far as the measurements like normal power transmission, portability factor. Utilizing this need, a CH is chosen after progressive cycles. Edge esteem as far as the quantity of common hubs under such CH is characterized with the end goal that pointless appointment of a hub as CH would not

prompt wastage of energy in the organization. Presently, a steering convention is concocted to choose the most ideal energy effective ways bypassing join breakages for information conveyance. The leftover energy for every one of the hubs is acquired from both of the introductory and consumed energy of the hub relying upon the bundle size. This measure of leftover energy is contrasted and a limit an incentive for getting an productive directing way. The trial results show the viability of the proposed plot when contrasted with the existing directing conventions as far as a few execution measurements (see Table 1).

Section snippets

Previous methods

Devulapalli et al. [1] focused on energy efficiency of ad hoc networks through multi-hop protocols. Here both clustering concept and location routing algorithms were used. If any request was made by source or sink node due to network overloading, clusters were formed and cluster heads were also nominated. Various metrics like signal to noise ratio, distance and mobility of nodes were used for electing cluster head. But due to lack of node location identification, energy efficiency is not…

Dynamic efficient energy load based multi-hop protocol

In this phase, reliable paths are selected once the cluster region is formed. Cluster head selects the reliable path for forwarding the data packets. Localization model is illustrated to elect the node with high stability and locate nearer to sink node. Data transmission is begun by CH and forwarded to destination node via neighbour nodes.…

Results and discussions

In this section, Network Simulator (NS2) simulation tool is used for analysing the performance of proposed protocols and existing schemes. It is an user friendly tool where C++ is used as an back end language and tool command language is an front end language. The following parameters were used for analysis of proposed scheme. In the proposed approach, the courses are acquired by considering *Res* of the hubs. In the event that the hubs energy level is more noteworthy than the limit esteem and…

Conclusion and future work

Mobile ad hoc network is an indivisible part of wireless networks where the nodes are connected without any access point. Due to ad hoc nature, node may go in or out of the zone. It leads to more energy consumption of node and network lifetime may get reduced. Meanwhile, the selection of reliable path is also an important consideration to maximize energy of node. In existing schemes, it is observed that implementation of path selection and energy model was mostly failure due to vulnerability of …

CRediT authorship contribution statement

S. Syed Jamaesha: Conceptualization. **M.S. Gowtham:** Methodology. **S. Gopinath:** Draft writing, Software. **A. Shenbagharaman:** Validation. **K. Vinoth Kumar:** Investigation, Supervision.…

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.…

Special issue articles Recommended articles

References (16)

P.K. Devulapalli *et al.*
Energy efficient multi-hop cooperative transmission protocol for large scale mobile ad hoc networks
Wireless Pers. Commun. (2021)

N.K. Ray *et al.*

A hybrid energy efficient protocol for mobile ad hoc networks
J. Comput. Netw. Commun. (2016)

V. Alappatt *et al.*
Trust-based energy efficient secure multipath routing in MANET Using LF-SSO and SH2E
Int. J. Comput. Netw. Appl. (IJCNA) (2021)

Imran Memon, Mohammad Kamrul Hasan, Riaz Ahmed Shaikh, Jamel Nebhen, Khairul Azmi Abu Bakar, Eklas Hossain, Muhammad...

N.D. Alotaibi *et al.*
Enhancing MANET by balanced and energy efficient multipath routing with robust transmission mechanism with using FF-AOMDV
Commun. Network (2010)

S. Rajeswari, Y. Venkataramani, An adaptive energy efficient and reliable gossip routing protocol for mobile adhoc...

Ashraf Al Sharah, Mohammad Alhaj, Firas Al Naimat, Trade-off between energy consumption and transmission rate in mobile...

N.C. Sachithanantham, V. Jaiganesh., Enhanced energy efficient routing protocol (EEE-RP) to forward the data packets...
There are more references available in the full text version of this article.

Cited by (0)

View full text

Support Vector Machine based Recognition of cavity size and location in High Voltage Cable

Publisher: IEEE

R. Rajesh ; S. Sujith ; B. Vigneshwaran ; S. Vishwanathan ; J. Rajeshkannan ; R. V. Maheswari **All Authors**

Abstract: In electrical analysis, the electric field and potential distributions are used to examine, whether the system working properly or not. By using this analysis also identi... **View more**

Metadata

Abstract:
In electrical analysis, the electric field and potential distributions are used to examine, whether the system working properly or not. By using this analysis also identifies major defects that exist in the system. The electric field and potential have non-uniform distribution when a fault occurs at any part of the system like insulation failure, temperature rise, etc. Then artificial cavities are created in the insulation of the cable at various locations with different sizes for performing the electrical analysis using the Finite Element Method (FEM). These investigations are used to examine the impact of the cavity's dimension and its location on the electrical properties of the cable. In this analysis, various, features are extracted from the electrical field and potential distribution. Extracted features from the plot are offered as input datasets to Support Vector Machine (SVM) for classifying the cavity position and the cavity size can be predicted.

Published in: 2022 First International Conference on Electrical, Electronics, Information and Communication

Metrics

More Like This

Technologies (ICEEICT)

Date of Conference: 16-18 February 2022

DOI: 10.1109/ICEEICT53079.2022.9768574

Date Added to IEEE *Xplore*: 10 May 2022

Publisher: IEEE

ISBN Information:

Conference Location: Trichy, India

Contents

More Like This

A review in feature extraction approach in question classification using Support Vector Machine
2014 IEEE International Conference on Control System, Computing and Engineering (ICCSCE 2014)
Published: 2014

Application of interdigital capacitive sensors for detecting power cable insulation damage
2015 IEEE International Conference on Mechatronics and Automation (ICMA)
Published: 2015

Show More

Provable data possession based Multi-Cloud Storage Security with Auditing

Publisher: IEEE

Chamaeshika ; Vasanthi ; Jerart Julus **All Authors**

Abstract: The data are stored as multiple copies on different cloud servers for improving the constancy and availability as the data are being outsourced. For proving the integrity... **View more**

Metadata

Abstract:
The data are stored as multiple copies on different cloud servers for improving the constancy and availability as the data are being outsourced. For proving the integrity of the data of multiple copies Provable Data Possession (PDP) protocol is used. Beforehand all of the PDP protocol will be storing copies in single cloud storage server. Public key infrastructure was depended by many PDP protocols which lacks security and leads to vulnerabilities. For storing various copies on multiple different cloud server identity based provable data possession has been used. By using the homomorphic tags data are stored in multiple cloud and its integrity will be simultaneously checked. Computation Diffie-Hellman hard problem was base for our scheme. Our scheme has been the premier for the provable data possession of multifold copies on multiple various cloud. The given system model, security model was given and this experimental research proved that our PDP scheme is applicable as well as practical.

Published in: 2022 International Conference on Smart Technologies and Systems for Next Generation Computing (ICSTSN)

Metrics

More Like This

Date of Conference: 25-26 March 2022

DOI: 10.1109/ICSTSN53084.2022.9761315

Date Added to IEEE *Xplore*: 25 April 2022

Publisher: IEEE

ISBN Information:

Conference Location: Villupuram, India

Contents

In this new era, cloud computing has gathered lots of attention and been a new computation mode. Rapidly developing IT industries such as Oracle, Microsoft Azure, AWS etc. They made a change by creating cloud computing server for themselves and for the entire world. The cost of storing data locally is high when compared to the data being stored in cloud. The payment for the rent of the service will be paid afterwards. Before they have to buy IT infrastructure and maintain it which is quite expensive. Since, it has become new tech for storing information in the cloud.

More Like This

Security Analysis of Server-Aided Public Key Generation Protocols on Low-Power Devices for Ad-Hoc Networks
2008 ISECS International Colloquium on Computing, Communication, Control, and Management
Published: 2008

Development of servers in cloud computing to solve issues related to security and backup
2011 IEEE International Conference on Cloud Computing and Intelligence Systems
Published: 2011

Show More

ScienceDirect

Materials Today: Proceedings

Volume 66, Part 3, 2022, Pages 702-706

Examination of microstructure properties of AISI 316L stainless steel fabricated by wire arc additive manufacturing

V. Vinoth [a], S. Sathiyamurthy [a], U. Natarajan [b], D. Venkatkumar [c], J. Prabhakaran [d], K. Sanjeevi Prakash [e]

Show more

https://doi.org/10.1016/j.matpr.2022.04.011

Get rights and content

Abstract

Wire Arc Additive Manufacturing (WAAM) is a fusion manufacturing or Wire-feed additive manufacturing for creating components by layer-by-layer technique. WAAM has been a viable replacement to traditional machining because of its ecological protection, high deposition rate, minimizes the wastage, and competitive pricing. WAAM technique is used to manufacture multipart designed products.316 L stainless steel plate was fabricated in this investigation using ER 316 L consumable wires and a welding robot system. Current, Voltage, welding speed, gas flow rate, and shielding gas were used as experimental factors. Micro wire cut electric discharge machining was used to remove the base plate and side edges, and the processed plate surface was polished with help of vertical milling machine. To check the microstructure behaviors like Scanning electron microscope, Macro test and Surface roughness test was performed. The process of additive manufacture of 316L stainless steel is found to be practical using this experimental work.

Introduction

WAAM Technique is one unique since materials are feed to make a product by automation and machine learning methods to keep materials waste to a bare minimum and reducing time to market, additive manufacturing promises to lower component costs [1]. Frazier et al. [2] In ASTM Standard it is described in contrast to subtractive manufacturing techniques, additive manufacturing involves mixing materials to create objects using 3D model data, which is typically layered on. Ding et al. [3] Due to its rapid deposition rate, the usage of whether Gas Metal Arc Welding or Gas Tungsten Arc Welding has piqued the concentration of the technical community in recent days. Low capital investment is a big benefit of the WAAM phase. The WAAM components system may be built using open-source apparatus from a variety of providers in the established welding industries. The WAAM method uses metallic wire as the feed material and an arc as the heat source. In comparison to laser and electron beam wire feed AM's low energy efficiency, WAAM offers a greater energy performance of up to 90% [4]. Bharath Kumar et al. [5] studied the wire feed velocity is the most essential of entirely the input factors for weld bead distance, weld velocity, and voltage flow rate. By selecting and optimizing the parameters, a surface's waviness, porosity, weld cracks, and weld bead discontinuity can be decreased.

Duraisamy et al. [6] it was identified that the WAAM plate formed 120×210×4mm in ER 347 Wire material the structural and microstructure characteristics of the deposited plate were examined. Wanwan et al. [7] in his research it is stated that Due to the obvious layer-wise deposition method's directivity, WAAM models are exceedingly anisotropic in terms of tensile strength and microstructure. In situ rollings combined with WAAM could aid in the reduction of residual stress in WAAM components. Xiong et al. [8] in their study In WAAM, surface roughness was quantitatively measured by optical measurement, a non-invasive process, which can provide adequate details. Xiong et al. [9] the rise in surface roughness is correlated with increasing the wire feed speed. In general, increasing travel speed will increase the consistency of the surface. A lower Wire feed speed combined with a lower Travel speed can improve the surface quality. Sudhakar et al. [10] 316L stainless steel is well-known for its use as a biomaterial in the production of a variety of medical equipment. One of the experiments of 316L Stainless steel SLM process stands reducing (if not entirely eliminating) residual porous and the poor surface equality. In these characteristics

were critical, especially in biomedical applications that need excellent dynamic and static qualities, as well as ductility and corrosion resistance. The main goal of this research is to see how different SLM process parameters effect mechanical characteristics, microstructure, fracture, and other factors. Vinoth et al. [11] at the optimum welding current, welding speed, and gas flow rate, the input parameters were analysed to achieve desirable mechanical characteristics such as tensile strength, impact strength, and corrosion rate. Ravikumar et al. [12] Type 316L is a low-carbon version of Grade 316 that prevents dangerous carbides from forming during welding. A systematic review of modern technical growths in the WAAM process has been published, with attention on mechanical behaviors, process defects, and microstructure post-process action. Integrating material properties with the performance characteristics of various WAAM techniques results in a quality-based approach for creating high & low - quality components [13]. Ashley M. Roach et al. [14] reported as the micro structure and complex material strengths of the 316L alloy used in this investigation, as measured by micro hardness, did not change considerably as a function of random sample. Johnnie et al. [15] reported that PAW, MIG, and TIG are the most common heat sources used by WAAM. Because the welding torch employs a continuous wire spool, MIG is faster and more accurate than TIG and PAW. WAAM is becoming more popular as an AM option. Numerous research has found that WAAM may significantly reduce costs and enhance product superiority in industrial areas, particularly in the aerospace, railways and automotive industries. V.Dhinakaran et al. [16] In contrast to conventionally manufactured alloys, the Ti alloy has stronger mechanical properties. Thermo-mechanical engineering, Materials science, and process preparation for metal parts are all part of WAAM's interdisciplinary research and development. For all, or even most, cases, the current subtractive development method should not be replaced with WAAM. Instead, to minimize material consumption and financial costs, the two should balance each other. Duraisamy et al. [17] The WAAM-treated 347 has a completely heterogeneous microstructure, with different grain shapes in each piece along the construction direction. The microstructure is predominantly austenitic, with columnar, equiaxed, and cellular dendrites distributed throughout, as well as a small amount of -ferrite and NBC.

In this Present study WAAM fabricated plate enhancing the Microstructure properties such as Scanning electron microscope, Macro examination and Surface roughness tests were performed.

Section snippets

316L stainless steel

It is nearly equivalent to 316 stainless steel. The carbon content is the sole difference. The decreased carbon percentage of 316L makes it even more corrosion resistant than 316. No post-weld annealing is required with 316L.For high-corrosion and high-temperature applications, it is the preferable option. Unlike 316 stainless steels, it has greater inter granular corrosion resistance, which means its welds will not degrade. Most common welding processes may be used to weld it. The post-weld…

Result and discussion

Microstructures behaviors such as Scanning electron microscope, Macro graph and Surface roughness have been performed and their corresponding testing samples manufactured by WAAM.…

Conclusion

In this present experimental study, a 3 mm thick plate was created by running ER 316L stainless steel wire through a welding robot machine and regulating the process parameters like voltage, current, welding speed, waiting time, and gas flow rate. Micro wire cut EDM is used to remove the substrate and side boundaries, and a vertical milling machine is used to polish the surface. It found that the micro structural properties in the fabricated plate. The following interpretation is obtained from…

CRediT authorship contribution statement

V. Vinoth: Writing – original draft, Data curation. **S. Sathiyamurthy:** Conceptualization, Methodology. **U. Natarajan:** Conceptualization, Methodology. **D. Venkatkumar:** Reviewing and Editing. **J. Prabhakaran:** Reviewing and Editing. **K. Sanjeevi Prakash:** Visualization, Investigation.…

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.…

Special issue articles Recommended articles

References (17)

D. Ding *et al.*
A practical path planning methodology for wire and arc additive manufacturing of thin-walled structures
Rob. Comput. Integr. Manuf. (2015)

C. Zhang *et al.*
Wire arc additive manufacturing of Al-6Mg alloy using variable polarity cold metal transfer arc as power source
Mater. Sci. Eng., A (2018)

J. Xiong *et al.*
Influences of process parameters on surface roughness of multi-layer single-pass thin-walled parts in GMAW-based additive manufacturing
J. Mater. Process. Technol. (2018)

V. Vinoth *et al.*
Optimization of mechanical behaviour of TIG welded 316 stainless steel using Taguchi based grey relational analysis method
Mater. Today: Proc. (2021)

B. Wu *et al.*
A review of the wire arc additive manufacturing of metals: properties, defects and quality improvement
J. Manuf. Process. (2018)

A.M. Roach *et al.*
Size-dependent stochastic tensile properties in additively manufactured 316L stainless steel
Addit. Manuf. (2020)

V. Dhinakaran *et al.*
Wire Arc Additive Manufacturing (WAAM) process of nickel based superalloys – A review
Mater. Today: Proc. (2020)

R. Duraisamy *et al.*
Tribological performance of wire arc additive manufactured 347 austenitic stainless steel under unlubricated conditions at elevated temperatures
J. Manuf. Process. (2020)

There are more references available in the full text version of this article.

Cited by (6)

Additive Manufacturing of AISI 316L Stainless Steel: A Review ↗
2023, Metals

INVESTIGATION ON MECHANICAL BEHAVIOUR OF CALCIUM CARBONATE AND GROUNDNUT SHELL FILLER ADDED COCOS NUCIFERA FIBER REINFORCED POLYESTER COMPOSITES ↗
2023, ARPN Journal of Engineering and Applied Sciences

Corrosion behavior of selective laser melting-manufactured bio-applicable 316L stainless steel in ionized simulated body fluid ↗
2023, International Journal of Bioprinting

Investigation of Antibacterial Properties of Corrosion-Resistant 316L Steel Alloyed with 0.2 wt.% and 0.5 wt.% Ag ↗
2023, Materials

Fatigue Behavior of Additively Manufactured Stainless Steel 316L ↗
2023, Materials

Preparation and Investigation of Spherical Powder Made from Corrosion-Resistant 316L Steel with the Addition of 0.2% and 0.5% Ag ↗
2022, Materials

View full text

The Recent Advancements in the Wireless Security and Smart Grid Technology in Protecting the Ecological aspects for better Future Generation — Analysis through Structural Equation Modeling

Publisher: IEEE

Syed Jamaesha S ; K. Rajkumar ; A. Shenbagharaman ; Reena Malik ; P. Nagarjuna ; Shikha Kuchhal **All Authors**

Abstract: The application of smart grid technology support in revolutionizing the industries and government in order to reduce the emission of greenhouse gases and protect the ecol... **View more**

Metadata

Abstract:

The application of smart grid technology support in revolutionizing the industries and government in order to reduce the emission of greenhouse gases and protect the ecological aspects for future generation. The smart grids are mainly stated as the next gen power system which supports the users and providers in enhancing the overall production and output. The smart grids are focused in enhancing the efficiency, proved two-way communication and enable in applying reliability for the future power systems. These grids can also support in better collaboration between the renewable source of energy and with other sources. However along with the stated features of the smart grids, there exist security issues which will impact the devices and disrupt the power supply since these devices are interconnected. Hence it is highly essential in implementing better secured wireless security which enable in protecting the data which are carried through the communication network, support in uninterrupted supply of power and increases reliability on the widespread technology and infrastructure. This study is focused in presenting the critical attributes of implementing wireless security and smart grid technology in protecting the ecological aspects for future generation. The study intends to collect the information from the respondents to analyse the key determinants of implement wireless security and smart grids for better ecological aspects the analysis is made using structural equation model (SEM).

Keywords
Metrics
More Like This
Footnotes

Published in: 2022 2nd International Conference on Innovative Practices in Technology and Management (ICIPTM)

Date of Conference: 23-25 February 2022

DOI: 10.1109/ICIPTM54933.2022.9754132

Date Added to IEEE *Xplore*: 18 April 2022

Publisher: IEEE

ISBN Information:

Conference Location: Gautam Buddha Nagar, India

Contents

The growth of the implementation of smart grid technology is poised to revolutionise the business, industries, government and communities with the influential solution in enhancing the in efficiency of the electric grids. The smart grid is considered as the critical supply network which applied digital tools and technologies in optimize the performance and output. [1]. It has been noted that the demand for the energy requirements has been increasing and the energy companies are exploring various means to meet the demand, however usage of fossil fuels pollute the environment, hence they are now looking to implement progressive emerging digital technologies for optimizing the performance.

