

3.3.2 Number of research papers per faculty in the Journals notified on UGC website during the year-2022-23							
Sl. No	Title of paper	Name of the author/s	Dept.of Faculty	Name of the Journal	Year of publication	ISSN/ ISBN number	Link to the recognition in UGC enlistment of the Journal / Digital Object Identifier (DOI) number
							Link to article/paper/abstract of the article
1	An optimal self adaptive deep neural network and spine kernelled chirplet transform for image registration	Dr.I.Manju	ECE	Concurrency and Computation: Practice and Experience	2022-23	1532-0634	https://onlinelibrary.wiley.com/doi/10.1002/cpe.7297
2	Design and Analysis of Classifier for Atrial Fibrillation and Deep Neural Networks with ECG.	Dr.M.Sivakumar	ECE	Computational Imaging and Analytics in Biomedical Engineering Algorithms and Applications	2022-23	9781774914717	https://www.appleacade micpress.com/computati onal-imaging-and-analytics-in-biomedical- engineering- algorithms- and-applications
3	Design and Analysis of Efficient Short- Time Fourier Transform-Based Feature Extraction for Removing EOG Artifacts Using Deep Learning Regression	Dr.M.Sivakumar	ECE	Computational Imaging and Analytics in Biomedical Engineering Algorithms and Applications	2022-23	9781774914717	https://www.appleacade micpress.com/computati onal-imaging-and-analytics-in-biomedical- engineering- algorithms- and-applications
4	Extricating Web pages from Deep Web using Deaima Architecture	Mr. D. Weslin	IT	Journal of Theoretical Computer Science	2022-23	0304-3975	https://www.sciencedirec t.com/science/article/abs
5	Bipolar Trapezoidal Neutrosophic Differential Equation and its Application	S.Sudha	Sci & Hum	International Journal of Neutrosophic Science	2022-23	2690-6805	https://doi.org/10.54216/IJNS.180402
6	Forbidden Love In Arundjati Roy's The God Of Small Things	Barveen Fathima . M	Sci & Hum	IJNRD	2022-23	2456 - 4184	https://www.ijnrd.org/papers/IJNRD2209013.pdf
7	g^*w -Continuous Maps and g^*w - Irresolute Maps in Topological spaces	S.Rajakumar	Sci & Hum	Journal of Xidian University	2022-23	1001-2400	https://xadzkidx.cn/index.php/volume-16-issue-7-jul-22/
8	Weighted PI and Szeged indices of Generalized Gear graph	S. Subramanian	Sci & Hum	Indian journal of Natural Science	2022-23	0976-0997	https://tnsroindia.org.in/journals.html
9	Calculating Pi realted indices and their application of Hyaluonic acid and conjugated	S. Subramanian	Sci & Hum	J.Indones.math.Soc.	2022-23	2460-0245	https://doi.org/10.1007/s40962-023-01070-1