More Like This

A Mathematical Model of Infant Thermoregulation System for Investigating Heat Exchange Mechanisms: A Biological System Model
2022 Medical Technologies Congress (TIPTEKNO)
Published: 2022

Reliability Impacts of the Dynamic Thermal Rating System on Smart Grids Considering Wireless Communications
IEEE Access
Published: 2019

Show More

Downl
PDF

Flashover performance of an AC insulator under various uniform and FSNU contamination conditions

Publisher: IEEE

S Maharani ; G. Kannayeram **All Authors**

Abstract: Contamination, bright (UV) radiation, and electro-warm pressure put various sorts of protectors in risky circumstances. Contamination collects on encasing in an assortmen... **View more**

Metadata

Abstract:
Contamination, bright (UV) radiation, and electro-warm pressure put various sorts of protectors in risky circumstances. Contamination collects on encasing in an assortment of structures, including uniform, non-uniform, and lopsided. The discoveries of uniform and fan-molded non-uniform (FSNU) contamination tests under AC voltage on four unique sorts of unadulterated and endured encasings are accounted for in this review. The strong layer method is utilized to settle toxins on the cover surface. The outcomes show that when contamination non-consistency degree (J) develops from 1 to 16, the flashover voltage of both unadulterated and matured examples diminishes. Contamination tests from a few modern districts were acquired and placed on the protectors. The flashover voltage of unadulterated and matured examples decreases and the contamination non-consistency degree (J) ascends while estimating the presentation of FSNU grimy covers in shifted extents. Covers examined were matured for as long as about a month (672h). Even though there was no way to see an impact of multi-week (168h) sped up maturing on flashover voltage and morphology of protectors, the flashover strength of the examples is decreased as the maturing time frame protracts. Because of the

More Like This

new protectors, a measurable report was performed to decide the flashover voltage of sped-up matured separators under uniform and FSNU pollution. The study's purpose was to identify insulators that could withstand industrial, sunny and windy conditions.

Published in: 2022 International Mobile and Embedded Technology Conference (MECON)

Date of Conference: 10-11 March 2022

DOI: 10.1109/MECON53876.2022.9752279

Date Added to IEEE *Xplore*: 14 April 2022

Publisher: IEEE

ISBN Information:

Conference Location: Noida, India

Contents

More Like This

Study on AC Flashover Performance for Different Types of Porcelain and Glass Insulators With Non-Uniform Pollution
IEEE Transactions on Power Delivery

Published: 2013

Comparison of pollution flashover performance of porcelain long rod, disc type, and composite UHVDC insulators at high altitudes
IEEE Transactions on Dielectrics and Electrical Insulation
Published: 2012

Show More

Image Processing based Protection of Crops from wild animals using Intelligent Surveillance

Publisher: IEEE

A. Sathesh ; K. Vishnu ; A. Yuvaneshwar ; V. Vellaisamy ; K. Gowthami **All Authors**

Abstract: Surveillance plays a major role in home, hospitals, schools, public places, farmlands etc. It helps us to monitor and prevent theft. To prevent unauthorized peoples, surv... **View more**

Metadata

Abstract:

Surveillance plays a major role in home, hospitals, schools, public places, farmlands etc. It helps us to monitor and prevent theft. To prevent unauthorized peoples, surveillance is important in farmlands. Traditional methods like human itself monitoring the whole field for long time to prevent the animals and it is difficult. So there is a need for specialized detection of animals particularly like include segmentation and object detection process. Main intruders of agriculture are birds and animals, but most of the work is based on human intruders. So, object recognition based intrusion detection is proposed in this work. Already predefined images and features of some animals are stored in image processor. When animal is intruding to the land the camera fixed at various places will capture it and send it to the processor for further processing. Feature extraction and matching of predefined and new image will be done through yolo based regression algorithm after that alarm will be produced and also SMS will be sent to the owner of the land. So this proposed system will really helpful for the agriculture to increase yield.

Published in: 2022 International Conference on Electronics and Renewable Systems (ICEARS)

Date of Conference: 16-18 March 2022 **DOI:** 10.1109/ICEARS53579.2022.9752018

Keywords

Metrics

More Like This

Date Added to IEEE *Xplore*: 13 April 2022

Publisher: IEEE

ISBN Information:

Conference Location: Tuticorin, India

Contents

Agriculture is the main occupation in the ancient times for livelihood. But at that time it was done manually like ploughing by farmer itself and it takes more time. Due to this the yield of crops is becoming low. Various factors are there for the reason for low yield, but animal intrusion is a major reason for low yield [3]. Animals like boars, tigers as they want to prevent attacks from human when they get spotted, they usually enter into the farm lands and run fastly so crops may get destroyed. It causes the financial problem for farmers because they are going to lose their invested amount on crops. Farmers with vast lands are affected more because they are going to protect their lands from animals and it becomes tedious to the farmers. Vast lands of forests now a day's becomes residential areas due to deforestation. Human Conflicts are rearing that elephants and deer's are entering into cultivation lands and destroying crops. Some peoples are creating electric fencing around their land to protect crops from wild animals. As per government rules we should not threaten or ill treat animals. So electric fencing is not a good solution. So this system, without ill treating animals, is protecting crops by producing alarm sound [8]. This system is also helpful for owners to monitor human intrusion by capturing images and sending that message to the owner of the land. Raspberry pi plays main role in this system. It helps to prevent animals entering into the farmlands and this system gives protection from enemies. Wild animals like pigs, elephants play a major part in crop destruction by eating them.

Authors

Figures

References

Citations

Keywords

Metrics

More Like This

Object Detection and Tracking Approaches for Video Surveillance Over Camera Network

2019 5th International Conference on Advanced Computing & Communication Systems (ICACCS)

Published: 2019

Downl PDF

Detection of Animals in Thermal Imagery for Surveillance using GAN and Object Detection Framework
2022 International Conference for Advancement in Technology (ICONAT)
Published: 2022

Show More

ScienceDirect

Materials Today: Proceedings

Volume 62, Part 2, 2022, Pages 599-605

Experimental studies on single point incremental sheet forming of stainless steel 409L alloy

V. Vinoth [a], S. Sathiyamurthy [a], C. Veera Ajay [b], Harsh Vardhan [c], R. Siva [d], J. Prabhakaran [e], C. Suresh Kumar [b]

Show more

https://doi.org/10.1016/j.matpr.2022.03.614

Abstract

Single Point Incremental Forming (SPIF) is a sheet metal forming process in which a sheet metal blank is plastically deformed through a progressive action of single point tool and more reliable for batch production of complex shape of sheet metals with simple numeric control vertical milling machine. In this study, the formability behaviour of stainless steel 409L on both conventional and incremental forming technique were analysed experimentally. The effect of process parameter of SPIF like tool size, spindle speed, feed rate and vertical step down on the formability of stainless steel 409L was investigated experimentally. The forming limit diagram (FLD) and fracture limit curve (FLC) of SS 409L for both the forming processes were plotted and compared. Formability of SS 409L during SPIF increased comparing with conventional forming technique.

Introduction

Incremental sheet metal forming process is more flexible in manufacture of complex components at low production cost in less processing time. This process does not require any dedicated or special dies [1] and uses a ball or hemispherical end tool to produce complicated shaped products. ISF (incremental sheet forming) is a method of metal forming that involves a series of localized deformations. The tool tip forces the metal to undergo plastic deformation at the localized region. The sheet is clamped between the blank holders of the fixture. The tool with a smooth ball tip is rotated and pressed against the sheet metal. The applied load deforms the work material at localized area. The tool is passed required number of times depending on the sheet thickness, design, depth of the profile, etc. In ISMF process, several forming tools such as flat end, ball end and hemispherical end are used. The ball end tool is chosen in two-point ISMF and hemispherical end tool is favored in single point ISMF process [2]. ISF is used in manufacturing of medical parts such as ankle prosthesis [3], [4], a palate or knee implants [5], and automotive parts [6]. Suresh kurra et al. [7] Surface roughness of incrementally formed parts made of EDD steel was evaluated in various forming conditions, and predictive replicas were created utilizing ANN, SVR, and GP. Hypothesis tests are used to assess the model's adequacy, and R2 value is used to assess its performance. The models constructed with ANN and SVR outperform the GP models. In this analysis, the step depth and feed rate are both limited to 0.45 mm and 1100 mm/min, respectively. Subramanian et al. [8] formed the SS304 in stages using a hemispherical tool with varying input parameters. The limit of formability and thickness distribution of the generated sheet were investigated. An optical microscope was used to examine the microstructure of the generated specimens. It has been shown that an extreme decrease in sheet thickness of roughly 50% can be achieved. At a feed rate of 1600 mm/min and a speed of 1000 r/min, the greatest forming limit was attained for a sheet thickness of 0.6 mm. Suresh kurra et al. [9] In this study, numerical simulation and Taguchi orthogonal array were used to investigate the effects of wall angle, step depth, and tool diameter on maximum resultant force, plastic strain, and thinning. It has a thinning effect of 98.42%, a plastic strain effect of 95.91%, and 81.84% resultant force impact. Due to the increased contact area, diameter has a 17.12% result on forming force and has no effect on the other two response variables. Plastic strain is affected by step depth by 2.48%, but the other two response factors are unaffected. Vignesh et al. [10] the dimple fracture mode, which has higher formability, was observed on the broken surface of the sample. The cleavage fracture and decohesive rupture modes were recognized simultaneously on the broken surface of the remaining samples. Fracto graphs reveal that the sample with the highest formability contains prolate type voids, while the remaining

samples mostly have oblate type voids. Fang et al. [11] concluded from stress analysis that the fracture first occurs on the outer wall side at the transition between the contact and non-contact zone. Jawale et al. [12] concluded that using mineral oil as lubricant reduced the surface roughness in the formed sheet. Ajay et al. [13] incrementally formed Ti-6Al-4V sheets, and studied the effect of feed, depth and speed to the Ra, wall angle and thickness. Ajay et al. [14] concluded that Incremental depth is a major parameter that has a major effect on forming force. Ajay et al. [15] indicated that the step depth have a main effect in responsible the formability and surface features of the formed material.

The objective of the work is to investigate the process parameters for Incremental Forming sheet and to study the formability and strain distribution in the Incremental Sheet Forming process.

Section snippets

Material and method

Experiments are performed in three axis CNC Vertical Machining Centre and material used is stainless steel 409L, 150×150 (l×b). The ISMF experimental setup is shown in Fig. 1. High Speed Steel (HSS M2) is used as tool material and is coated with Titanium nitride (TiN) to increase its wear resistance characteristics. The work methodology is shown in a Fig. 2. The microstructure of the stainless steel 409L and the grain boundaries are clearly visible in the Fig. 3.…

Tensile test

The tensile tests were…

Formability test (Cup Test)

It is observed that the SS409L has higher major strain in tension–tension region when compare to other strain condition as well as it also have greater minor strain in tensile compression region when compare to plain strain and tension- tension region. So this stainless steel has well for stretch forming. Stainless steel with a thickness of 1 mm has a maximum major strain of 39% and a maximum minor strain of 7% in the tension–tension area. The greatest main strain offered by stainless steel of…

Conclusion

The stainless steel 409L sheet with 1 mm thickness was selected for the formability study. The straight groove and cup tests were conducted and their FLD's in a usual pattern were plotted. Both FLD's show well increased forming limits strain then the conventional forming limit strains. The FLD's plotted the results of straight groove in rolling direction, diagonal direction, and transverse direction show that there is some effect of anisotropy in incremental sheet forming

a. In this work, the…

…

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.…

Special issue articles Recommended articles

References (15)

G. Ambrogio *et al.*
Application of incremental forming process for high customised medical product manufacturing
J. Mater. Process. Technol. (2005)

S. Kurra *et al.*
Modeling and optimization of surface roughness in single point incremental forming process

J. Mater. Res. Technol. (2015)

Y. Fang *et al.*
Analytical and experimental investigations on deformation mechanism and fracture behavior in single point incremental forming
J. Mater. Process. Technol. (2014)

K. Jawale *et al.*
Microstructural investigation and lubrication study for single point incremental forming of copper
Int. J. Solids Struct. (2018)

C. Veera Ajay *et al.*
Studies on single point incremental forming of Ti-6Al-4V alloy for aerospace applications
Mater. Today: Proc. (2020)

M. Oraon *et al.*
Prediction of surface roughness in single point incremental forming of AA3003-O alloy using artificial neural network
IJMATEI (2018)

C. Veera Ajay *et al.*
Incremental Sheet Metal Forming (ISMF): a literature review
AIP Conf. Proc. (2019)
There are more references available in the full text version of this article.

Cited by (1)

Optimization of Fixture Layout and Clamping Force in a Concurrent Environment to Improve the Part Quality in Milling Operations ↗
2023, International Journal of Vehicle Structures and Systems

View full text

Investigation and Performance of Pollution Layer Location on 11kV Polymer Insulator

Publisher: IEEE

S. Frieda Angelin ; R.V. Maheswari ; B. Vigneshwaran **All Authors**

Abstract: Ongoing years, financial effect of force framework blackouts brought about by HV cover contamination is a genuine concern. Subsequently, because of its significance and i... **View more**

Metadata

Abstract:
Ongoing years, financial effect of force framework blackouts brought about by HV cover contamination is a genuine concern. Subsequently, because of its significance and intricacy, more prominent consideration has been given to this subject. Therefore, various models, standards, and test strategies have been introduced to forestall the cataclysmic results of force framework blackouts brought about by HV separator contamination flashover. This project focuses on the impacts of non-uniform pollution layer boundaries pollution layer boundaries in particular conductivity and position on reactions is named as flashover voltage and the greatest E-field and the breakdown strength are examined utilizing High Voltage laboratory experimentation.

Published in: 2022 International Conference on Computer Communication and Informatics (ICCCI)

More Like This

Date of Conference: 25-27 January 2022

DOI: 10.1109/ICCCI54379.2022.9740782

Date Added to IEEE *Xplore*: 31 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Print on Demand(PoD) ISSN: 2329-7190

Contents

Polymer insulators have a well-known low pollution performance. Because of the weak links found in polymer materials, polymer insulators are more vulnerable to chemical alterations. Electric field power at the protector surface increments because of the great permittivity and conductivity of water drops, adding to contamination flashover and composite cover maturing.

More Like This

Flashover Prediction of Polymer Insulators Based on Dynamic Modeling of Pollution Layer Resistance Using ANN
IEEE Transactions on Dielectrics and Electrical Insulation
Published: 2023

Dynamic flashover model considering pollution layer resistance variation for fixed washed high voltage insulators
IEEE Transactions on Dielectrics and Electrical Insulation
Published: 2017

Show More

Transformer Oil Quality Assessment Using Machine Learning Techniques

Publisher: IEEE

M. Sinduja ; R.V. Maheswari ; B. Vigneshwaran **All Authors**

Abstract: In this suggested work, difficulties in most engineering applications are overcome, and vector machine learning is used to support the state of the power transformer oil ... **View more**

Metadata

Abstract:
In this suggested work, difficulties in most engineering applications are overcome, and vector machine learning is used to support the state of the power transformer oil based on test findings. For nonlinear issues, such as higher dimensional problems, the support vector machine kernel function is utilized. In machine learning algorithms, kernelized SVM functions such as sigmoid kernel function (SKF), radial basis kernel function (RBF), Gaussian kernel function (GKF), and Bayesian optimization (BO) are performed. To evaluate the quality of high voltage power transformer oil, AI has been used. The oil test on the power transformer is adequate for continued usage., oils that simply require conditioning filtration for future service, oils in very bad condition, the oil should be reclaimed or disposed of, It is theoretically permissible to dispose of oils that are in such terrible condition. In comparison to existing machine learning algorithms, the suggested Bayesian optimization approach achieved a recognition rate of 99.5 percent. The oil test characteristics were transformed and filtered of the dataset, which enhanced the classification performance of the employed methods; The support vector machine kernel function is beneficial for monitoring transformer oil condition.

Metrics

More Like This

Published in: 2022 International Conference on Computer Communication and Informatics (ICCCI)

Date of Conference: 25-27 January 2022

DOI: 10.1109/ICCCI54379.2022.9741071

Date Added to IEEE *Xplore*: 31 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Print on Demand(PoD) ISSN: 2329-7190

Contents

Power Transformer oil test was consisting of measuring breakdown voltage, dielectric strength, resistivity, acidity, flash point and tan delta of samples of the transformer oil test. When power transformer is most important in substations (SS) and critical equipment. These transformers are maintained by insulating oil, serving as a coolant, and degradation due to aging, the temperature is high, and due to weather conditions chemical reactions such as oxidation. Most of the labor was defined as the operations and planning of transformer oil utility, which are dependent on the health state of the transformer. The transformer Water, sludge, acids, dissolved gases, leaking oil content, and other degradation components are all formed by processes. [1]–[2].

More Like This

Prediction of Loan Pricing on the basis of Area Location using K-Nearest Neighbour and Support Vector Machine Learning Algorithms
2023 International Conference on Sustainable Communication Networks and Application (ICSCNA)
Published: 2023

A Novel Framework of Network Packet Loss Detection Using Random Forest Algorithm over Support Vector Machine Learning Algorithms to Improve Accuracy
2022 International Conference on Knowledge Engineering and Communication Systems (ICKES)

Published: 2022

Show More

Investigation Of Different Solid Insulation Impregnated In Liquid Dielectrics

Publisher: IEEE

H. Deborah Festus ; L. Kalaivanai ; R. V. Maheswari **All Authors**

Abstract: An Electrical life is an important way to assess the insulation properties of dielectric materials. The breakdown voltage of insulating paper is an important electric fea... **View more**

Metadata

Abstract:
An Electrical life is an important way to assess the insulation properties of dielectric materials. The breakdown voltage of insulating paper is an important electric feature. In this study, the electrical and physical properties of oil-impregnated insulation paper are investigated experimentally. For various periods, the breakdown voltage and time of mineral oil and vegetable oil-impregnated paper insulation were determined. The impact of insulation paper thickness on electrical and mechanical characteristics has been investigated. The results showed that as the time of immersing insulation paper in oil at room temperature increased, the breakdown voltage reduced and vice versa. As the thickness increases, breakdown voltage increases and decreases for a reduced thickness.

Published in: 2022 International Conference on Computer Communication and Informatics (ICCCI)

Date of Conference: 25-27 January 2022 **DOI:** 10.1109/ICCCI54379.2022.9740849

Keywords

Metrics

More Like This

Date Added to IEEE *Xplore*: 31 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Print on Demand(PoD) ISSN: 2329-7190

Contents

Insulating materials are a material that restricts or eliminates heat, sound, or electricity transmission through them. In engineering practice, the importance of insulating material cannot be overstated. Because heat and electricity are the primary sources of energy in many essential operations, they may be impossible to handle safely without insulators. In electrical and electronic components and assemblies, various insulators are used. Paper, Mica, Asbestos, Rubber, Porcelain, and other insulating materials are examples.

More Like This

A new mathematical model of moisture equilibrium in mineral and vegetable oil-paper insulation
IEEE Transactions on Dielectrics and Electrical Insulation
Published: 2012

Experimental simulation of effects of high temperatures on paper oil insulation of transformers in presence of DBDS in mineral oil
IEEE Transactions on Dielectrics and Electrical Insulation
Published: 2017

Show More

Dynamic target tracking of wheeled mobile robots and analysis of controller with various orientation

Publisher: IEEE

N Karthick Pugalum Perumal ; A Perumal ; M Sivapalanirajan ; E Nithin Durai ; A Stephen ; M Willjuice Iruthayarajan **All Authors**

Abstract: Robot tracking application mostly needs prefixed initial postion and orientation from the target location. The problem becomes complicated when the target moves with time... **View more**

Metadata

Abstract:
Robot tracking application mostly needs prefixed initial postion and orientation from the target location. The problem becomes complicated when the target moves with time. It always needs better controller with quick error convergence and travel distance to track the moving target In this work, the performance of three controllers in tracking a moving reference is compared with possible variation in orientation of the mobile robot. Periodic control in Lyapunov framework is having both shortest distance travel and error convergence for any orientation form 0° to 180° It is observed that the PCL controller suits better for any orientation between the limits when compared to conventional linear controller and nonlinear Lyapunov controller.

Published in: 2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)

Keywords

Metrics

More Like This

Date of Conference: 23-25 February 2022

DOI: 10.1109/ICAIS53314.2022.9743103

Date Added to IEEE *Xplore*: 30 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

In recent years there has been enormous activities in the field of wheeled mobile robotics. For the past two decades of development the progress in trajectory tracking and control of the two wheeled mobile robot is exponentially rising. Many types of robots which is custom build design needs prefixed position and orientation to implement the ideas of programming the hardware. General goal of Robotics is to program the robot track the known or unknown reference trajectory with the objectives like minimum error, minimum distance travelled, and minimum control effort during progression. Many researchers focus on the positioning of robots with some prefixed initial position and orientation. It will be challenging to position the robot in appropriate position and orientation. In this work, the robot is controlled by various controllers to track the dynamically changing target location from any initial condition around the four quadrants of the reference path. The performance measures indicates the capability of the controller in tracking the reference with minimum error and minimum distance travelled. The distance travelled by the robot to track a dynamically changing setpoint from distant location becomes more challenging to keep the error and travel distance as minimum.

Authors

Figures

References

Citations

Keywords

Metrics

More Like This

Maximum principle in finding free final-time optimal trajectory of mobile robot for moving target tracking

2017 Indian Control Conference (ICC)

Published: 2017

Design of Manipulator Trajectory Tracking Control System Based on Artificial Intelligence Algorithm
2023 2nd International Conference on Artificial Intelligence and Autonomous Robot Systems (AIARS)
Published: 2023

Show More

A Survey on various Electric Vehicle batteries – Battery power management and performance monitoring system

Publisher: IEEE

R. Balamurugan ; P. RamKumar ; B. Singaraj ; C. Vasudev ; K. Karthik Kumar ; M. Willjuice Iruthayarajan **All Authors**

Abstract: In recent days, the emission of GHG due to fuel-based transportations causes global disorders to all living beings on the earth. This can be reduced by introducing electr... **View more**

Metadata

Abstract:

In recent days, the emission of GHG due to fuel-based transportations causes global disorders to all living beings on the earth. This can be reduced by introducing electrified transportation. The up-to-date research concentrate more on battery management system and monitoring system, to monitor the battery activity for increasing its life. This review focuses on three main important components of various electric vehicles like battery storage capacity, power management methods and battery performance monitoring system, with an overview of the existing research works. A battery management system is an electronic device that monitors the charging and discharge of rechargeable batteries that can be used to prevent overcharging or high temperature. The battery management system is an integral part of electric vehicles. Unfortunately, it is challenging to monitor and control the various cells of a battery due to their different production and operating conditions. In the end of the review, an upcoming research activity and its challenges relating to solar PV integrated electric vehicle to operate the system independent to the EB or grid supply has been proposed.

Metrics

More Like This

Published in: 2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)

Date of Conference: 23-25 February 2022

DOI: 10.1109/ICAIS53314.2022.9743050

Date Added to IEEE *Xplore*: 30 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

1. Introduction

In the automobile sector, Electric Vehicles (EVs) are particularly appealing since they use cleaner energy and can attain higher performance when compared to fossil-fueled vehicles. Due to the advantages of EVs, their adoption is highly encouraged by various governments. In most countries, they have already established regulations that support their development [1]. Renewable energy sources are used to generate power and drive wheels to replace them. The electrification of transportation, such as EVs and electric buses, has attracted a lot of attention from the automobile industry, academia, and public transportation in recent years, with the aim of reducing metropolitan air pollution caused by fossil fuel-powered automobiles [2]. The battery type, and the number and quality of battery cells utilized, are all factors that affect battery life. Moreover, controlling the accelerator pedal, the driving schedule, and determining energy consumption and battery State of Charge (SOC) evolution are all factors that affect battery life in electric vehicles. Battery durability decreases over time and as a measure of the number of charges and discharges it has received [4].

More Like This

Battery pack modeling for the analysis of battery management system of a hybrid electric vehicle
2009 IEEE Vehicle Power and Propulsion Conference
Published: 2009

A Digital Twin Model for the Battery Management Systems of Electric Vehicles

2021 IEEE 23rd Int Conf on High Performance Computing & Communications; 7th Int Conf on Data Science & Systems; 19th Int Conf on Smart City; 7th Int Conf on Dependability in Sensor, Cloud & Big Data Systems & Application (HPCC/DSS/SmartCity/DependSys)

Published: 2021

Show More

Automatic Indoor Hydroponic Plant Grow Pot using Arduino

Publisher: IEEE

G.Muthu Janani ; N. Santhiya ; G. Vigneshwari ; A. Manuka ; K. Kumar **All Authors**

Abstract: There is a method used for growing plants. The method for growing plants is called hydroponics. In this method the crops are grown on water, rich in essential nutrients. ... **View more**

Metadata

Abstract:
There is a method used for growing plants. The method for growing plants is called hydroponics. In this method the crops are grown on water, rich in essential nutrients. This method provides a solution to the problem in watering the plants. Plants found in houses, workplaces and other public places will have persons to water the plants manually. An automation system with moisture sensors provided near the plant pot is used to detect whether the soil of the plant pot is wet or dry. The LCD notification board displays soil moisture level on the screen. The Pump motor is used to pump water to the plant-based on the display in LCD screen. Therefore, this proposed design will automatically monitor and control plants' watering.

Published in: 2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)

Date of Conference: 23-25 February 2022 **DOI:** 10.1109/ICAIS53314.2022.9742782

Keywords

Metrics

More Like This

Date Added to IEEE *Xplore*: 30 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

Hydroponics was resultant from two greek words, namely hydro means water and ponos means labor-literally “water working. Hydroponics is a method of budding the plants in nutrient solutions with or without the use of an sawdust, coir dust, coconut fibre, etc. These techniques are followed in countries like the USA and other countries are also trying to follow this technology. One of the essential ideologies in soil and in hydroponic system is to offer all nutrients the plant needs. The first and foremost work is to search for an area where we can install this hydroponic system. There is a disadvantage in watering the plants manually, when we are out of home, the plants cannot be monitored and watered properly. Subsequently, the plant will not grow properly and the plants will die without proper nutrients and water content. So there comes an automatic Hydroponic system to regulate and monitor the plants automatically.

More Like This

Impacts of Soil Moisture on Crop Health: A Remote Sensing Perspective
2021 9th International Conference on Agro-Geoinformatics (Agro-Geoinformatics)
Published: 2021

Prediction of Crop Yield Based-on Soil Moisture using Machine Learning Algorithms
2022 2nd International Conference on Technological Advancements in Computational Sciences (ICTACS)
Published: 2022

Show More

Provable data possession based Multi-Cloud Storage Security with Auditing

Publisher: IEEE

Chamaeshika ; Vasanthi ; Jerart Julus **All Authors**

Abstract: The data are stored as multiple copies on different cloud servers for improving the constancy and availability as the data are being outsourced. For proving the integrity... **View more**

Metadata

Abstract:

The data are stored as multiple copies on different cloud servers for improving the constancy and availability as the data are being outsourced. For proving the integrity of the data of multiple copies Provable Data Possession (PDP) protocol is used. Beforehand all of the PDP protocol will be storing copies in single cloud storage server. Public key infrastructure was depended by many PDP protocols which lacks security and leads to vulnerabilities. For storing various copies on multiple different cloud server identity based provable data possession has been used. By using the homomorphic tags data are stored in multiple cloud and its integrity will be simultaneously checked. Computation Diffie-Hellman hard problem was base for our scheme. Our scheme has been the premier for the provable data possession of multifold copies on multiple various cloud. The given system model, security model was given and this experimental research proved that our PDP scheme is applicable as well as practical.

Published in: 2022 International Conference on Smart Technologies and Systems for Next Generation Computing (ICSTSN)

Metrics

More Like This

Date of Conference: 25-26 March 2022

DOI: 10.1109/ICSTSN53084.2022.9761315

Date Added to IEEE *Xplore*: 25 April 2022

Publisher: IEEE

ISBN Information:

Conference Location: Villupuram, India

Contents

In this new era, cloud computing has gathered lots of attention and been a new computation mode. Rapidly developing IT industries such as Oracle, Microsoft Azure, AWS etc. They made a change by creating cloud computing server for themselves and for the entire world. The cost of storing data locally is high when compared to the data being stored in cloud. The payment for the rent of the service will be paid afterwards. Before they have to buy IT infrastructure and maintain it which is quite expensive. Since, it has become new tech for storing information in the cloud.

More Like This

Security Analysis of Server-Aided Public Key Generation Protocols on Low-Power Devices for Ad-Hoc Networks
2008 ISECS International Colloquium on Computing, Communication, Control, and Management
Published: 2008

Development of servers in cloud computing to solve issues related to security and backup
2011 IEEE International Conference on Cloud Computing and Intelligence Systems
Published: 2011

Show More

ScienceDirect

Materials Today: Proceedings

Volume 66, Part 3, 2022, Pages 702-706

Examination of microstructure properties of AISI 316L stainless steel fabricated by wire arc additive manufacturing

V. Vinoth [a], S. Sathiyamurthy [a], U. Natarajan [b], D. Venkatkumar [c], J. Prabhakaran [d], K. Sanjeevi Prakash [e]

Show more

https://doi.org/10.1016/j.matpr.2022.04.011

Get rights and content

Abstract

Wire Arc Additive Manufacturing (WAAM) is a fusion manufacturing or Wire-feed additive manufacturing for creating components by layer-by-layer technique. WAAM has been a viable replacement to traditional machining because of its ecological protection, high deposition rate, minimizes the wastage, and competitive pricing. WAAM technique is used to manufacture multipart designed products.316 L stainless steel plate was fabricated in this investigation using ER 316 L consumable wires and a welding robot system. Current, Voltage, welding speed, gas flow rate, and shielding gas were used as experimental factors. Micro wire cut electric discharge machining was used to remove the base plate and side edges, and the processed plate surface was polished with help of vertical milling machine. To check the microstructure behaviors like Scanning electron microscope, Macro test and Surface roughness test was performed. The process of additive manufacture of 316L stainless steel is found to be practical using this experimental work.

Introduction

WAAM Technique is one unique since materials are feed to make a product by automation and machine learning methods to keep materials waste to a bare minimum and reducing time to market, additive manufacturing promises to lower component costs [1]. Frazier et al. [2] In ASTM Standard it is described in contrast to subtractive manufacturing techniques, additive manufacturing involves mixing materials to create objects using 3D model data, which is typically layered on. Ding et al. [3] Due to its rapid deposition rate, the usage of whether Gas Metal Arc Welding or Gas Tungsten Arc Welding has piqued the concentration of the technical community in recent days. Low capital investment is a big benefit of the WAAM phase. The WAAM components system may be built using open-source apparatus from a variety of providers in the established welding industries. The WAAM method uses metallic wire as the feed material and an arc as the heat source. In comparison to laser and electron beam wire feed AM's low energy efficiency, WAAM offers a greater energy performance of up to 90% [4]. Bharath Kumar et al. [5] studied the wire feed velocity is the most essential of entirely the input factors for weld bead distance, weld velocity, and voltage flow rate. By selecting and optimizing the parameters, a surface's waviness, porosity, weld cracks, and weld bead discontinuity can be decreased.

Duraisamy et al. [6] it was identified that the WAAM plate formed 120×210×4mm in ER 347 Wire material the structural and microstructure characteristics of the deposited plate were examined. Wanwan et al. [7] in his research it is stated that Due to the obvious layer-wise deposition method's directivity, WAAM models are exceedingly anisotropic in terms of tensile strength and microstructure. In situ rollings combined with WAAM could aid in the reduction of residual stress in WAAM components. Xiong et al. [8] in their study In WAAM, surface roughness was quantitatively measured by optical measurement, a non-invasive process, which can provide adequate details. Xiong et al. [9] the rise in surface roughness is correlated with increasing the wire feed speed. In general, increasing travel speed will increase the consistency of the surface. A lower Wire feed speed combined with a lower Travel speed can improve the surface quality. Sudhakar et al. [10] 316L stainless steel is well-known for its use as a biomaterial in the production of a variety of medical equipment. One of the experiments of 316L Stainless steel SLM process stands reducing (if not entirely eliminating) residual porous and the poor surface equality. In these characteristics

were critical, especially in biomedical applications that need excellent dynamic and static qualities, as well as ductility and corrosion resistance. The main goal of this research is to see how different SLM process parameters effect mechanical characteristics, microstructure, fracture, and other factors. Vinoth et al. [11] at the optimum welding current, welding speed, and gas flow rate, the input parameters were analysed to achieve desirable mechanical characteristics such as tensile strength, impact strength, and corrosion rate. Ravikumar et al. [12] Type 316L is a low-carbon version of Grade 316 that prevents dangerous carbides from forming during welding. A systematic review of modern technical growths in the WAAM process has been published, with attention on mechanical behaviors, process defects, and microstructure post-process action. Integrating material properties with the performance characteristics of various WAAM techniques results in a quality-based approach for creating high & low - quality components [13]. Ashley M. Roach et al. [14] reported as the micro structure and complex material strengths of the 316L alloy used in this investigation, as measured by micro hardness, did not change considerably as a function of random sample. Johnnie et al. [15] reported that PAW, MIG, and TIG are the most common heat sources used by WAAM. Because the welding torch employs a continuous wire spool, MIG is faster and more accurate than TIG and PAW. WAAM is becoming more popular as an AM option. Numerous research has found that WAAM may significantly reduce costs and enhance product superiority in industrial areas, particularly in the aerospace, railways and automotive industries. V.Dhinakaran et al. [16] In contrast to conventionally manufactured alloys, the Ti alloy has stronger mechanical properties. Thermo-mechanical engineering, Materials science, and process preparation for metal parts are all part of WAAM's interdisciplinary research and development. For all, or even most, cases, the current subtractive development method should not be replaced with WAAM. Instead, to minimize material consumption and financial costs, the two should balance each other. Duraisamy et al. [17] The WAAM-treated 347 has a completely heterogeneous microstructure, with different grain shapes in each piece along the construction direction. The microstructure is predominantly austenitic, with columnar, equiaxed, and cellular dendrites distributed throughout, as well as a small amount of -ferrite and NBC.

In this Present study WAAM fabricated plate enhancing the Microstructure properties such as Scanning electron microscope, Macro examination and Surface roughness tests were performed.

Section snippets

316L stainless steel

It is nearly equivalent to 316 stainless steel. The carbon content is the sole difference. The decreased carbon percentage of 316L makes it even more corrosion resistant than 316. No post-weld annealing is required with 316L.For high-corrosion and high-temperature applications, it is the preferable option. Unlike 316 stainless steels, it has greater inter granular corrosion resistance, which means its welds will not degrade. Most common welding processes may be used to weld it. The post-weld…

Result and discussion

Microstructures behaviors such as Scanning electron microscope, Macro graph and Surface roughness have been performed and their corresponding testing samples manufactured by WAAM.…

Conclusion

In this present experimental study, a 3 mm thick plate was created by running ER 316L stainless steel wire through a welding robot machine and regulating the process parameters like voltage, current, welding speed, waiting time, and gas flow rate. Micro wire cut EDM is used to remove the substrate and side boundaries, and a vertical milling machine is used to polish the surface. It found that the micro structural properties in the fabricated plate. The following interpretation is obtained from…

CRediT authorship contribution statement

V. Vinoth: Writing – original draft, Data curation. **S. Sathiyamurthy:** Conceptualization, Methodology. **U. Natarajan:** Conceptualization, Methodology. **D. Venkatkumar:** Reviewing and Editing. **J. Prabhakaran:** Reviewing and Editing. **K. Sanjeevi Prakash:** Visualization, Investigation.…

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.…

Special issue articles Recommended articles

References (17)

D. Ding *et al.*
A practical path planning methodology for wire and arc additive manufacturing of thin-walled structures
Rob. Comput. Integr. Manuf. (2015)

C. Zhang *et al.*
Wire arc additive manufacturing of Al-6Mg alloy using variable polarity cold metal transfer arc as power source
Mater. Sci. Eng., A (2018)

J. Xiong *et al.*
Influences of process parameters on surface roughness of multi-layer single-pass thin-walled parts in GMAW-based additive manufacturing
J. Mater. Process. Technol. (2018)

V. Vinoth *et al.*
Optimization of mechanical behaviour of TIG welded 316 stainless steel using Taguchi based grey relational analysis method
Mater. Today: Proc. (2021)

B. Wu *et al.*
A review of the wire arc additive manufacturing of metals: properties, defects and quality improvement
J. Manuf. Process. (2018)

A.M. Roach *et al.*
Size-dependent stochastic tensile properties in additively manufactured 316L stainless steel
Addit. Manuf. (2020)

V. Dhinakaran *et al.*
Wire Arc Additive Manufacturing (WAAM) process of nickel based superalloys – A review
Mater. Today: Proc. (2020)

R. Duraisamy *et al.*
Tribological performance of wire arc additive manufactured 347 austenitic stainless steel under unlubricated conditions at elevated temperatures
J. Manuf. Process. (2020)

There are more references available in the full text version of this article.