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10	Enhancing the microstructure and mechanical properties of Si3N4eBN strengthened AlZneMg properties of assisted stir casting method	Mr.Tharanikumar L	MECH	Journal of materials research and technology	2022-23	2214- 0697	https://doi.org/10.1016/j.jmrt.2022.08.093
11	Bending and Torsion Performance study of Plastic Gears using FEA	Dr.A.Saravanan	MECH	Journal of Aeronautical Materials	2022-23	1005 -5053	https://www.researchgate.net/publication/373921474
12	A Novel Approach to IoT-Based Solar Energy	Dr. S. Prasath	MECH	Eur. Chem. Bull.	2022-23	2063-5346	https://www.eurchembull.com/uploads/paper/289c646ba3198dd4afbc1ac5c926ccbapdf
13	Evaluation and Mechanical and Microstructural Properties of Aluminium Aa 7075	Dr. Ramesh. G Mr.V.Vigneswaran	MECH	Journal For Basic Sciences	2022-23	1006-8341	https://tnsroindia.org.in/journals.html
14	Performance Analysis of Mimo-Fbmc Transceivers In Multi-Path Fading Channels	Dr.I.Manju Dr.M.Sivakumar Mr.M.Kamarajan Mr.M.Ashokkumar	ECE	International journal of broadband cellular communication	2022-23	2455-8532	https://ecc.journalspub.info/index.php?journal=JBCCC&page=article&op=view&path%5B%5D=1825
15	Advanced Video Surveillance System Using Computer Vision	Mrs.E.Jayanthi	ECE	Semiconductor Optoelectronics	2022-23	1001-5868	https://bdtgd.cn/article/view/2023/897.pdf
16	Machine Learning Approach for Measuring Water Quality of Coastline And Estuaries in Chennai Coastal Area	Mr.M.Kamarajan, Mrs. S. Anusuya, Mr. S.R. Mohan, Mr. D. Sathishkumar	ECE	Environmental Quality Management	2022-23	1520-6483	https://doi.org/10.1002/tqem.22034
17	Computational Framework For Human Detection Through Improved Uwb Radar System	Mr.M.Ashokkumar	ECE	International journal for multiscale computational engineering	2022-23	1940-4352	https://www.dl.begellhouse.com/journals/61fd1b191cf7e96f,6129d44f1682fc8e,1e068d4e5c88fe0e.html
18	Inclusion Complex of Histidine- Cyclic Voltametry	Mr. A. Balakrishnan	Sci & Hum	Eur. Chem. Bull.	2022-23	2063-5346	https://www.eurchembull.com/uploads/paper/1076f5cf6d4be78eb8593551b7d426a7.pdf
19	Synthesization and Characterization of Silicon Carbide and Boron Nitride-Reinforced Al-Zn-Mg Alloy Hybrid Nanocomposites using Squeeze Casting Method	Mr.Tharanikumar L	MECH	International Journal of Metalcasting	2022-23	2163-3193	https://link.springer.com/article/10.1007/s40962-023-01070-1
20	Multi-level Attention Augmented Deep Learning Model for Optical Cup & Disc Segmentation in Fundus Images	Mrs. S. Anusuya	ECE	Eur. Chem. Bull.	2022-23	2705-2729	https://www.eurchembull.com/uploads/paper/6da87cc6cd6d0924e8e61f42bc1487b5.pdf
21	Design And Fabrication Of On Road Real Time E Car Utilize To Testing And Implement The Self Driving Car Using AI Technology	Mr.V. Vigneshwaran	MECH	Semiconductor Optoelectronics	2022-23	1194-1202	https://bdtgd.cn/article/view/2023/1194.pdf

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22	Using Fuzzy Cognitive Map To Determine The Significantfactor Of Manpower Planning In An Organization	Mrs. S. Sudha	Sci & Hum	Neuroquantology	2022-23	1303-5150	https://www.neuroquantology.com/media/article_pdfs/11048-11053.pdf
23	Bipolar Neutrosophic Frank Aggregation Operator and its application in Multi Criteria Decision Making Problem	Mrs. S. Sudha	Sci & Hum	Neutrosophic Sets and Systems	2022-23	2331-6055	https://doi.org/10.5281/zenodo.7135339



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An optimal self adaptive deep neural network and spine-kernelled chirplet transform for image registration

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Summary

Image registration is one of the image processing techniques that align more than two images of a similar scene captured under different perspectives at different intervals of time. In demographical research, the image registration process assists to study differences in the structure of brain tissue. Due to enhanced technological advancements, numerous image registration methods have been established. On the other hand, these traditional techniques face few real-time challenges while processing huge input data. In addition to this, uncertainty analysis becomes a crucial step in medical applications which is utilized to judge whether the registration result is valuable or not. The high percentage of uncertainty than the threshold makes the registration result abnormal. Therefore, to conquer such circumstances, this research work proposed a modified spine-kernelled chirplet transform (MCST) based optimal Self-Adaptive Deep Neural Network (SADNN) which focuses mainly on enhancing registration accuracy by reducing the uncertainties of registration results. The experimental analysis is conducted and from the evaluation results, the proposed MCST-based optimal SADNN technique outperforms existing techniques in terms of accuracy, specificity, sensitivity, F-measure, and DICE values. Moreover, the proposed method achieves 97.2% accuracy for accurate image registration.