Cited by (6)

Additive Manufacturing of AISI 316L Stainless Steel: A Review ↗
2023, Metals

INVESTIGATION ON MECHANICAL BEHAVIOUR OF CALCIUM CARBONATE AND GROUNDNUT SHELL FILLER ADDED COCOS NUCIFERA FIBER REINFORCED POLYESTER COMPOSITES ↗
2023, ARPN Journal of Engineering and Applied Sciences

Corrosion behavior of selective laser melting-manufactured bio-applicable 316L stainless steel in ionized simulated body fluid ↗
2023, International Journal of Bioprinting

Investigation of Antibacterial Properties of Corrosion-Resistant 316L Steel Alloyed with 0.2 wt.% and 0.5 wt.% Ag ↗
2023, Materials

Fatigue Behavior of Additively Manufactured Stainless Steel 316L ↗
2023, Materials

Preparation and Investigation of Spherical Powder Made from Corrosion-Resistant 316L Steel with the Addition of 0.2% and 0.5% Ag ↗
2022, Materials

View full text

The Recent Advancements in the Wireless Security and Smart Grid Technology in Protecting the Ecological aspects for better Future Generation — Analysis through Structural Equation Modeling

Publisher: IEEE

Syed Jamaesha S ; K. Rajkumar ; A. Shenbagharaman ; Reena Malik ; P. Nagarjuna ; Shikha Kuchhal **All Authors**

Abstract: The application of smart grid technology support in revolutionizing the industries and government in order to reduce the emission of greenhouse gases and protect the ecol... **View more**

Metadata

Abstract:

The application of smart grid technology support in revolutionizing the industries and government in order to reduce the emission of greenhouse gases and protect the ecological aspects for future generation. The smart grids are mainly stated as the next gen power system which supports the users and providers in enhancing the overall production and output. The smart grids are focused in enhancing the efficiency, proved two-way communication and enable in applying reliability for the future power systems. These grids can also support in better collaboration between the renewable source of energy and with other sources. However along with the stated features of the smart grids, there exist security issues which will impact the devices and disrupt the power supply since these devices are interconnected. Hence it is highly essential in implementing better secured wireless security which enable in protecting the data which are carried through the communication network, support in uninterrupted supply of power and increases reliability on the widespread technology and infrastructure. This study is focused in presenting the critical attributes of implementing

wireless security and smart grid technology in protecting the ecological aspects for future generation. The study intends to collect the information from the respondents to analyse the key determinants of implement wireless security and smart grids for better ecological aspects the analysis is made using structural equation model (SEM).

Published in: 2022 2nd International Conference on Innovative Practices in Technology and Management (ICIPTM)

Date of Conference: 23-25 February 2022

DOI: 10.1109/ICIPTM54933.2022.9754132

Date Added to IEEE *Xplore*: 18 April 2022

Publisher: IEEE

ISBN Information:

Conference Location: Gautam Buddha Nagar, India

Contents

The growth of the implementation of smart grid technology is poised to revolutionise the business, industries, government and communities with the influential solution in enhancing the in efficiency of the electric grids. The smart grid is considered as the critical supply network which applied digital tools and technologies in optimize the performance and output. [1]. It has been noted that the demand for the energy requirements has been increasing and the energy companies are exploring various means to meet the demand, however usage of fossil fuels pollute the environment, hence they are now looking to implement progressive emerging digital technologies for optimizing the performance.

Reliability Impacts of the Dynamic Thermal Rating System on Smart Grids Considering Wireless Communications
IEEE Access
Published: 2019

Show More

Flashover performance of an AC insulator under various uniform and FSNU contamination conditions

Publisher: IEEE

S Maharani ; G. Kannayeram **All Authors**

Abstract: Contamination, bright (UV) radiation, and electro-warm pressure put various sorts of protectors in risky circumstances. Contamination collects on encasing in an assortmen... **View more**

Metadata

Abstract:

Contamination, bright (nces.
Contamination collects The
discoveries of uniform sorts
of unadulterated and e ttle
toxins on the cover sur om 1
to 16, the flashover vol few
modern districts were a
examples decreases a n of
FSNU grimy covers in
though there was no w nology
of protectors, the flash of the

More Like This

new protectors, a measurable report was performed to decide the flashover voltage of sped-up matured separators under uniform and FSNU pollution. The study's purpose was to identify insulators that could withstand industrial, sunny and windy conditions.

Published in: 2022 International Mobile and Embedded Technology Conference (MECON)

Date of Conference: 10-11 March 2022

DOI: 10.1109/MECON53876.2022.9752279

Date Added to IEEE *Xplore*: 14 April 2022

Publisher: IEEE

ISBN Information:

Conference Location: Noida, India

Contents

High voltage equipment, such as transformers and insulators, plays a vital part in the transmission system. It is vital to maintain the insulation in electrical devices to achieve regular operation of the power supply. Outside protectors are exposed to limits in temperature and moistness, as well as contaminations from the shore and processing plants. As a result, leakage current may flow on the insulator surface, potentially degrading it. Airborne particles are deposited on insulators near industrial, agricultural, and coastal locations, and contamination accumulates over time. When the insulators are dry, these deposits do not affect the insulating strength. When a polluted insulator is wetted by fog or light rain, a conductive layer forms on the contaminated insulator surface, resulting in leakage current. Dry bands are formed by the drying action of leakage current. The line voltage flashes across the dry-band, causing the insulator to flash over as the arc extends. Dry band arcing on the insulator surface can occur under certain conditions, resulting in insulator failure.

Published: 2013

Comparison of pollution flashover performance of porcelain long rod, disc type, and composite UHVDC insulators at high altitudes
IEEE Transactions on Dielectrics and Electrical Insulation
Published: 2012

Show More

Image Processing based Protection of Crops from wild animals using Intelligent Surveillance

Publisher: IEEE

A. Sathesh ; K. Vishnu ; A. Yuvaneshwar ; V. Vellaisamy ; K. Gowthami **All Authors**

Abstract: Surveillance plays a major role in home, hospitals, schools, public places, farmlands etc. It helps us to monitor and prevent theft. To prevent unauthorized peoples, surv... **View more**

Metadata

Abstract:

Surveillance plays a major role in home, hospitals, schools, public places, farmlands etc. It helps us to monitor and prevent theft. To prevent unauthorized peoples, surveillance is important in farmlands. Traditional methods like human itself monitoring the whole field for long time to prevent the animals and it is difficult. So there is a need for specialized detection of animals particularly like include segmentation and object detection process. Main intruders of agriculture are birds and animals, but most of the work is based on human intruders. So, object recognition based intrusion detection is proposed in this work. Already predefined images and features of some animals are stored in image processor. When animal is intruding to the land the camera fixed at various places will capture it and send it to the processor for further processing. Feature extraction and matching of predefined and new image will be done through yolo based regression algorithm after that alarm will be produced and also SMS will be sent to the owner of the land. So this proposed system will really helpful for the agriculture to increase yield.

Keywords

Metrics

More Like This

Published in: 2022 International Conference on Electronics and Renewable Systems (ICEARS)

Date of Conference: 16-18 March 2022

DOI: 10.1109/ICEARS53579.2022.9752018

Date Added to IEEE *Xplore*: 13 April 2022

Publisher: IEEE

ISBN Information:

Conference Location: Tuticorin, India

Contents

Agriculture is the main occupation in the ancient times for livelihood. But at that time it was done manually like ploughing by farmer itself and it takes more time. Due to this the yield of crops is becoming low. Various factors are there for the reason for low yield, but animal intrusion is a major reason for low yield [3]. Animals like boars, tigers as they want to prevent attacks from human when they get spotted, they usually enter into the farm lands and run fastly so crops may get destroyed. It causes the financial problem for farmers because they are going to lose their invested amount on crops. Farmers with vast lands are affected more because they are going to protect their lands from animals and it becomes tedious to the farmers. Vast lands of forests now a day's becomes residential areas due to deforestation Signup to Continue Reading hearing that elephants and deer's are entering into cultivation lands and destroying crops. Some peoples are creating electric fencing around their land to protect crops from wild animals. As per government rules we should not threaten or ill treat animals. So electric fencing is not a good solution. So this system, without ill treating animals, is protecting crops by producing alarm sound [8]. This system is also helpful for owners to monitor human intrusion by capturing images and sending that message to the owner of the land. Raspberry pi plays main role in this system. It helps to prevent animals entering into the farmlands and this system gives protection from enemies. Wild animals like pigs, elephants play a major part in crop destruction by eating them.

More Like This

ScienceDirect

Materials Today: Proceedings

Volume 62, Part 2, 2022, Pages 599-605

Experimental studies on single point incremental sheet forming of stainless steel 409L alloy

V. Vinoth [a], S. Sathiyamurthy [a], C. Veera Ajay [b], Harsh Vardhan [c], R. Siva [d], J. Prabhakaran [e], C. Suresh Kumar [b]

Show more

https://doi.org/10.1016/j.matpr.2022.03.614

Abstract

Single Point Incremental Forming (SPIF) is a sheet metal forming process in which a sheet metal blank is plastically deformed through a progressive action of single point tool and more reliable for batch production of complex shape of sheet metals with simple numeric control vertical milling machine. In this study, the formability behaviour of stainless steel 409L on both conventional and incremental forming technique were analysed experimentally. The effect of process parameter of SPIF like tool size, spindle speed, feed rate and vertical step down on the formability of stainless steel 409L was investigated experimentally. The forming limit diagram (FLD) and fracture limit curve (FLC) of SS 409L for both the forming processes were plotted and compared. Formability of SS 409L during SPIF increased comparing with conventional forming technique.

Introduction

Incremental sheet metal forming process is more flexible in manufacture of complex components at low production cost in less processing time. This process does not require any dedicated or special dies [1] and uses a ball or hemispherical end tool to produce complicated shaped products. ISF (incremental sheet forming) is a method of metal forming that involves a series of localized deformations. The tool tip forces the metal to undergo plastic deformation at the localized region. The sheet is clamped between the blank holders of the fixture. The tool with a smooth ball tip is rotated and pressed against the sheet metal. The applied load deforms the work material at localized area. The tool is passed required number of times depending on the sheet thickness, design, depth of the profile, etc. In ISMF process, several forming tools such as flat end, ball end and hemispherical end are used. The ball end tool is chosen in two-point ISMF and hemispherical end tool is favored in single point ISMF process [2]. ISF is used in manufacturing of medical parts such as ankle prosthesis [3], [4], a palate or knee implants [5], and automotive parts [6]. Suresh kurra et al. [7] Surface roughness of incrementally formed parts made of EDD steel was evaluated in various forming conditions, and predictive replicas were created utilizing ANN, SVR, and GP. Hypothesis tests are used to assess the model's adequacy, and R2 value is used to assess its performance. The models constructed with ANN and SVR outperform the GP models. In this analysis, the step depth and feed rate are both limited to 0.45 mm and 1100 mm/min, respectively. Subramanian et al. [8] formed the SS304 in stages using a hemispherical tool with varying input parameters. The limit of formability and thickness distribution of the generated sheet were investigated. An optical microscope was used to examine the microstructure of the generated specimens. It has been shown that an extreme decrease in sheet thickness of roughly 50% can be achieved. At a feed rate of 1600 mm/min and a speed of 1000 r/min, the greatest forming limit was attained for a sheet thickness of 0.6 mm. Suresh kurra et al. [9] In this study, numerical simulation and Taguchi orthogonal array were used to investigate the effects of wall angle, step depth, and tool diameter on maximum resultant force, plastic strain, and thinning. It has a thinning effect of 98.42%, a plastic strain effect of 95.91%, and 81.84% resultant force impact. Due to the increased contact area, diameter has a 17.12% result on forming force and has no effect on the other two response variables. Plastic strain is affected by step depth by 2.48%, but the other two response factors are unaffected. Vignesh et al. [10] the dimple fracture mode, which has higher formability, was observed on the broken surface of the sample. The cleavage fracture and decohesive rupture modes were recognized simultaneously on the broken surface of the remaining samples. Fracto graphs reveal that the sample with the highest formability contains prolate type voids, while the remaining

samples mostly have oblate type voids. Fang et al. [11] concluded from stress analysis that the fracture first occurs on the outer wall side at the transition between the contact and non-contact zone. Jawale et al. [12] concluded that using mineral oil as lubricant reduced the surface roughness in the formed sheet. Ajay et al. [13] incrementally formed Ti-6Al-4V sheets, and studied the effect of feed, depth and speed to the Ra, wall angle and thickness. Ajay et al. [14] concluded that Incremental depth is a major parameter that has a major effect on forming force. Ajay et al. [15] indicated that the step depth have a main effect in responsible the formability and surface features of the formed material.

The objective of the work is to investigate the process parameters for Incremental Forming sheet and to study the formability and strain distribution in the Incremental Sheet Forming process.

Section snippets

Material and method

Experiments are performed in three axis CNC Vertical Machining Centre and material used is stainless steel 409L, 150×150 (l×b). The ISMF experimental setup is shown in Fig. 1. High Speed Steel (HSS M2) is used as tool material and is coated with Titanium nitride (TiN) to increase its wear resistance characteristics. The work methodology is shown in a Fig. 2. The microstructure of the stainless steel 409L and the grain boundaries are clearly visible in the Fig. 3.…

Tensile test

The tensile tests were…

Formability test (Cup Test)

It is observed that the SS409L has higher major strain in tension–tension region when compare to other strain condition as well as it also have greater minor strain in tensile compression region when compare to plain strain and tension- tension region. So this stainless steel has well for stretch forming. Stainless steel with a thickness of 1 mm has a maximum major strain of 39% and a maximum minor strain of 7% in the tension–tension area. The greatest main strain offered by stainless steel of…

Conclusion

The stainless steel 409L sheet with 1 mm thickness was selected for the formability study. The straight groove and cup tests were conducted and their FLD's in a usual pattern were plotted. Both FLD's show well increased forming limits strain then the conventional forming limit strains. The FLD's plotted the results of straight groove in rolling direction, diagonal direction, and transverse direction show that there is some effect of anisotropy in incremental sheet forming

a. In this work, the…

…

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.…

Special issue articles Recommended articles

References (15)

M. Oraon *et al.*
Prediction of surface roughness in single point incremental forming of AA3003-O alloy using artificial neural network
IJMATEI (2018)

C. Veera Ajay *et al.*
Incremental Sheet Metal Forming (ISMF): a literature review

AIP Conf. Proc. (2019)

G. Ambrogio *et al.*
Application of incremental forming process for high customised medical product manufacturing
J. Mater. Process. Technol. (2005)

V. Oleksik *et al.*
The influence of geometrical parameters on the incremental forming process for knee implants analyzed by numerical simulation
AIP Conf. Proc. (2010)

S. Tanaka *et al.*
Residual stress in sheet metal parts made by incremental forming process
AIP Conf. Proc. (2007)

H. Amino *et al.*
Dieless NC forming of automotive service panels

S. Kurra *et al.*
Modeling and optimization of surface roughness in single point incremental forming process
J. Mater. Res. Technol. (2015)

Cited by (1)

Investigation and Performance of Pollution Layer Location on 11kV Polymer Insulator

Publisher: IEEE

S. Frieda Angelin ; R.V. Maheswari ; B. Vigneshwaran **All Authors**

Abstract: Ongoing years, financial effect of force framework blackouts brought about by HV cover contamination is a genuine concern. Subsequently, because of its significance and i... **View more**

Metadata

Abstract:
Ongoing years, financial effect of force framework blackouts brought about by HV cover contamination is a genuine concern. Subsequently, because of its significance and intricacy, more prominent consideration has been given to this subject. Therefore, various models, standards, and test strategies have been introduced to forestall the cataclysmic results of force framework blackouts brought about by HV separator contamination flashover. This project focuses on the impacts of non-uniform pollution layer boundaries pollution layer boundaries in particular conductivity and position on reactions is named as flashover voltage and the greatest E-field and the breakdown strength are examined utilizing High Voltage laboratory experimentation.

Published in: 2022 International Conference on Computer Communication and Informatics (ICCCI)

More Like This

Date of Conference: 25-27 January 2022

DOI: 10.1109/ICCCI54379.2022.9740782

Date Added to IEEE *Xplore*: 31 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Print on Demand(PoD) ISSN: 2329-7190

Contents

Polymer insulators have a well-known low pollution performance. Because of the weak links found in polymer materials, polymer insulators are more vulnerable to chemical alterations. Electric field power at the protector surface increments because of the great permittivity and conductivity of water drops, adding to contamination flashover and composite cover maturing.

More Like This

Flashover Prediction of Polymer Insulators Based on Dynamic Modeling of Pollution Layer Resistance Using ANN
IEEE Transactions on Dielectrics and Electrical Insulation
Published: 2023

Dynamic flashover model considering pollution layer resistance variation for fixed washed high voltage insulators
IEEE Transactions on Dielectrics and Electrical Insulation
Published: 2017

Show More

Transformer Oil Quality Assessment Using Machine Learning Techniques

Publisher: IEEE

M. Sinduja ; R.V. Maheswari ; B. Vigneshwaran **All Authors**

Abstract: In this suggested work, difficulties in most engineering applications are overcome, and vector machine learning is used to support the state of the power transformer oil ... **View more**

Metadata

Abstract:
In this suggested work, difficulties in most engineering applications are overcome, and vector machine learning is used to support the state of the power transformer oil based on test findings. For nonlinear issues, such as higher dimensional problems, the support vector machine kernel function is utilized. In machine learning algorithms, kernelized SVM functions such as sigmoid kernel function (SKF), radial basis kernel function (RBF), Gaussian kernel function (GKF), and Bayesian optimization (BO) are performed. To evaluate the quality of high voltage power transformer oil, AI has been used. The oil test on the power transformer is adequate for continued usage., oils that simply require conditioning filtration for future service, oils in very bad condition, the oil should be reclaimed or disposed of, It is theoretically permissible to dispose of oils that are in such terrible condition. In comparison to existing machine learning algorithms, the suggested Bayesian optimization approach achieved a recognition rate of 99.5 percent. The oil test characteristics were transformed and filtered of the dataset, which enhanced the classification performance of the employed methods; The support vector machine kernel function is beneficial for monitoring transformer oil condition.

Metrics

More Like This

Published in: 2022 International Conference on Computer Communication and Informatics (ICCCI)

Date of Conference: 25-27 January 2022

DOI: 10.1109/ICCCI54379.2022.9741071

Date Added to IEEE *Xplore*: 31 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Print on Demand(PoD) ISSN: 2329-7190

Contents

Power Transformer oil test was consisting of measuring breakdown voltage, dielectric strength, resistivity, acidity, flash point and tan delta of samples of the transformer oil test. When power transformer is most important in substations (SS) and critical equipment. These transformers are maintained by insulating oil, serving as a coolant, and degradation due to aging, the temperature is high, and due to weather conditions chemical reactions such as oxidation. Most of the labor was defined as the operations and planning of transformer oil utility, which are dependent on the health state of the transformer. The transformer Water, sludge, acids, dissolved gases, leaking oil content, and other degradation components are all formed by processes. [1]–[2].

More Like This

Prediction of Loan Pricing on the basis of Area Location using K-Nearest Neighbour and Support Vector Machine Learning Algorithms
2023 International Conference on Sustainable Communication Networks and Application (ICSCNA)
Published: 2023

A Novel Framework of Network Packet Loss Detection Using Random Forest Algorithm over Support Vector Machine Learning Algorithms to Improve Accuracy
2022 International Conference on Knowledge Engineering and Communication Systems (ICKES)

Published: 2022

Show More

Investigation Of Different Solid Insulation Impregnated In Liquid Dielectrics

Publisher: IEEE

H. Deborah Festus ; L. Kalaivanai ; R. V. Maheswari **All Authors**

Abstract: An Electrical life is an important way to assess the insulation properties of dielectric materials. The breakdown voltage of insulating paper is an important electric fea... **View more**

Metadata

Abstract:

An Electrical life is an important way to assess the insulation properties of dielectric materials. The breakdown voltage of insulating paper is an important electric feature. In this study, the electrical and physical properties of oil-impregnated insulation paper are investigated experimentally. For various periods, the breakdown voltage and time of mineral oil and vegetable oil-impregnated paper insulation were determined. The impact of insulation paper thickness on electrical and mechanical characteristics has been investigated. The results showed that as the time of immersing insulation paper in oil at room temperature increased, the breakdown voltage reduced and vice versa. As the thickness increases, breakdown voltage increases and decreases for a reduced thickness.