KEYWORDS

dynamic group, image registration, modified spine-kernelled chirplet transform, self-adaptive deep neural network

1 | INTRODUCTION

Brain cancer is considered as a serious disease caused due to the growth of uncontrollable cells in the brain. The tumor cells are the cells that are multiplied and increased undesirably as abnormal mass of tissues are named brain tumors. In addition, the brain tumor is said to be one of the lethal classes of cancers.¹ The brain tumors increase the mortality between children and adults which causes a higher burden on the healthcare system. A brain tumor is the mass or collection of unusual cells generated in the brain in adjacent with the parenchyma brain parts. Severe disabilities are caused by brain tumors which also minimizes the life quality.² The tumor growth can occur in any part of the tissue and mostly found in cranial nerves, cranium, pituitary gland, pineal gland, skull, and meninges. Tumors are usually developed in the brain itself and the dangerous tumors will be founded on the various parts of the human body. The brain tumor destructs both the normal and healthy brain cells and grows abnormally with different sizes and shapes. In general, the brain tumor is classified into two types and they are malignant and benign. The benign is the non-harmful tumor in which the variety of cancer cells lacks the capability to attack the neighboring tissues. A malignant tumor is defined as a harmful tumor that spreads to the neighboring tissues.³



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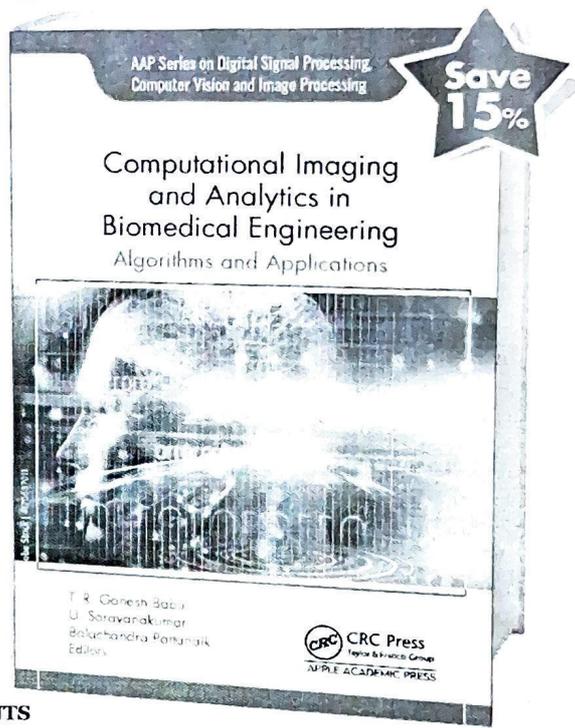
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New Book Announcement

Computational Imaging and Analytics in Biomedical Engineering Algorithms and Applications

Available October 2023



Editors: T. R. Ganesh Babu, PhD
 Professor, Department of Electronics and Communication Engineering, Muthayammal Engineering College (Autonomous), Rasipuram, Namakkal District, India

U. Saravanakumar, PhD
 Professor and Head, Department of Electrical and Computer Engineering, Muthayammal Engineering College, Namakkal, India

Balachandra Pattanaik, PhD
 Professor, Department of Electrical and Computer Engineering, College of Engineering and Technology, Wollega University, Ethiopia

Computational Imaging and Analytics in Biomedical Engineering: Algorithms and Applications focuses on mathematical and numerical methods for medical images and data. The book presents the various mathematical modeling techniques, numerical analysis, computing and computational techniques, and applications of machine learning for medical images and medical informatics. It also focuses on programming concepts using MATLAB and Python for medical image and signal analytics.

The volume demonstrates the use of various computational techniques and tools such as machine learning, deep neural networks, artificial intelligence and human-computer interaction, fusion methods for CT and pet images, etc., for diagnosis of brain disorders, cervical cancer, lung disease, melanoma, atrial fibrillation and other circulatory issues, dental images, diabetes, and other medical issues.

Key features:

- Addresses the various common challenges related to biomedical image analysis
- Presents a variety of mathematical models for medical images
- Discusses applications of algorithms on medical images for various medical issues
- Describes the development of intelligent computing machines such as embedded systems
- Explores the programming techniques using MATLAB and Python for biomedical applications

This book presents a plethora of uses of algorithms and applications in computational imaging and analytics for the medical/health field. It will serve as a resource on recent advances and trends in the field of computational imaging, where computation is playing a dominant role in imaging systems.