Published in: 2022 International Conference on Computer Communication and Informatics (ICCCI)

Date of Conference: 25-27 January 2022 **DOI:** 10.1109/ICCCI54379.2022.9740849

Date Added to IEEE *Xplore*: 31 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Print on Demand(PoD) ISSN: 2329-7190

Contents

Insulating materials are a material that restricts or eliminates heat, sound, or electricity transmission through them. In engineering practice, the importance of insulating material cannot be overstated. Because heat and electricity are the primary sources of energy in many essential operations, they may be impossible to handle safely without insulators. In electrical and electronic components and assemblies, various insulators are used. Paper, Mica, Asbestos, Rubber, Porcelain, and other insulating materials are examples.

Dynamic target tracking of wheeled mobile robots and analysis of controller with various orientation

Publisher: IEEE

N Karthick Pugalum Perumal ; A Perumal ; M Sivapalanirajan ; E Nithin Durai ; A Stephen ; M Willjuice Iruthayarajan **All Authors**

Abstract: Robot tracking application mostly needs prefixed initial postion and orientation from the target location. The problem becomes complicated when the target moves with time... **View more**

Metadata

Abstract:
Robot tracking application mostly needs prefixed initial postion and orientation from the target location. The problem becomes complicated when the target moves with time. It always needs better controller with quick error convergence and travel distance to track the moving target In this work, the performance of three controllers in tracking a moving reference is compared with possible variation in orientation of the mobile robot. Periodic control in Lyapunov framework is having both shortest distance travel and error convergence for any orientation form 0° to 180° It is observed that the PCL controller suits better for any orientation between the limits when compared to conventional linear controller and nonlinear Lyapunov controller.

Published in: 2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)

Keywords

Metrics

More Like This

Date of Conference: 23-25 February 2022

DOI: 10.1109/ICAIS53314.2022.9743103

Date Added to IEEE *Xplore*: 30 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

In recent years there has been enormous activities in the field of wheeled mobile robotics. For the past two decades of development the progress in trajectory tracking and control of the two wheeled mobile robot is exponentially rising. Many types of robots which is custom build design needs prefixed position and orientation to implement the ideas of programming the hardware. General goal of Robotics is to program the robot track the known or unknown reference trajectory with the objectives like minimum error, minimum distance travelled, and minimum control effort during progression. Many researchers focus on the positioning of robots with some prefixed initial position and orientation. It will be challenging to position the robot in appropriate position and orientation. In this work, the robot is controlled by various controllers to track the dynamically changing target location from any initial condition around the four quadrants of the reference path. The performance measures indicates the capability of the controller in tracking the reference with minimum error and minimum distance travelled. The distance travelled by the robot to track a dynamically changing setpoint from distant location becomes more challenging to keep the error and travel distance as minimum.

Authors

Figures

References

Citations

Keywords

Metrics

More Like This

Maximum principle in finding free final-time optimal trajectory of mobile robot for moving target tracking

2017 Indian Control Conference (ICC)

Published: 2017

Design of Manipulator Trajectory Tracking Control System Based on Artificial Intelligence Algorithm
2023 2nd International Conference on Artificial Intelligence and Autonomous Robot Systems (AIARS)
Published: 2023

Show More

A Survey on various Electric Vehicle batteries – Battery power management and performance monitoring system

Publisher: IEEE

R. Balamurugan ; P. RamKumar ; B. Singaraj ; C. Vasudev ; K. Karthik Kumar ; M. Willjuice Iruthayarajan **All Authors**

Abstract: In recent days, the emission of GHG due to fuel-based transportations causes global disorders to all living beings on the earth. This can be reduced by introducing electr... **View more**

Metadata

Abstract:

In recent days, the emission of GHG due to fuel-based transportations causes global disorders to all living beings on the earth. This can be reduced by introducing electrified transportation. The up-to-date research concentrate more on battery management system and monitoring system, to monitor the battery activity for increasing its life. This review focuses on three main important components of various electric vehicles like battery storage capacity, power management methods and battery performance monitoring system, with an overview of the existing research works. A battery management system is an electronic device that monitors the charging and discharge of rechargeable batteries that can be used to prevent overcharging or high temperature. The battery management system is an integral part of electric vehicles. Unfortunately, it is challenging to monitor and control the various cells of a battery due to their different production and operating conditions. In the end of the review, an upcoming research activity and its challenges relating to solar PV integrated electric vehicle to operate the system independent to the EB or grid supply has been proposed.

Metrics

More Like This

Published in: 2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)

Date of Conference: 23-25 February 2022

DOI: 10.1109/ICAIS53314.2022.9743050

Date Added to IEEE *Xplore*: 30 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

1. Introduction

In the automobile sector, Electric Vehicles (EVs) are particularly appealing since they use cleaner energy and can attain higher performance when compared to fossil-fueled vehicles. Due to the advantages of EVs, their adoption is highly encouraged by various governments. In most countries, they have already established regulations that support their development [1]. Renewable energy sources are used to generate power and drive wheels to replace them. The electrification of transportation, such as EVs and electric buses, has attracted a lot of attention from the automobile industry, academia, and public transportation in recent years, with the aim of reducing metropolitan air pollution caused by fossil fuel-powered automobiles [2]. The battery type, and the number and quality of battery cells utilized, are all factors that affect battery life. Moreover, controlling the accelerator pedal, the driving schedule, and determining energy consumption and battery State of Charge (SOC) evolution are all factors that affect battery life in electric vehicles. Battery durability decreases over time and as a measure of the number of charges and discharges it has received [4].

More Like This

Battery pack modeling for the analysis of battery management system of a hybrid electric vehicle
2009 IEEE Vehicle Power and Propulsion Conference
Published: 2009

A Digital Twin Model for the Battery Management Systems of Electric Vehicles

2021 IEEE 23rd Int Conf on High Performance Computing & Communications; 7th Int Conf on Data Science & Systems; 19th Int Conf on Smart City; 7th Int Conf on Dependability in Sensor, Cloud & Big Data Systems & Application (HPCC/DSS/SmartCity/DependSys)

Published: 2021

Show More

Automatic Indoor Hydroponic Plant Grow Pot using Arduino

Publisher: IEEE

G.Muthu Janani ; N. Santhiya ; G. Vigneshwari ; A. Manuka ; K. Kumar **All Authors**

Abstract: There is a method used for growing plants. The method for growing plants is called hydroponics. In this method the crops are grown on water, rich in essential nutrients. ... **View more**

Metadata

Abstract:
There is a method used for growing plants. The method for growing plants is called hydroponics. In this method the crops are grown on water, rich in essential nutrients. This method provides a solution to the problem in watering the plants. Plants found in houses, workplaces and other public places will have persons to water the plants manually. An automation system with moisture sensors provided near the plant pot is used to detect whether the soil of the plant pot is wet or dry. The LCD notification board displays soil moisture level on the screen. The Pump motor is used to pump water to the plant-based on the display in LCD screen. Therefore, this proposed design will automatically monitor and control plants' watering.

Published in: 2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)

Date of Conference: 23-25 February 2022 **DOI:** 10.1109/ICAIS53314.2022.9742782

Keywords

Metrics

More Like This

Date Added to IEEE *Xplore*: 30 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

More Like This

Impacts of Soil Moisture on Crop Health: A Remote Sensing Perspective
2021 9th International Conference on Agro-Geoinformatics (Agro-Geoinformatics)
Published: 2021

Prediction of Crop Yield Based-on Soil Moisture using Machine Learning Algorithms
2022 2nd International Conference on Technological Advancements in Computational Sciences (ICTACS)
Published: 2022

Show More

Fuzzy Logic Controller based Power Factor Correction Converter for Industrial Applications

Publisher: IEEE

K. Vinodhini ; A. Sobiya ; M. Gengaraj ; M. Nanthini ; M. Subashini ; L. Kalaivani **All Authors**

Abstract: In the modern era, the primary concern is low power factors and high harmonics in the operating power system sourced by the power converter. Various converter topologies ... **View more**

Metadata

Abstract:

In the modern era, the primary concern is low power factors and high harmonics in the operating power system sourced by the power converter. Various converter topologies with different control schemes have been proposed over a long period to mitigate these challenges in the power systems. This paper depicts the power factor correction converter whose control techniques are based upon intelligence techniques such as Fuzzy logic Controller. The proposed control scheme will enhance the power factor of the power system, along with the reduced harmonics in input current with the regulated output voltage. This paper presents a Fuzzy Logic Controller (FLC) based boost converter. The proposed controller fed the converter to process in continuous conduction mode, operating the converter is nearly unity power factor. The fuzzy logic controller-based boost converter has been designed using the MATLAB/Simulink platform. The robustness of the controller can be validated by comparing it with other traditional controllers such as P, PI, and PID controllers.

Citations

Keywords

Metrics

More Like This

Published in: 2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)

Date of Conference: 23-25 February 2022

DOI: 10.1109/ICAIS53314.2022.9742911

Date Added to IEEE *Xplore*: 30 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

In the contemporary globalization of the world, the switched-mode power conversion schemes (ac/dc) have been gained more attention at a more significant concern in several applications such as computer peripherals, industrial control, and instrumentation, aerospace/ military communication areas. Nowadays, AC/DC power conversion is vital in battery charging, energy storage systems, renewable energy systems, and variable speed systems. Present-day, this AC/DC conversion provides a power supply for computers and other electronic pieces of equipment due to their high efficiency and compact sizes [1].

More Like This

Fuzzy logic based SVC for reactive power compensation and power factor correction
2007 International Power Engineering Conference (IPEC 2007)
Published: 2007

Power Factor Correction of a Single Phase AC/DC Boost Converter Using Fuzzy Logic Controller
2021 18th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON)
Published: 2021

Show More

Recognition of Electrocardiogram Signal using Multi-class Kernel Support Vector Machine

Publisher: IEEE

A. Sathesh Kumar ; V. Venkatraj ; S. Rathinam ; B. Vigneshwaran **All Authors**

Abstract: In this proposed work, an electrocardiogram (ECG) signal is classified using multi-class kernel function based support vector machine (SVM) approach with optmized hyperpa... **View more**

Metadata

Abstract:

In this proposed work, an electrocardiogram (ECG) signal is classified using multi-class kernel function based support vector machine (SVM) approach with optmized hyperparameter using bayesian optmization (BO). Measured ECG signal is denoised using butterworth filter. Then the signal is converted into scalogram patterns and features are extracted using fractal image image compression technique for recognition. For validation, the propsoed algorithm comprised of three different input patterns like, people having cardiac arrhythmia (ARR), people having congestive heart failure (CHF), and people having normal sinus rhythms (NSR). The proposed algorithm attained the recognition rate of 99.25% compared to other machine learning approaches signifcant improvement is found. Additional beneifit of the proposed algorithm is required very less amount of memory with fast response.

Published in: 2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)

Keywords

Metrics

More Like This

Date of Conference: 23-25 February 2022

DOI: 10.1109/ICAIS53314.2022.9742905

Date Added to IEEE *Xplore*: 30 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Contents

ECG signal from the human bodies indicates the status of the disease or threats about the looming diseases. Depends upon the human activities the characteristics of the signal may vary from time to time and its very hard to recognize the signals by Cardiologist Reading, in recent trends computer based automate classification of ECG signal using ML approaches can be considered as an effective diagnostics tool [1–2].

More Like This

Prediction of Loan Pricing on the basis of Area Location using K-Nearest Neighbour and Support Vector Machine Learning Algorithms
2023 International Conference on Sustainable Communication Networks and Application (ICSCNA)
Published: 2023

A Novel Framework of Network Packet Loss Detection Using Random Forest Algorithm over Support Vector Machine Learning Algorithms to Improve Accuracy
2022 International Conference on Knowledge Engineering and Communication Systems (ICKES)
Published: 2022

Show More

A Survey of Retinal Image Segmentation

Publisher: IEEE

Swaythana R ; Shree Vardhini V ; G.R. Hemalakshmi **All Authors**

Abstract: There is a multitude of health issues that impact people of all ages all around the world. Retinal disorders that are asymptomatic can result in substantial visual loss. ... **View more**

Metadata

Abstract:
There is a multitude of health issues that impact people of all ages all around the world. Retinal disorders that are asymptomatic can result in substantial visual loss. A retinal eye disease called age-related macular degeneration (AMD) can obscure the clear, center vision required for tasks such as reading. Choroidal neovascularization is a complication that can cause a variety of problems. Segmentation of retinal images is essential for detecting these illnesses. These segmentation approaches for extracting specific images aid in diagnosis and treatment. In this work, different techniques for segmenting the optic disc and blood vessels on retinal pictures were used. The created methodologies are tested on a variety of retinal images, and the results show that the given strategy outperforms other proposed methods for segmentation of optic disc and blood vessels. The results of segmentation are evaluated in terms of accuracy, edge and radius continuity, and background noise.

Published in: 2022 International Conference for Advancement in Technology (ICONAT)

Date of Conference: 21-22 January 2022

DOI: 10.1109/ICONAT53423.2022.9725960

Date Added to IEEE *Xplore*: 10 March 2022

Publisher: IEEE

ISBN Information:

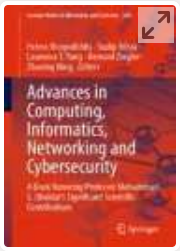
Conference Location: Goa, India

Contents

The most common problems of Age related macular degeneration (AMD), choroidal neovascularization (CNV), and diabetic retinopathy (DR) cause serious retinal damage. Diabetic retinopathy damages the retina and choroid and is one of the consequences of diabetes mellitus. Choroidal neovascularization (CNV) is the formation of a network of tiny blood capillaries and take a portion which supplies the blood in retina. Sight may deteriorate as the volume of blood supplying the retina decreases, and in extreme case, causes blindness [1]. Despite fast advances in medication, the number of persons affected by this disease is expected to rise dramatically in the future years. The doctors aim to treat this retinal disease issue by photocoagulating the neovascularization using optical radiation. To sustain vision, photocoagulation is utilized to characterize the tiny vessels, increasing the amount of blood in the retina. This therapy method takes several sessions to complete. The patient is instructed to fixate his or her eye so that the laser beam can be guided to the damaged area by the ophthalmologist.

Published: 2018

Show More



Advances in Computing, Informatics, Networking and Cybersecurity pp 733–754

Machine Learning Methods for Enhanced Cyber Security Intrusion Detection System

M Satheesh Kumar, Jalel Ben-Othman, K G Srinivasagan & P Umarani

Chapter | First Online: 03 March 2022

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 289)

Abstract

In the ever-changing world of information security, networks had expanded in scale and complexity that integrates wide range of business functions, intrusion threats have increased in occurrence and intelligence. Network administrators and vendors are now moving beyond conventional Intrusion-Detection Systems

(IDS), that only identify problems after they have occurred, to a novel, constructive approach termed Artificial Intelligence (AI) based intrusion detection system. Conventional network Intrusion Detection Systems and firewalls are usually preconfigured to spot malicious network attacks. Now-a-days attackers have become profounder and can try evading common detection rules. There are a few targeted areas where Artificial Intelligence will distribute the extreme evolution for Cybersecurity. To design a proactive defence mechanism, the system has to understand the intelligence of threats that are currently targeting the organization. The implementation of Machine Learning (ML) and threat intelligent-based solutions into blend can revolutionize the landscape in cyber security industry against any kinds of network attacks. Machine Learning is an application of AI that uses a system which is capable of learning from experience. Even in the era of extremely large amount of data and cybersecurity skill shortage, ML can aid in solving the most common tasks including regression, prediction, and classification. In this chapter, the origin and evolution of IDS has been described, followed by the classification of IDS. This chapter will provide a truly interactive learning experience to help and prepare the researchers for the challenges in traditional IDS and the contributions of ML in IDS. This comprehensive review briefs the prominent current works, and an outline of the datasets frequently used

for evaluation purpose. Moreover, this chapter will also describe the Collaborative Intrusion Detection that enhances the Big Data Security. Finally, it presents the IDS research issues and challenges; and the skills that need to survive and thrive in today's threat-ridden and target-rich cyber environment.

Keywords

Intrusion detection system **Machine learning**

Network traffic **Dataset** **Attributes**

International Conference on Communication, Devices and Computing

ICCDC 2021: **Proceedings of the 3rd International Conference on Communication, Devices and Computing**, pp 513–520

Smart Environmental Monitoring Using LoraWAN

G. Kannayeram, M. Madhumitha, S. Mahalakshmi, P. Menaga Devi, K. Monika & N. B. Prakash

Conference paper | First Online: 18 February 2022

Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 851)

Abstract

The motive of this paper is to monitor the environmental parameters using LoRaWAN technology. The main objective of this device is to establish an intelligent monitoring system and a system that covers an entire city using a long-range wireless network. LORAWAN technology is a wireless

network that transfers data from one point to another point, and these points can be tens to hundreds of kilometers apart from the transmitter section. In the receiver section, the LoRa gateway allows sensing devices to transmit data to the cloud. In this paper, monitorization of all sensor data by accessing the webserver. The advantages that LoRaWAN possesses are it is a low-cost product, needs only a little maintenance which means low maintenance offers a very low cost of deployment. It consumes low power while transmitting and receiving the data. Here the mobile based monitoring is used to study the characteristics of the environment at various locations. The mobile app is developed through which the parameters can be easily viewed through mobile phone. Sensors are used to sense the characteristics of temperature, humidity, pressure, CO_2, Ammonia, etc. This system also holds applications in LoRaWAN security, smart agriculture, smart logistics, smart homes, and smart cities for monitoring the environmental parameters. Arduino open-source platform is used to integrate all the sensors.

Keywords

Arduino UNO **LoRaWAN** **Sensors**

Abstract

Manufacturing requires reliable models and methods for the prediction of output performance of machining processes as the demand for highly automated machine tools in the industry has been increased. The prediction of optimal machining conditions for good surface finish and dimensional accuracy plays a very important role in process planning. In the present work, dry turning of austenitic Stainless Steel (SS303) using CVD multi-layer ($TiN/Al_2O_3/TiCN$) coated carbide insert has been investigated. Cutting speed, feed rate, and depth of cut have been considered as the input process variables for the dry turning process. Taguchi's L_9 orthogonal array has been utilized for designing the experiments. A Grey-Fuzzy logic approach has been employed to investigate the multi-objective optimization of turning process parametric combination to provide minimum Surface Roughness (SR) with the maximum Material Removal Rate (MRR). Analysis of Variance (ANOVA) technique has been employed to identify the most influencing input process variable for achieving minimum SR and maximum MRR. Morphology analysis has been performed on the machined surfaces and the chips generated during the machining processes using a Scanning Electron Microscope (SEM) in order to relate the surface quality with the input factor setting.

References

1. Asiltürk I, Neseli S. Multi response optimisation of CNC turning parameters via Taguchi method-based response surface analysis. *Measurement* 2012; 45: 785–794.