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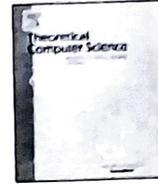


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Extricating web pages from deep web using deaima architecture



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Web page classification agent

ABSTRACT

Due to remarkable development of advanced data, it has gotten drawn-out to recover applicable query items from the web crawler. The customary web search tool furnishes pertinent site pages however with the blend of unessential pages with less coverage rate and high slithering time. To overcome the issues, this paper proposes an Intelligent Multi-Agent design that utilizes Differential Evolution Algorithm (DEA) to extricate more pertinent site pages with high coverage rate and less slithering time. Three intelligent agents, specifically, Trajectory pattern mining agent, Query clustering agent and Web page classification agent are employed to track the relevancy of the pages, hidden web links and classify the searchable and non-searchable forms respectively. The extrication of relevant pages is optimized by the DEA algorithm. DEA calculation like selection, crossover and mutation are utilized for optimizing the extraction process. In any case, in Genetic Algorithm (GA) determination of chromosome depends on the wellness esteem, where the low quality chromosomes don't get by in the future. The Differential Evolutionary activity help the helpless chromosome to get by in the opposition and it will create the upgraded results. The learnt by experience of the intelligent agents help to work on the presentation of the framework. The exploration result shows that the proposed architecture gives the high precision and recall rates over the current web crawlers. The creeping time for recovering the website pages is likewise diminished utilizing the proposed DEAIMA architecture.

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1. Introduction

Extricating the most relevant web pages from the web is the crucial issue need to be addressed in the present age of information world [1]. Over the last two decades information is growing exponentially on the internet enforces the establishment and development of accessing the relevant information from the Internet [2]. In the internet era business people and academicians often need to tap the relevant information from the web in much quicker way. To tap the right web pages from this immeasurable size of web, it is required to deploy an efficient architecture. There are several relevant approaches are available to extract the relevant web pages from the deep web. From, these existing methods the solutions for retrieval of information from the hidden web pages do not improve the recall and precision rates with reduced crawling time. This

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Bipolar Trapezoidal Neutrosophic Differential Equation and its Application

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Abstract

Neutrosophic set plays a vital role in dealing with indeterminacy in real-world problems. Differential equations represent the relation between a function and its derivatives and its applications have importance in both pedagogical and real life. In this paper, neutrosophic differential equation is proposed and solved using bipolar trapezoidal neutrosophic number and applied the concept in predicting bacterial reproduction over separate bodies with graphical representation using MATLAB. Also, comparative analysis is done with the existing method to prove the effectiveness of the proposed method.

Keywords: Trapezoidal Neutrosophic Numbers; Neutrosophic Set; Neutrosophic Differential Equations; Bipolar Trapezoidal Neutrosophic Number; Neutrosophic Numbers.

1. Introduction

To deal with an uncertain parameter there are a many methods are available like interval numbers, fuzzy number, and intuitionistic fuzzy number Neutrosophic number. But Neutrosophic number is the method to deals with indeterminacy where fuzzy number and intuitionistic fuzzy numbers fails to deal. Fuzzy numbers handle only the membership function, whereas in intuitionistic fuzzy number can handle both membership function and non-membership function but in Neutrosophic numbers only we deal both membership function and non-membership function in addition to that indeterminacy also. Any real-life problems can be modeled by differential equation, which is an equation involving the rate of change of a quantity. First time the term fuzzy differential equations introduced by Zadeh [1]. A very basic formulation of a fuzzy first-order initial value problems at first they found the crisp solution, then fuzzified it to check to see if it satisfies the fuzzy system of differential equations were presented by bukley [5]. Under generalized differentiability introduced by D.S-Le,H.Vu, and P.D-Nguyen also they introduced a new approach for approximating the fuzzy linear system of differential equations. Atanassov K [2] introduced the concept of an intuitionistic fuzzy differential equation. Ettoussi, R., et al [7] discussed the existence and uniqueness for the solution of a intuitionistic fuzzy differential equation and they proven and defined the averaging of intuitionistic fuzzy differential equation. The Romanian mathematician Florentine Smarandache [3-4] introduced the Neutrosophic ordinary differential equation of first order through neutrosophic numbers. A.El Allaoui., et al. [8] optionized the averaging intuitionistic fuzzy differential equations. I. R.Sumathi, L.Mohana Priya.V et al., [9-10] demonstrated the neutrosophic linear differential equation with a new concept of neutrosophic derivatives. I.R.Sumathi, C.Antony Crispin [11] first time a second –order neutrosophic boundary value problem has been introduced with different types of first and second order derivatives. Suvankar Biswas, Sandip Moi.Smita