Crossref

ISI

Google Scholar

---

2. Korkut I, Kasap M, Ciftci I,. et al. Determination of optimum cutting parameters during machining of AISI 304 austenitic stainless steel. *Mater Des* 2004; 25: 303–305.

Crossref

ISI

Google Scholar

---

3. Saoubi RM, Outeiro JC, Chandrasekaran H, et al. A reviews of surface integrity in machining and its impact on functional performance and life of machined products. *Int J Sustain Manuf* 2008; 1: 203–236.

Google Scholar

---

4. Aggarwal A, Singh H, Kumar P, et al. Optimizing power consumption for CNC turned parts using response surface methodology and taguchi's technique-A comparative analysis. *J Mater Process Technol* 2008; 200: 373–384.

Crossref

ISI

Google Scholar

---

5. Hamdan A, Ahmed A, Sarhan D, et al. An optimization method of the machining parameters in high-speed machining of stainless steel using coated carbide tool for best surface finish. *Int J Adv Manuf Technol* 2012; 58: 81–91.

Crossref

ISI

Google Scholar

6. Junior CADO, Diniz AE, Bertazzoli R. Correlating tool wear, surface roughness and corrosion resistance in the turning process of super duplex stainless steel. *J Braz Soc Mech Sci Eng* 2014; 36: 775–785.

Crossref

Google Scholar

7. Ciftci I. Machining of austenitic stainless steels using CVD multi-layer coated cemented carbide tools. *Tribol Int* 2006; 39: 565–569.

Crossref

ISI

Google Scholar

8. Sreejith PS, Ngoi BKA. Dry machining: machining of the future. *J Mater Process Technol* 2000; 101: 287–291.

Crossref

ISI

Google Scholar

9. Sahoo AK, Sahoo B. Performance studies of multilayer hard surface coatings (TiN/TiCN/Al_2O_3/TiN) of indexable carbide inserts in hard machining: part-I (An experimental approach). *Measurement* 2013; 46: 2854–2867.

Crossref

Google Scholar

10. Lin CL. Use of the taguchi method and grey relational analysis to optimize turning operations with multiple performance characteristics. *Mater Manuf Process* 2007; 19: 209–220.

Crossref

ISI

Google Scholar

11. Lanjewar RW, Saha P, Datta U, et al. Evaluation of machining parameters for turning of AISl 304 austenitic stainless steel on auto sharpening machine. *J Sci Ind Res* 2008; 67: 282–287.

Google Scholar

12. Lin WS. The study of high speed fine turning of austenitic stainless steel. *J Achiev Mater Manuf Eng* 2008; 27: 191–194.

Google Scholar

13. Gandarias A, Lacalle LNLD, Aizpitarte X, et al. Study of the performance of the turning and drilling of austenitic stainless steels using two coolant techniques. *Int J Mach Machin Mater* 2008; 3: 1–17.

Google Scholar

14. Xavior MA, Adithan M. Determining the influence of cutting fluids on tool wear and surface roughness during turning of AISI 304 austenitic stainless steel. *J Mater Process Technol* 2009; 209: 900–909.

Crossref

ISI

Google Scholar

15. Asilturk I, Akkus H. Determining the effect of cutting parameters on surface roughness in hard turning using the taguchi method. *Measurement* 2011; 44: 1697–1704.

ISI

Google Scholar

16. Kaladhar M, Subbaiah KV, Rao CHS. Simultaneous optimization of multiple responses in turning operations. *Proc Inst Mech Eng B: J Eng Manuf* 2014; 228: 707–714.

Crossref

ISI

Google Scholar

17. Lin CL, Lin JL. The use of grey-fuzzy logic for the optimization of the manufacturing process. *J Mater Process Technol* 2005; 160: 9–14.

Crossref

ISI

Google Scholar

18. Bharathi SRS, Ravindran D, et al. Multi objective optimization of CNC turning process parameters with acrylonitrile butadiene styrene material. *Mater Today Proceed* 2019; 27: 2042–2047.

Crossref

Google Scholar

19. Lan TS, Chuang KC, Chen YM. Optimization of machining parameters using fuzzy Taguchi method for reducing tool wear. *Appl Sci* 2018; 8: 1–13.

Crossref

Google Scholar

20. Khatekar N, Bhole J, Pawade R. Monitoring of machining processes: prediction of surface roughness and its correlation with acoustic emission parameters in AISI 303 steel paperback. *LAP LAMBERT Academic Publishing* 2020.

Google Scholar

21. Kaladhar M, Subbaiah KV, Rao CHS. Machining of austenitic stainless steels – a review. *Int J Mach Machin Mater* 2012; 12: 178–192.

Google Scholar

22. Bharathi SRS, Ravindran D, Moshi AAM. Multi response optimization of CNC turning parameters on austenitic stainless steel 303 using taguchi based grey relational analysis. *Trans Can Soc Mech Eng* 2020; 44: 592–601.

Crossref

Google Scholar

23. Bagaber SA, Yusoff AR. Multi-responses optimization in dry turning of a stainless steel as a key factor in minimum energy. *Int J Adv Manuf Technol* 2018; 96: 1–8.

Crossref

Google Scholar

24. Bartarya G, Choudhury SK. State of the art in hard turning. *Int J Mach Tool Manu* 2012; 53: 1–14.

Crossref

ISI

Google Scholar

25. Nur R, Noordin MY, Izman S, et al. Machining parameters effect in dry turning of AISI 316L stainless steel using coated carbide tools. *Proc IMechE Part E: J Process Mechanical Engineering* 2015; 231: 676–683.

Crossref

Google Scholar

26. Ahilan C, Kumanan S, Sivakumaran N, et al. Modeling and prediction of machining quality in CNC turning process using intelligent hybrid decision making tools. *Appl Soft Comput* 2013; 13: 1543–1156.

Crossref

Google Scholar

27. Kaladhar M. Optimization of machining parameters when machining beyond recommended cutting speed. *World J Eng* 2020; 17: 739–749.

Crossref

Google Scholar

28. Kaladhar M, Subbaiah KV, Rao CS. Parametric optimization during machining of AISI 304 austenitic stainless steel using CVD coated DURATOMICTM cutting insert. *Int J Ind Eng Comput* 2012; 3: 577–586.

Google Scholar

29. Puh F, Jurkovic Z, Perinic M, et al. Optimization of machining parameters for turning operation with multiple quality characteristics using grey relational analysis. *Teh Vjesn* 2016; 23: 377–382.

Google Scholar

30. Rajesh M, Moshi AAM, Mathew J, et al. Hybrid optimization of turning parameters using copras-taguchi technique. *Int J Appl Eng Res* 2016; 11: 719–728.

Google Scholar

31. Sahoo AK, Sahoo B. Performance studies of multilayer hard surface coatings (TiN/TiCN/Al_2O_3/TiN) of indexable carbide inserts in hard machining: part-II (RSM, grey relational and techno economical approach). *Measurement* 2013; 46: 2868–2884.

Crossref

ISI

Google Scholar

32. Hariharasakthisudhan P, Moshi AAM, Bharathi SRS, et al. Regression and grey relational analysis on friction and wear behavior of AA6061/Al_2O_3/Si_3N_4/graphite hybrid nanocomposites. *Mater Res Express* 2019; 6: 085017.

Crossref

Google Scholar

33. Rajendran K, Mercy, Kumar SS, et al. Parametric optimization on turning AISI 303 austenitic stainless steel using grey relational analysis. *J Industr Pollut Control* 2017; 33: 1794–1800.

Google Scholar

34. Alagarsamy SV, Ravichandran M, Raveendran P, et al. Evaluation of micro hardness and optimization of dry sliding wear parameters on AA7075 (Al-Zn-Mg-Cu) matrix composites. *J Balk Tribol Assoc* 2019; 25: 730–742.

Google Scholar

35. Moshi AAM, Madasamy S, Bharathi SRS, et al. Investigation on the mechanical properties of sisal – banana hybridized natural fiber composites with distinct weight fractions. *AIP Confer Proceed* 2019; 2128: 020029.

Crossref

Google Scholar

36. Senthilkumar S, Karthick A, Madavan R, et al. Optimization of transformer Oil blended with natural ester oils using taguchi-based grey relational analysis. *Fuel* 2021; 288: 119629.

Crossref

Google Scholar

37. Moshi AAM, Ravindran D, Bharathi SRS, et al. TIG Welding process parameter optimization for aluminium alloy 6061 using grey relational analysis and regression equations. *Adv Intell Sys Comput* 2020; 979: 412–425.

Google Scholar

38. Arulselvan S, Ravindran D, Moshi AAM, et al. Optimization of surface roughness, material removal rate and taper error for wirecut electrical discharge machined taper parts of inconel 825 alloy. *J Balk Tribol Assoc* 2019; 25: 1028–1037.

Google Scholar

39. Pattnaik S, Karunakar DB, Jha PK. Multi-characteristic optimization of wax patterns in the investment casting process using grey–fuzzy logic. *Int J Adv Manuf Technol* 2013; 67: 1577–1587.

Crossref

ISI

Google Scholar

40. Ahilan C, Kumanan S, Sivakumaran N. Multi-objective optimisation of CNC turning process using grey based fuzzy logic. *Int J Mach Machin Mater* 2009; 5: 434–451.

Google Scholar

41. Prasath VJ, Kannan RK, Mugesh RS, et al. Grey-Fuzzy modelling and analysis of optimizing turning process parameters for stainless steel material. Recent advances in manufacturing, automation, design and energy technologies. *Part of the Lecture Notes in Mechanical Engineering book series* 2021: 331–338.

Google Scholar

42. Ramanujam R, Venkatesan K, Saxena V, et al. Optimization of machining parameters using fuzzy based principal component analysis during dry turning operation of inconel 625 – A hybrid approach. *Procedia Eng* 2014; 97: 668–676.

Crossref

Google Scholar

43. Alagarsamy SV, Ravichandran M. Parametric studies on dry sliding wear behaviour of A1-7075 alloy matrix composite using S/N ratio and ANOVA analysis. *Mater Res Express* 2020; 7: 1–17.

Crossref

Google Scholar

44. Senthilkumar N, Sudha J, Muthukumar V. A grey fuzzy approach for optimizing machining parameters and the approach angle in turning AISI 1045 steel. *Adv Prod Eng Manag* 2015; 10: 195–208.

Google Scholar

45. Salem SB, Bayraktar E, Boujelbene M, et al. Effect of cutting parameters on chip formation in orthogonal cutting. *J Achiev Mater Manuf Eng* 2012; 50: 7–17.

Google Scholar

46. Cakir MC, Ensarioglu C, Demirayak I. Mathematical modeling of surface roughness for evaluating the effects of cutting parameters and coating material. *J Mater Process Technol* 2009; 209: 102–109.

Crossref

ISI

Google Scholar

Supplementary Material

Supplemental material for this article is available online.

Turning performance analysis and optimization of processing parameters using GRA-PSO approach in sustainable manufacturing

Show details

Restricted access

Machinability characteristics analysis of hard turning operation on AISI 4340 steel using physical vapor deposition multilayer coated carbide cutting tool in the dry environment

Show details

Restricted access

Parametric study and multi-criteria optimization during turning of X210Cr12 steel using the desirability function and hybrid Taguchi-WASPAS method

Show details

View more

Sage recommends:

SAGE Knowledge
Entry

Stainless Steel

Show details

SAGE Knowledge
Entry

Stainless Steel

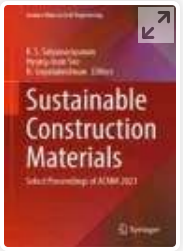
Show details

SAGE Knowledge
Book chapter

Within-Subjects ANOVA

Show details

View more



Sustainable Construction Materials pp 377–386

Analysis of RCC Beam with Varying Stirrups Pattern Subjected to Two-Point Loading by Using ABAQUS

M. Ananth, R. Sivasankar, G. Selvaganapathy & T. Sevakapandian

Conference paper | First Online: 15 December 2021

Part of the Lecture Notes in Civil Engineering book series (LNCE,volume 194)

Abstract

RCC means reinforced cement concrete, which contains a specific amount of reinforcing material such as steel in it. A stirrup is a closed loop of reinforcement bar that is used to hold the main reinforcement bars together in an RCC structure. The purpose of stirrups is to prevent the column from

buckling and beam from bending. When it is used in beams, stirrup is used as shear or transverse reinforcement since it withstands the shear force, even though shear cracks are occurring. The analysis and behaviour of beam with normally tied stirrups and truss model stirrups in RCC beam of dimensions (150 mm x 230 mm x 1200 mm) using ABAQUS software. From the software results, beams with truss model 1 show the value of 89.23 kN and the beam with different angles shows the value of 98.79 kN. So that truss model stirrup shows better results compared to the beam analysed with normally tied stirrups.

Keywords

RCC beam **Normally tied stirrups** **ABAQUS**

Truss model stirrups **Two-point loading**

References

1. Abaqus Analysis User Manual – Abaqus Version 6.8. (2008). Retrieved November 5, 2010

2. El-Sayed AK (2017) Shear capacity assessment of reinforced concrete beams with corroded stirrups. Construct Building Mater 134, 176–184

3. Karayannis CG et al (2013) Shear tests of reinforced concrete beams with continuous rectangular spiral reinforcement. Construct Build Mater 46:86–97

4. Dassault Systèmes Simulia Corp (2008). Abaqus v. 6.8 [Software]. Providence, RI: Dassault Sys/tèmes Simulia Corp

5. Doo-Yeol Yoo et al (2017) Feasibility of replacing minimum shear reinforcement with steel fibers for sustainable high-strength concrete beams. Eng Struct 147:207–222

6. Abeda F et al (2019) Experimental and finite element investigation of the shear performance of BFRP-RC short beams. Structures 20:689–701

7. Jumaa GB (2019) Size effect on the shear failure of high-strength concrete beams reinforced with basalt FRP bars and stirrups. Construct Build Mater 209:77–94

8. Joergensen HB et al (2018) Experimental investigation on the shear capacity of RC beams with curtailed reinforcement. Eng Struct 169:81–93

9. Fisker J (2016) Mechanical model for the shear capacity of R/C beams without stirrups: A proposal based on limit analysis. Eng Struct 115:220–231

10. Bantilas KE (2017) Shear strength of reinforced concrete beam-column joints with crossed inclined bars. Eng Struct 140:241–255

11. Wang L et al (2015) Effects of stirrup and inclined bar corrosion on shear behaviour of RC beams. Construct Build Mater 98:537–546

12. Cui M et al (2019) Experimental study on the shear performance of RC beams reinforced with welded reinforcement grids. Construct Build Mater 203:377–391

13. Colajanni P (2014) Shear capacity in concrete beams reinforced by stirrups with two different inclinations. Eng Struct 81:444–453

14. Wakjira TG et al, FRCM/internal transverse shear reinforcement interaction in shear strengthened RC beams. Composite Struct 201:326–339

15. Ebead U (2019) Experimental and analytical study on strengthening of reinforced concrete T-beams in shear using steel reinforced grout (SRG). Composites Part B 177:107368

16. Visintin P (2017) Shear behaviour of Geo-polymer concrete beams without stirrups. Construct Build Mater 148:10–21

17. de Corte W et al, Effectiveness of spirally shaped stirrups in reinforced concrete beams. Eng Struct 52:667–675

18. IS 456:2000 Indian standard plain and reinforced concrete - code of practice (fourth revision)

19. IS: 2386 (part iii) (1963) Methods of test for aggregates for concrete

20. IS :4031 (part 4) (1988) Methods of physical tests for hydraulic cement part 4 determination of consistency of standard cement paste

21. Earij A et al (2017) Nonlinear three–dimensional finite–element modelling of reinforced–concrete beams: computational challenges and experimental validation. Eng Failure Anal 82:92–115

22. Rajasekhar K et al (2017) Stress-strain behaviour of confined normal grade concrete. Int J Prof Eng Stud viii(3)

Author information

Authors and Affiliations

National Engineering College, KR Nagar, Kovilpatti, Tamilnadu, India

M. Ananth, R. Sivasankar, G. Selvaganapathy & T. Sevakapandian

Corresponding author

Correspondence to R. Sivasankar .

Editor information

Editors and Affiliations

Civil Engineering, SRM Institute of Science and Technology, Chennai, Tamil Nadu, India

K. S. Satyanarayanan

Civil Engineering and Industrial Design, University of Liverpool, Liverpool, UK

Hyung-Joon Seo

Civil Engineering, CSIR- Central Building Research Institute, Roorkee, Uttarakhand, India

N. Gopalakrishnan

Rights and permissions

Copyright information

About this paper

Cite this paper

Ananth, M., Sivasankar, R., Selvaganapathy, G., Sevakapandian, T. (2022). Analysis of RCC Beam with Varying Stirrups Pattern Subjected to Two-Point Loading by Using ABAQUS. In: Satyanarayanan, K.S., Seo, HJ., Gopalakrishnan, N. (eds) Sustainable Construction Materials. Lecture Notes in Civil Engineering, vol 194. Springer, Singapore. https://doi.org/10.1007/978-981-16-6403-8_32

.RIS .ENW .BIB

DOI	Published	Publisher Name
https://doi.org/10.1007/978-981-16-6403-8_32	15 December 2021	Springer, Singapore

Print ISBN	Online ISBN	eBook Packages
978-981-16-6402-1	978-981-16-6403-8	Engineering Engineering (R0)

Publish with us

[Policies and ethics]

Contemporary Issues in Communication, Cloud and Big Data Analytics pp 273–284

Advanced FET-Based Biosensors—A Detailed Review

M. Suryaganesh, T. S. Arun Samuel, T. Ananth Kumar & M. Navaneetha Velammal

Conference paper | First Online: 01 December 2021

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 281)

Abstract

This review paper has done a detailed performance analysis for advanced field-effect transistor (FET) based biosensors which shall be distinguished by their outstanding features, such as mass-production capability, sensitivity, ultra-sensitivity detection, and low-cost manufacturing, within a range of advanced

biosensing technologies. In order to encourage the understanding of FET-based biosensing technology and its sensing analyte, major FET-based biosensing devices are presented in this review: Dielectric modulated FET, impact ionization MOSFET, double gate -dielectric modulated tunnel FET, junction less electrolyte insulator-semiconductor FET and nanowire FET, etc. This work is also designed to provide a state-of-the-art analysis of biosensors, based on an advanced field-gate field-effect transistor in the area of bioanalytical applications. Besides, a connection will be made between the various FET structures, with particular attention paid to materials and technologies.