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FORBIDDEN LOVE IN ARUNDHATI ROY'S THE GOD OF SMALL THINGS

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Abstract: 'Forbidden love' is a major theme that runs through The God of Small things, but in order to understand it, one must deal with themes such as 'love' and 'forbid'. The second kind of forbidden love is that Pappachi's sister Baby Kochamma. For example, Ancient Greek has different words to denote different aspects of the English word love i.e., Philia, Eros, Agape, Storge, and Xenia. Eros ((ἔρως érōs) (from the Greek deity Eros) is passionate love, with sensual desire and longing. But the unduly steps taken by men or women to attain through shortcut methods makes it a Forbidden Fruit. The relationship between Velutha and Ammu is solely the pleasing of the body which is not accompanied by the full gusto of Eros. Even her own inner moral law doesn't allow her for an open relationship with Velutha that is why, "Love by night the man her children love by day"

Key words: Forbidden Love, Philia, Eros, Agape, Storge, and Xenia, Four Law's

"Though I speak with the tongues of men and of angels, and have not love, I have become sounding brass or a clanging cymbal. And though I have the gift of prophecy, and understand all mysteries and all knowledge, and though I have all faith, so that I could remove mountains, but have not love, I am nothing. And though I bestow all my goods to feed the poor, and though I give my body to be burned, but have not love, it profits me nothing." I Corinthians 13:1-3

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Arundhati Roy (born November 24, 1961) won the Booker Prize in 1997 for her first novel The God of Small Things. Roy was born in Shillong, Meghalaya to a Keralite Syrian Christian mother and a Bengali Hindu father, a tea planter by profession. She spent her childhood in Aymanam, in Kerala, schooling in Corpus Christi. She left Kerala for Delhi at age 16, and embarked on a homeless lifestyle, staying in a small hut with a tin roof within the walls of Delhi's Feroz Shah Kotla and making a living selling empty bottles. She then proceeded to study architecture at the Delhi School of Architecture, where she met her first husband, the architect Gerard Da Cunha. The God of Small Things is the only novel written by Roy. Since winning the Booker Prize, she has concentrated her writing on political issues.

'Forbidden love' is a major theme that runs through The God of Small Things, but in order to understand it, one must deal with themes such as 'love' and 'forbid'.

In English, love refers to a variety of different feelings, states, and attitudes, ranging from pleasure ("I loved that meal") to interpersonal attraction ("I love my partner"). "Love" may refer specifically to the passionate desire and intimacy of romantic love, to the sexual love of Eros, to the emotional closeness of familial love, to the platonic love that defines friendship, or to the profound oneness or devotion of religious love, or to a concept of love that encompasses all of those feelings. This diversity of uses and meanings, combined with the complexity of the feelings involved, makes love unusually difficult to consistently define, compared to other emotional states. Love in its various forms acts as a major facilitator of interpersonal relationships and, owing to its central psychological importance, is one of the most common themes in the creative arts. Love may be understood as part of the survival instinct, a function to keep human beings together against menaces and to facilitate the continuation of the species. However, Greek distinguishes several different senses in which the word "love" is used. For example, Ancient Greek has different words to denote different aspects of the English word love i.e., *philia*, *eros*, *agape*, *storge*, and *xenia*.

1) *Philia* (φιλία *philia*), a dispassionate virtuous love. It includes loyalty to friends, family, and community, and requires virtue, equality, and familiarity. *Philia* is motivated by practical reasons; one or both of the parties benefit from the relationship.