Keywords

Field-effect transistor **MOSFET**

In-vitro diagnosis (IVD) **Biosensors**

References

1. Kim, J.-Y., Ahn, J.-H., Choi, S.-J., Im, M., Kim, S., Duarte, J.P., Kim, C.-H., Park, T.J., Lee, S.Y., Choi, Y.-K.: An underlap channel-embedded field-effect transistor for biosensor application in watery and dry environment. IEEE Trans. Nanotechnol. **11**(2), 390–394 (2012). https://doi.org/10.1109/TNANO.2011.2175006

2. Kannan, N., Kumar, M.J.: Dielectric-modulated impact-ionization MOS transistor as a label-free biosensor. IEEE Electron Device Lett. **34**(12), 1575–1577 (2013). https://doi.org/10.1109/LED.2013.2283858

3. Saad, I., Syazana, A.H.B., Zuhir, M.H., Seng, B.C., Bolong, N.: Equivalent circuit model analysis of vertical impact ionization MOSFET (IMOS). In: 2015 3rd International Conference on Artificial Intelligence, Modelling and Simulation (AIMS), Kota Kinabalu, pp. 451–456 (2015). https://doi.org/10.1109/AIMS.2015.77

4. Kanungo, S., Chattopadhyay, S., Gupta, P.S., Rahaman, H.: Comparative performance analysis of the dielectrically modulated full-gate and short-gate tunnel FET-based biosensors. IEEE Trans. Electron Devices **62**(3), 994–1001 (2015). https://doi.org/10.1109/TED.2015.2390774

5. Kanungo, S., Chattopadhyay, S., Gupta, P.S., Sinha, K., Rahaman, H.: Study and analysis of the effects of SiGe source and pocket-doped channel on sensing performance of dielectrically modulated tunnel FET-based biosensors. IEEE Trans. Electron Devices **63**(6), 2589–2596 (2016). https://doi.org/10.1109/TED.2016.2556081

6. Ajay, Narang, R., Saxena, M., et al.: Novel junctionless electrolyte-insulator-semiconductor field-effect transistor (JL EISFET) and its application as pH/biosensor. Microsyst. Technol. **23**, 3149–3159 (2017). https://doi.org/10.1007/s00542-016-3013-1

7. Chen, Y., Ren, R., Pu, H., et al.: Field-effect transistor biosensor for rapid detection of Ebola Antigen. Sci Rep **7**, 10974 (2017). https://doi.org/10.1038/s41598-017-11387-7

8. Syu, Y.-C., Hsu, W.-E., Lin, C.-T.: Review—field-effect transistor biosensing: devices and clinical applications. ECS J Solid State Sci Technol **7**(7), Q3196–Q3207 (2018)

9. Bhattacharyya, A., Chanda, M., De, D.: Performance assessment of new dual-pocket vertical heterostructure tunnel FET-based biosensor

considering steric hindrance issue. IEEE Trans. Electron Devices **66**(9), 3988–3993 (2019). https://doi.org/10.1109/TED.2019.2928850

10. Kumar, S., Singh, Y., Singh, B.: Extended source double-gate tunnel FET based biosensor with dual sensing capabilities. SILICON (2020). https://doi.org/10.1007/s12633-020-00565-4

11. Chattopadhyay, A., Tewari, S., Gupta, P.S.: Dual-metal double-gate with low-k/high-k oxide stack junctionless MOSFET for a wide range of protein detection: a fully electrostatic based numerical approach. SILICON (2020). https://doi.org/10.1007/s12633-020-00430-4

12. Sellami'r, L., Newcomb, R.W.: Electrical Engineering Department, U.S. Naval Academy 105 Maryland Ave, Annapolis, MD 21402, USAE-mail: sellami@eng.umd.edu, http://web.usna.navy.mil/'sellami

13. Ambhorkar, P., Wang, Z., Ko, H., Lee, S., Koo, K.-I., Kim, K., Cho, D.-I.D.: Nanowire-based biosensors: from growth to applications. Micromachines **9**, 679 (2018)

14. Kwong Hong Tsang, D., Lieberthal, T.J., Watts, C., et al.: Chemically functionalised graphene FET biosensor for the label-free sensing of exosomes. Sci. Rep. **9**, 13946 (2019). https://doi.org/10.1038/s41598-019-50412-9

Author information

Authors and Affiliations

Department of ECE, National Engineering College, Kovilpatti, Tamil Nadu, India

M. Suryaganesh & T. S. Arun Samuel

Department of CSE, IFET College of Engineering, Villupuram, Tamil Nadu, India

T. Ananth Kumar

Department of ECE, Francis Xavier Engineering College, Tirunelveli, Tamil Nadu, India

M. Navaneetha Velammal

Editor information

Editors and Affiliations

Department of Information Technology, Sikkim Manipal Institute of Technology, Majitar, Sikkim, India

Hiren Kumar Deva Sarma

Department of Automatics and Applied Software, Aurel Vlaicu University of Arad, Arad, Romania

Valentina Emilia Balas

Department of Information Technology, Sikkim Manipal Institute of Technology, Majitar, Sikkim, India

Bhaskar Bhuyan

Department of Computer Science and Engineering, Marwadi University, Rajkot, Gujarat, India

Nitul Dutta

Rights and permissions

Copyright information

About this paper

Cite this paper

Suryaganesh, M., Arun Samuel, T.S., Ananth Kumar, T., Navaneetha Velammal, M. (2022). Advanced FET-Based Biosensors—A Detailed Review. In: Sarma, H.K.D., Balas, V.E., Bhuyan, B., Dutta, N. (eds) Contemporary Issues in Communication, Cloud and Big Data Analytics. Lecture Notes in Networks and Systems, vol 281. Springer, Singapore. https://doi.org/10.1007/978-981-16-4244-9_22

DOI Published Publisher Name

https://doi.org/10.1007/978-981-16-4244-9_22	01 December 2021	Springer, Singapore

Print ISBN	Online ISBN	eBook Packages
978-981-16-4243-2	978-981-16-4244-9	Engineering Engineering (R0)

Publish with us

Policies and ethics

2022 | OriginalPaper | Chapter

Tuning of MIMO PID Controller Using HCLPSO Algorithm

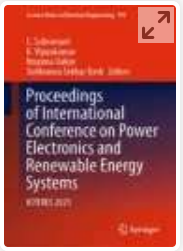
Authors : T. Jeyaraman, D. Joelpraveenkumar, M. Kaliraj, M. Krishna Chandar, M. Willjuice Iruthayarajan

Published in: Proceedings of International Conference on Power Electronics and Renewable Energy Systems

Publisher: Springer Singapore

Abstract

In this paper, the heterogeneous comprehensive learning particle swarm optimization is proposed for the tuning of multivariable proportional integral derivative (PID) for Wood and Berry system. This simulation work is done for both the decentralized and centralized PID controller. For comparison, results from the tuning of multivariable PID controller by particle swarm optimization (PSO) algorithm is considered. Here, our objective is to minimize the integral absolute error (IAE) value of the system. For the simulation of the system and algorithm, MATLAB/SIMULINK software is used. Statistical performance of evolutionary algorithms such as best value, mean value, and standard deviation are going to be evaluated based on ten independent initial conditions. In this work, it is observed that HCLPSO give more consistent performance compared to PSO algorithm.



Proceedings of International Conference on Power Electronics and Renewable Energy Systems pp 341–351

Recognition of Partial Discharge Signal Using Deep Learning Algorithm

J. Ashmin Sugaji, M. Ravindran & R. V. Maheswari

Conference paper | First Online: 22 November 2021

Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 795)

Abstract

In transmission frameworks, insulators have a huge impact on the better presentation of the devices. The outside insulators are introduced to an environment that has a high temperature, clamminess similar to pollution from the beachfront and industries. On deposition of contaminants, pollution builds gradually, and spillage current starts to stream on a

surface level. Partial Discharge (PD) deteriorates the insulation and leads to the breakdown of the device. The effect of conductive pollution on PD is seen through tests performed on both earthenware and non-ceramic protectors at different pollution levels. To achieve complete information about PD, it is gotten through a PD acknowledgment system that records the PD waveforms close to the regular PD. A couple of sorts of PD signals are difficult to recognize at a starting stage. To crush the test, a Convolutional Neural Network (CNN) based profound learning procedure for PD plan affirmation is presented in this paper. The acquired PD signal is changed into a 3-D (ϕ-q-n) picture. To anticipate such a PD the 3-D (ϕ-q-n) picture is feed as a input to Deep Learning Algorithm. It uses Convolutional Neural Networks (CNN) for picture gathering. In this, Alex Net is used for perceiving the unmistakable PD.

Keywords

Partial discharge **Deep learning**

Pattern recognition **Spillage current**

Spark over voltage

Chapter

Investigation of Electrical Characteristics for Different Geometrical Dimensions of 11 kV Insulators Under Finite Element Method

January 2022
DOI:10.1007/978-981-16-4943-1_2
In book: Proceedings of International Conference on Power Electronics and Renewable Energy Systems (pp.11-20)

Authors:

R. Bharanidharan **R. V. Maheswari**

References (10)

Citations (0) References (10)

Impacts of Corona Rings on the Insulation Performance of Composite Polymer Insulator Strings

Article Full-text available

Jun 2015

S. Ilhan · Aydogan Ozdemir · Hasbi Ismailoglu

View Show abstract

Analysis of Stress Control on 33-kV Non-ceramic Insulators Using Finite-element Method

Article Full-text available

Mar 2015

Murugan Natarajan · Basharan Vigneshwaran · Kannayeram Ganapathya Pillai · Willjuice Iruthayarajan Mariasiluvairaj

View Show abstract

Study on Leakage Current Waveforms of Porcelain Insulator due to Various Artificial Pollutants

Article Full-text available

Jan 2007

Waluyo Waluyo · Parouli M. Pakpahan · Suwarno Harjo · Maman Djauhari

View Show abstract

Finite element modeling for electric field and voltage distribution along the polluted polymeric insulator

Article

Jan 2012

C. Muniraj · Chandrasekar Dr.S.

View Show abstract

Finite elements for electrical engineers. (Metod konechnykh ehlementov dlya radioinzhenerov i inzhenerov-ehlektrikov). Transl. from the English

Article

P. Silvester · Ronald leslie Ferrari

View

Study on AC Flashover Performance for Different Types of Porcelain and Glass Insulators With Non-Uniform Pollution

Article

Jul 2013

Zhijin Zhang · Xiaohuan Liu · Xingliang Jiang · Wenzhong Gao

View Show abstract

Analysis of Surface Degradation of Silicone Rubber Insulation Due to Tracking Under Different Voltage Profiles

Article

Jun 2007

Chandrasekar Dr.S. · R. Sarathi · Michael Danikas

View Show abstract

Electric Fields on AC Composite Transmission Line Insulators

Article

May 2008

Andrew Phillips · J. Kuffel · Anthony Baker · Jennifer Yu

View Show abstract

Study on AC Artificial-Contaminated Flashover Performance of Various Types of Insulators

Article

Nov 2007

Xingliang Jiang · Jihe Yuan · Zhijin Zhang · Caixin Sun

View Show abstract

Electric fields along a post insulator: AC-measurements and calculations

Article

May 1994

Ralf. Hartings

View Show abstract

2022 | OriginalPaper | Chapter

Grey–Fuzzy Modelling and Analysis of Optimizing Turning Process Parameters for Stainless Steel Material

Authors : V. Jegan Prasath, R. Karthick Kannan, R. Shanmuga Mugesh, N. Sugeesh, S. R. Sundara Bharathi, A. Arul Marcel Moshi

Published in: Recent Advances in Manufacturing, Automation, Design and Energy Technologies

Publisher: Springer Singapore

Abstract

Stainless steel 303 (SS 303) is one among the parts of stainless steel alloys group. SS 303 is an austenitic stainless steel which is non-magnetic and non-hardenable. The present work attempts to optimize the CNC turning process parameters for SS303 material such as spindle speed, feed rate and depth of cut. Physical vapour deposition (PVD) coated inserts are used. Material removal rate (MRR) and surface roughness (SR) are chosen as the output responses for the optimization process. Grey-fuzzy model is generated between the normalized output values and the corresponding grey relational grade values. The optimal combination of input parameter setting for obtaining the better output responses has been decided based on the generated grey-fuzzy reasoning grade value. Analysis of variance technique has been employed to identify the influence of each input factors in achieving the optimal results.

previous chapter

next chapter

Literature

Metadata

Chapter

Numerical Investigation of Swirl Flow on Heat Transfer Enhancement in a Stepped Pipe

October 2021
DOI:10.1007/978-981-16-4222-7_98
In book: Recent Advances in Manufacturing, Automation, Design and Energy Technologies, Proceedings from ICoFT 2020 (pp.897-907)

Authors:

Prince Abraham
National Engineering College

F. Michael Thomas Rex

P. Samuel Ponraj

R. Jayavenkatesh

Show all 5 authors

References (14)

Abstract

Introduction of swirling flow in pipes has significant impact in convective heat transfer applications. The swirl is induced by various means such as installing guide vanes and swirl generators along the pipe. In this work, a numerical study is performed to predict the influence of the swirl intensity on heat transfer. The numerical analysis is performed using a commercial Computational Fluid Dynamics package for turbulent flow with a Reynolds number around 3300. The intensity of the swirl component at the inlet of the pipe is varied from 0 to 5 m/s by having a constant axial component of 0.1 m/s. Moreover, a step is introduced on the inlet of the pipe and its influence in heat transfer is also investigated. The results revealed that the heat transfer takes place effectively when the diameter of the inlet pipe is smaller. However, it is less responsive for the induced swirl. Conversely, the heat transfer is not as effective as the diameter of the inlet is more. But it is highly sensitive for the swirl flows and the heat transfer could be enhanced by swirling flows where the inlet diameter is relatively high.

No full-text available

To read the full-text of this research, you can request a copy directly from the authors.

Request full-text PDF

Citations (0) References (14)

Heat transfer enhancement in three-start spirally corrugated tube: Experimental and numerical study

Article Full-text available

Jun 2015

Zaid S. kareem · Shahrir Abdullah · Tholudin Mat Lazim · Ammar F Abdul Wahid

View Show abstract

A comprehensive review on passive heat transfer enhancements in pipe exchangers

Data Full-text available

May 2013 · RENEW SUST ENERG REV

Shuli Liu · Mohamed Fadl

View Show abstract

The effect of swirl on transition from churn flow to annular flow in an intermediate diameter pipe

Article

Jun 2019 · EXP THERM FLUID SCI

Wen Liu · Xiaofei Lv · Bo Feng Bai

View Show abstract

An experimental investigation of wall-bed heat transfer and flow characteristics in a swirling fluidized bed reactor

Article

Apr 2019 · APPL THERM ENG

Mohamed Hamam M Tawfik · Mohamed Refaat Diab · Hamada M. Abdelmotalib

View Show abstract

Comparison between rotation swirler and non-rotation swirler in a horizontal swirling flow pneumatic conveying

Article

Feb 2019 · POWDER TECHNOL

Lin Dong · Akira Rinoshika

View Show abstract

Comparative study on heat transfer enhancement by turbulent impinging jet under conditions of swirl, active excitations and passive excitations

Article

Jan 2019 · INT COMMUN HEAT MASS

Naseem Uddin · Bernhard Weigand · B. A. Younis

View Show abstract

Enhancing convective heat transfer for laminar flow in a tube by inserting a concentric inner tube and controlling concurrent flows: a numerical assessment

Article

Dec 2018 · INT COMMUN HEAT MASS

C.J. Ho · Jung-Yi Yen · Xiang-Yun Kung · C.D. Wen

View Show abstract

CFD simulation of swirling flow induced by twist vanes in a rod bundle

Article

Nov 2018 · NUCL ENG DES

Jinbiao Xiong · Cheng Ruiqi · Chuan Lu · Xu Cheng

View Show abstract

The influence of swirling flows on pulverized coal gasifiers using the comprehensive gasification model

Article

Apr 2018 · FUEL PROCESS TECHNOL

Jianliang Xu · Qinfeng Liang · Zhenghua Dai · Haifeng Liu

View Show abstract

Heat transfer enhancement in three-start spirally corrugated tube: Experimental and numerical study

Article

Jan 2015 · CHEM ENG SCI

Tholudin Mat Lazim

View

Numerical study of flow and heat transfer characteristics in outward convex corrugated tubes

Article

Dec 2012 · INT J HEAT MASS TRAN

Huai-Zhi Han · Bing-Xi Li · Bi-Yong Yu · Feng-Chen Li

View

Heat transfer enhancement in a tube with equilateral triangle cross sectioned coiled wire inserts

Article

Sep 2010 · EXP THERM FLUID SCI

Sibel Güneş · Veysel Ozceyhan · Orhan Büyükalaca

View Show abstract

The influence of artificial roughness shape on heat transfer enhancement: Corrugated tubes, dimpled tubes and wire coils

Article

Jan 2011 · APPL THERM ENG

Alberto García · Juan Pedro Solano · Pedro G. Vicente · A. Viedma

View Show abstract

Energy correlation of heat transfer and enhancement efficiency in decaying swirl flow

Article

Jan 2002

M. Yilmaz · Sinan Yapici · O. Comakli · O.N. Sara

View Show abstract

Laith Habeeb · Fouad Saleh · B.M. Maajel

This study investigates numerically heat transfer augmentation using water-based Al 2 O 3 nanofluid flowing in a circular cross-sectional tube under constant inlet temperature in laminar flow conditions. The Al 2 O 3 /water nanofluid with different volume fractions (3% and 5%) and twisted tape twist ratio of (H/D =1.85) are employed, and Reynolds numbers of 678 to 2033 in a laminar flow are ... [Show full abstract]

View full-text

Article

Enhancement of convection heat transfer using EHD conduction method

December 2017 · Experimental Thermal and Fluid Science

Mostafa Mirzaei · Majid Saffar-Avval

Laminar forced convection heat transfer in an annulus is enhanced using electrohydrodynamics (EHD) technique. A novel EHD-enhanced double pipe heat exchanger is designed and incorporated with six pairs of electrodes. An experimental setup is constructed to investigate heat transfer enhancement, pressure drop and power consumption in the double pipe. The finite volume method is employed to solve ... [Show full abstract]

Read more

Article

Size Effect on Thermal characteristic of Tubular Heat Exchanger at Macroscale & Microscale

September 2018 · Journal of Thermal Science and Engineering Applications

Ankush D. Tharkar · Shripad P. Mahulikar

The scope for the heat transfer enhancement in the tubular heat exchanger is high due to its unique property of having two separate convective heat transfer coefficients. The variation of diameter and annular space has a direct effect on the value of convective heat transfer coefficients due to their inverse relation. Thus, the strong emphasis must be given on the influence of diameter and ... [Show full abstract]

Read more

Last Updated: 16 Nov 2023

Abstract

Dimensional and form accuracy of the workpiece can be improved by effective fixture layout design which shows minimum deformation of the workpiece during machining. Flexible fixtures are inevitable in industries owing to high product variety and shortened production time. Hence, an integrated approach is presented to select the optimum position of locating and clamping elements in a flexible fixture that provide good form accuracy. In this approach, a Parametric Finite Element Model (PFEM) is developed using the information about the workpiece, fixture plan and machining condition. PFEM is used to predict the elastic deformation of the workpiece for the fixture layouts generated using a discre Genetic Algorithm (GA) with mixed integer-discrete variables. The objective is to min maximum deformation of the workpiece by optimizing fixture layouts. The stability of the workpiece and fixture system is ensured by implementing non-negative reaction force constraints in GA. The proposed approach is applied for a prismatic workpiece to carry out pocket milling operation. The significance of this work is to express the flexibility and computational effectiveness of PFEM to accommodate variation in the workpiece, machining condition and fixture plan while designing flexible fixtures. Further, it highlights a significant reduction in search space due to the use of discrete GA and stability constraint as it takes less objective function calculations. An experimental analysis is performed to study the effectiveness of the proposed approach. Therefore, the proposed approach provides a viable solution to the optimization problem in flexible fixtures.

Introduction

Fixture layout design is the process of arranging the fixturing elements such as locators and clamps around the workpiece to constrain the workpiece during machining. A good fixture layout design reduces undesirable workpiece deformation and leads to improvement in dimensional and form accuracy of the workpiece. Nowadays, Flexible Fixture Systems (FFS) are widely used in industries over dedicated fixture systems in the perspective of reducing the tooling cost and being versatile for a variety of components by merely reconfiguring the arrangement.

A good number of fixture layout design optimization approaches have been reported by other researchers. Most of these approaches used a Genetic Algorithm (GA) for optimization and the Finite Element Method (FEM) for modelling the workpiece and fixture systems. Kulankara and Melkote[1] applied an integrated approach using FEM and GA (FEM-GA) for optimizing fixture layout by minimizing maximum deformation of the 2D workpiece. The workpiece was considered as a 2D elastic body and the fixture was a rigid body. In GA, the variables were considered as integers by considering the availability of nodes on the workpiece. Constraints were implemented in GA to select feasible fixture layout by ensuring non-negative reaction force. Kaya[2] extended the work of Krishnakumar and Melkote to include ANSYS finite element solver for effective prediction of deformation of the workpiece by adopting Chromosome library in GA to reduce the number of iterations. Padmanaban et al.[3] applied the Ant Colony Algorithm (ACA) and FEM for fixture layout optimization of a 2D workpiece geometry and reported continuous ACA gives better results than discrete ACA. Further, they considered dynamic effects in FEM to determine workpiece deformation. Vishnupriyan et al.[4] presented a FEM-GA technique to minimize the machining error for a 2D workpiece geometry. MATLAB based GA is interfaced with ANSYS to determine the total machining error and subsequent optimization process. Rex and Ravindran[5] implemented an integrated approach for optimal fixture layout design using FEM and the design of experiments. Hajimiri et al.[6] applied the GA-FEM approach for optimizing fixture layout and fixturing sequence simultaneously. ABAQUS finite element solver was used to determine the deformation of the workpiece.

The above-mentioned studies contained two major drawbacks: Those were (1) 2D geometry was used to represent the workpiece to reduce the computational complexity in the optimization process and (2) consideration of fixture element positions based on the availability of nodes. Therefore, the studies with such drawbacks do not offer appropriate results for practical problems as these methods cannot simulate the dynamic behaviour of the 3D workpiece by establishing frictional contact between workpiece and fixture.

The aforementioned drawbacks can be overcome by developing a frictional contact model in FEM to determine the deformation of the workpiece. Satyanarayana and Melkote[7] used the surface-to-surface contact elements to model the workpiece-fixture contact behaviour, and the effectiveness of the model was verified experimentally. Siebenaler and Melkote[8] applied the FEM to predict the deformation of the workpiece and the reaction forces at the locators. However, their study was not extended to the fixture layout design. Rai and Xirouchakis[9] used transient dynamic analysis to predict the deformation of the workpiece. Asante[10] used surface-to-surface contact pair in the finite element analysis to find the sufficient clamping force. Kumar and Paulraj[11] employed a surface-to-surface contact pair in FEA to model the Workpiece-Fixture System (WFS) for simulating the drilling process.

The above-mentioned studies revealed that the surface-to-surface contact modelling technique was realistic to model Workpiece and fixture interaction. However, it was not widely used for fixture layout optimization due to high computational time.

In order to reduce the computational effort, few research works were conducted using empirical models to predict the deformation of the workpiece. Hamedi[12] applied Artificial Neural Network (ANN) and GA to optimize fixture layouts by minimising the deformation of the workpiece. An empirical model is developed using ANN to predict the deformation of a 3D workpiece while performing a pocket milling process. The advantage of the GA-ANN technique over GA-FEM is a significant reduction in computational complexity so that it can be used for 3D cases. Sundararaman et al.[13] applied an integrated approach for fixture layout design using Response Surface Methodology (RSM) and GA. RSM was used to develop the empirical model to predict the deformation of a workpiece using FEM results. Though the ANN and RSM based approaches are computationally efficient, they are specific to a particular problem that has to be performed for every change in design parameters.

The use of the FFS takes 20% less time for the arrangement of the fixture as compared to the dedicated fixtures.[14] Though its significance in the industry is vital, the fixture layout design of FFS is seldom reported in previous research. Babu et al.[15] developed a Computer-Aided Design (CAD) based automated fixture generation system for prismatic components in an FFS. Do et al.[16] implemented a geometry-based approach to find the optimum fixture layout in a FFS. Bejlegaard et al.[17] developed a methodology for the design of a reconfigurable fixture. Chen et al.[18] proposed an optimization procedure for flexible fixture design to make a car dashboard using suitable numbers of supporting and clamping points. Jeng and Gill[19] proposed a systematic approach for selecting the positions of locators and clamps automatically in a flexible fixture. Dai et al.[20] developed a CAD-based interference c

methodology to ensure a collision-free fixture design in a flexible fixture environment. Vukelic et al.[21] developed an integrated approach for fixture layout design which ensures surface quality and collision-free.

The above-mentioned studies discussed the design of the fixture layout for the FFS using geometry-based approaches, which did not analyse the elastic deformation of the workpiece. Further, the previous researches on fixture layout optimization have been mainly focused on dedicated fixtures, which are less used in the industry due to high manufacturing cost. The dedicated fixture layout design approaches cannot be applied for FFS as it possesses discrete positions as design variables in contrast to continuous variables in dedicated fixtures. Therefore, there is a lack of practical and efficient fixture layout design approaches for FFS to improve the form quality of the component.

This paper presents a novel method for fixture layout optimization that uses PFEM for predicting elastic deformation and discrete GA for layout design in FFS. The optimization objective is to find an optimum fixture layout that minimizes the maximum deformation of a prismatic workpiece for the entire machining process. The surface to surface contact modelling and transient dynamic analysis are employed to predict the elastic deformation realistically. The nonlinearity in analysis and iterative behaviour of GA would make the problem more computationally expensive. The advantage of using PFEM is to reduce the complexity of the modelling process which needs to be done for every change in fixture layout in the optimization process. PFEM can accommodate any change in design parameters including the positions of fixture elements due to its flexibility. Further, the significance of using discrete GA with necessary constraints reduces the number of feasible solutions and finds the optimum position of fixturing elements with minimum trials. This work contributes to the automation of fixture layouts design in flexible fixture systems to machine prismatic components on vertical machining centres.

Methodology

The overall procedure of the proposed methodology is illustrated in Figure 1. Initially, a PFEM was developed using the information about the workpiece, machining parameters and fixture plan. The model was developed in an ANSYS workbench environment to predict the elastic deformation of the workpiece and contact condition. The model was designed to be flexible so that all the parameters can be varied without altering the entire model, and extended to adopt it for a wide range of parts by varying the design parameters. A discrete

International Journal of Numerical Modelling: Electronic Networks, Devices and Fields / Volume 35, Issue 1 / e2944

RESEARCH ARTICLE | Free to Read

Optimally manage the energy between electric vehicle charging stations and electricity distribution system: A hybrid technique

Giri Rajanbabu Venkatakrishnan, Ramasubbu Rengaraj, Nattamai Balasubramanian Prakash

First published: 14 September 2021
https://doi.org/10.1002/jnm.2944
Citations: 3

Abstract

In this manuscript, the energy trading model is proposed for investigating the cooperative benefits between several electric vehicle charging stations (EVCSs) and integrated energy systems (IES) based on hybrid system. The proposed hybrid system is combination of Radial-Basis Function Neural Network (RBFNN) and artificial transgender longicorn algorithm (ATLA), hence it is called RBFNN-ATLA technique. Initially, the RBFNN approach manages the energy between IES and EVCSs. After that, the original issue breaks down into the main energy trade and payment negotiation issue. The energy trading issue and payment negotiation problem can be solved using ATLA approach. This proposed structure may not only diminish the IES cost, however also enlarge the EVCS profit. The uncertainties in electricity and renewable energy prices are modeled using a robust optimization technique. Additionally, the integrated demand response is modeled for maximizing operational performance. The distributed algorithm depends on the proposed technique is evolved for solving the issue of energy trading, ensuring the privacy of players. The proposed algorithm may obtain the global optimal solutions devoid of adjusting the parameter compared with existing algorithm. The proposed system is performed by the matrix laboratory (MATLAB)/Simulink and the performance is evaluated with other existing methods. The

Back

proposed system can accurately detect that optimal global solution.

CONFLICT OF INTEREST

The authors declare no competing interests.

Open Research

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

REFERENCES

1 Singh A, Letha SS. Emerging energy sources for electric vehicle charging station. *Environ Dev Sustain*. 2019; **21**(5): 2043-2082.

Web of Science® | Google Scholar

2 Savio DA, Juliet VA, Chokkalingam B, Padmanaban S, Holm-Nielsen JB, Blaabjerg F. Photovoltaic integrated hybrid microgrid structured electric vehicle charging station and its energy management approach. *Energies*. 2019; **12**(1): 168.

Web of Science® | Google Scholar

3 Torreglosa JP, García-Triviño P, Fernández-Ramirez LM, Jurado F. Decentralized energy management strategy based on predictive controllers for a medium voltage direct current photovoltaic electric vehicle charging station. *Energy Convers Manag*. 2016; **108**: 1-3.

Web of Science® | Google Scholar

4 Suganya S, Charles Raja S, Venkatesh P. Smart management of distinct plug-in hybrid electric vehicle charging stations considering mobility pattern and site characteristics. *Int J Energy Res*. 2017; **41**(14):

Back

5 Hosseini S, Sarder MD. Development of a Bayesian network model for optimal site selection of electric vehicle charging station. *Int J Electr Power Energy Syst*. 2019; **105**: 110-122.

Web of Science® Google Scholar

6 Hu Y, Su S, He L, et al. A real-time multilevel energy management strategy for electric vehicle charging in a smart electric energy distribution system. *Energy Technol*. 2019; **7**(5):1800705.

Web of Science® Google Scholar

7 Venkatakrishnan GV, Mahadevan J, Rengaraj R. Differential evolution algorithm with parameter adaptation strategy for optimal design of hybrid renewable energy system. *J Electr Eng*. 2016; **16**(3): 11.

Google Scholar

8 Mehrjerdi H, Hemmati R. Stochastic model for electric vehicle charging station integrated with wind energy. *Sustain Energy Technol Assess*. 2020; **37**:100577.

Web of Science® Google Scholar

9 Venkatakrishnan GR, Rengaraj R. Overview of solar energy in India. *Int J Dev Res*. 2014; **4**(3): 605-608.

Google Scholar

10 Boglou V, Karavas CS, Arvanitis K, Karlis A. A fuzzy energy management strategy for the coordination of electric vehicle charging in low voltage distribution grids. *Energies*. 2020; **13**(14): 3709.

Web of Science® Google Scholar

11 Rivera S, Wu B. Electric vehicle charging station with an energy storage stage for split-DC bus voltage balancing. *IEEE Trans Power Electron*. 2016; **32**(3): 2376-2386.

Web of Science® Google Scholar

Back

optimisation algorithm. *HKIE Trans*. 2020; **27**(1): 25-37.

Google Scholar

13 Rajesh P, Shajin F. A multi-objective hybrid algorithm for planning electrical distribution system. *Eur J Electr Eng*. 2020; **22**(4–5): 224-509.

Google Scholar

14 Shajin F, Rajesh P. Trusted secure geographic routing protocol: outsider attack detection in mobile ad hoc networks by adopting trusted secure geographic routing protocol. *Int J of Perv Comput Commun*. 2020.

Google Scholar

15 Thota MK, Shajin FH, Rajesh P. Survey on software defect prediction techniques. *Int J Appl Sci Eng*. 2020; **17**: 331-344.

Google Scholar

16 Khan W, Ahmad F, Alam MS. Fast EV charging station integration with grid ensuring optimal and quality power exchange. *Int J Eng Sci Technol*. 2019; **22**(1): 143-152.

Web of Science® Google Scholar

17 Shojaabadi S, Abapour S, Abapour M, Nahavandi A. Optimal planning of plug-in hybrid electric vehicle charging station in distribution network considering demand response programs and uncertainties. *IET Gen Trans Distrib*. 2016; **10**(13): 3330-3340.

Web of Science® Google Scholar

18 Khan A, Memon S, Sattar TP. Analyzing integrated renewable energy and smart-grid systems to improve voltage quality and harmonic distortion losses at electric-vehicle charging stations. *IEEE Access*. 2018; **6**: 26404-26415.

Web of Science® Google Scholar

Back

Web of Science® Google Scholar

20 Venkatakrishnan GR, Rengaraj R. Overview of wind energy in India. *Int J Dev Res*. 2014; **4**(3): 609-612.

Google Scholar

21 Wu X, Hu X, Moura S, Yin X, Pickert V. Stochastic control of smart home energy management with plug-in electric vehicle battery energy storage and photovoltaic array. *J Power Sources*. 2016; **333**: 203-212.

CAS Web of Science® Google Scholar

22 Hannan MA, Hoque MM, Hussain A, Yusof Y, Ker PJ. State-of-the-art and energy management system of lithium-ion batteries in electric vehicle applications: issues and recommendations. *IEEE Access*. 2018; **6**: 19362-19378.

Web of Science® Google Scholar

23 Ji Z, Huang X, Xu C, Sun H. Accelerated model predictive control for electric vehicle integrated microgrid energy management: a hybrid robust and stochastic approach. *Energies*. 2016; **9**(11): 973.

Web of Science® Google Scholar

24 Venkatakrishnan GR, Rengaraj R, Salivahanan S. Grey wolf optimizer to real power dispatch with non-linear constraints. *Comput Model Eng Sci*. 2018; **115**(1): 25-45.

Web of Science® Google Scholar

25 Venkatakrishnan GR, Mahadevan J, Rengaraj R. Optimal dispatch of residential distributed energy sources using self-adaptive differential evolution algorithm. *Int J Appl Eng Res*. 2015; **10**(5): 12761-12778.

Google Scholar

Back

Web of Science® Google Scholar

27 Venkatakrishnan GR, Rengaraj R. Differential evolution with parameter adaptation strategy for an optimal dispatch of residential distributed energy sources. *J Comput Theor Nanosci*. 2017; **14**(12): 5997-6002.

CAS Google Scholar

28 Abbasi MH, Taki M, Rajabi A, Li L, Zhang J. Coordinated operation of electric vehicle charging and wind power generation as a virtual power plant: a multi-stage risk constrained approach. *Appl Energy*. 2019; **239**: 1294-1307.

Web of Science® Google Scholar

29 Jeya R, Venkatakrishnan GR, Rengaraj R, Bharath Raj S, Ganapathi Ramanathan N. Evolutionary optimization algorithms-a review. *J Adv Res Dyn Control Syst*. 2018; 1112-1122.

Google Scholar

30 Ebrahimi J, Abedini M, Rezaei MM, Nasri M. Optimum design of a multi-form energy in the presence of electric vehicle charging station and renewable resources considering uncertainty. *Sustain Energy Grids Netw*. 2020; **23**:100375.

Web of Science® Google Scholar

31 Zenginis I, Vardakas JS, Zorba N, Verikoukis CV. Analysis and quality of service evaluation of a fast charging station for electric vehicles. *Energy*. 2016; **112**: 669-678.

Web of Science® Google Scholar

32 Li Y, Ni Z, Zhao T, et al. Supply function game based energy management between electric vehicle charging stations and electricity distribution system considering quality of service. *IEEE Trans Ind Appl*. 2020; **56**(5): 5932-5943.

Web of Science® Google Scholar

Back

CAS | Web of Science® | Google Scholar

34 Mumtaz S, Ali S, Ahmad S, Khan L, Hassan SZ, Kamal T. Energy management and control of plug-in hybrid electric vehicle charging stations in a grid-connected hybrid power system. *Energies*. 2017; **10**(11): 1923.

Web of Science® | Google Scholar

35 Tan B, Chen H. Multi-objective energy management of multiple microgrids under random electric vehicle charging. *Energy*. 2020; **208**:118360.

Web of Science® | Google Scholar

36 Kikusato H, Mori K, Yoshizawa S, et al. Electric vehicle charge–discharge management for utilization of photovoltaic by coordination between home and grid energy management systems. *IEEE Trans Smart Grid*. 2018; **10**(3): 3186-3197.

Web of Science® | Google Scholar

37 Mehrabi A, Nunna HK, Dadlani A, Moon S, Kim K. Decentralized greedy-based algorithm for smart energy management in plug-in electric vehicle energy distribution systems. *IEEE Access*. 2020; **8**: 75666-75681.

Web of Science® | Google Scholar

38 Pflaum P, Alamir M, Lamoudi MY. Probabilistic energy management strategy for EV charging stations using randomized algorithms. *IEEE Trans Control Syst Technol*. 2017; **26**(3): 1099-1106.

Web of Science® | Google Scholar

39 Wang Y, Wang X, Shao C, Gong N. Distributed energy trading for an integrated energy system and electric vehicle charging stations: a Nash bargaining game approach. *Renewable Energy*. 2020; **155**: 513-530.

Web of Science® | Google Scholar

Back

Web of Science® Google Scholar

41 Sui S, Rasheed R, Li Q, Su Y, Riffat S. Technoeconomic modelling and environmental assessment of a modern PEMFC CHP system: a case study of an eco-house at university of Nottingham. *Environ Sci Pollut Res*. 2019; **26**(29): 29883-29895.

CAS PubMed Web of Science® Google Scholar

42 Li Y, Miao S, Luo X, Yin B, Han J, Wang J. Dynamic modelling and techno-economic analysis of adiabatic compressed air energy storage for emergency back-up power in supporting microgrid. *Appl Energy*. 2020; **261**:114448.

Web of Science® Google Scholar

43 Gu W, Wang J, Lu S, Luo Z, Wu C. Optimal operation for integrated energy system considering thermal inertia of district heating network and buildings. *Appl Energy*. 2017; **199**: 234-246.

Web of Science® Google Scholar

44 Anvari-Moghaddam A, Rahimi-Kian A, Mirian MS, Guerrero JM. A multi-agent based energy management solution for integrated buildings and microgrid system. *Appl Energy*. 2017; **203**: 41-56.

Web of Science® Google Scholar

45 Mehrjerdi H, Hemmati R. Electric vehicle charging station with multilevel charging infrastructure and hybrid solar-battery-diesel generation incorporating comfort of drivers. *J Energy Storage*. 2019; **26**:100924.

Web of Science® Google Scholar

46 Erol R, Oğulata SN, Şahin C, Alparslan ZN. A radial basis function neural network (RBFNN) approach for structural classification of thyroid diseases. *J Med Syst*. 2008; **32**(3): 215-220.

PubMed Web of Science® Google Scholar

Back

Google Scholar

Citing Literature

Download PDF

Dr. K. Kalidasa Murugavel, M.E.,Ph.D.,
PRINCIPAL
NATIONAL ENGINEERING COLLEGE
K.R. NAGAR, KOVILPATTI - 628 503.
THOOTHUKUDI-DIST

Back