2) *Eros* (ἔρως *érōs*) (from the Greek deity Eros) is passionate love with sensual desire and longing. Some translations list it

g^*w -Continuous Maps and g^*w -Irresolute Maps in Topological spaces

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Abstract

In this paper, the notions of g^*w -continuous maps, g^*w -irresolute maps are introduced and some of their properties are discussed. Further, the relations between the other existing results and characteristics of g^*w -continuous maps, g^*w -irresolute maps in topological spaces are also investigated.

Key words and phrases: g^*w -continuous maps, g^*w -irresolute, g^*w -irresolute map,

T_{g^*w} -space .

AMS (2000) subject classification: 54A05.

1 Introduction

Generalized open sets play a very important role in General topology and they are now the research topics of many topologists worldwide. In 1986, Maki[6] continued the work of Levine[4] on generalized closed sets and closure operators by introducing the notion of Λ -sets in topological spaces. A subset A of a topological space (X, τ) is called generalized weakly closed set (briefly gw -closed set) if $wCl(A) \subseteq U$ whenever $A \subseteq U$ and U is g -open in X . Using the concepts of many topologists[1],[2],[3],[7],[8],[9], we have extended the results in continuous and irresolute maps in topological spaces.


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Weighted Pi and Szeged Indices of Generalized Gear Graph

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Calculating PI related indices and their polynomial of Hyaluronic Acid and Conjugates

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Abstract. A large number of medical experiments have confirmed that the features of drugs have a close correlation with their molecular structure. Drug properties can be obtained by studying the molecular structure of corresponding drugs. The calculation of the topological index of a chemical graph enables scientists to have a better understanding of the physical chemistry and biological characteristics of drugs. In this paper, we focus on Hyaluronic Acid-Curcumin/Paclitaxel conjugate which are widely used in the manufacture of anticancer drugs. Therefore in this paper we have computed the Padmakar-Ivan related indices and its polynomial of the Hyaluronic Acid-curcumin/paclitaxel conjugate by using edge partitioning technique.

Key words and Phrases: Padmakar-Ivan index, weighted Padmakar-Ivan index, Padmakar-Ivan related polynomial, Hyaluronic Acid, Hyaluronic Acid-Curcumin/Paclitaxel conjugate.

1. INTRODUCTION AND PRELIMINARIES

In a recent year, there is a rapid growth in pharmaceutical and chemical fields. Biological activity, as well as physical, physicochemical, and chemical features of organic molecules, are all inherent in molecular structure, according to the primary paradigm of medical chemistry. Crum-brown and Fraser pulished the first quantitative structure activity relationship in 1868 on the basis of this principle. Despite many advances in the field of theoretical drug design, a large number of chemical experiments are needed to determine the pharmacological, chemical, and biological properties of these new compounds and drugs, which significantly increases the workload of pharmaceutical and chemical researchers. The critical step

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Original Article

Enhancing the microstructure and mechanical properties of Si_3N_4 -BN strengthened Al-Zn-Mg alloy hybrid nano composites using vacuum assisted stir casting method



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ABSTRACT

The present work investigates the microstructural and mechanical properties of nano- Si_3N_4 -BN hardened Al-Zn-Mg alloy hybrid nanocomposites synthesized by a vacuum-assisted stir casting process using different weight fractions. The microstructural analysis is performed using an optical microscope and the morphology studies were characterized using SEM analysis. The B117 salt spray test has been used to analyze the corrosion tests on hybrid nano composites. The microstructure evaluation revealed that nano-reinforcing particles are uniformly distributed in the matrix alloy without residual pores forming in the matrix alloy and shows the occurrence of intradendritic grains along the grain boundaries. Morphology analysis of synthesized Aluminium alloy hybrid nanocomposites illustrates that ceramic hard particles cannot be resolved and appear as fine globular species at high temperatures and its crystalline size of an average 44.9 nm has been observed. Owing to reduction in grain size and enhanced grain refinement the tensile and compressive strength of hybrid nano composites significantly increased in comparison with as cast Al-Zn-Mg alloy. The presence of Al_2Cu forms as an intermetallic phase, impeding dislocation progression and it acts as corrosion resistant of developed hybrid nano composites.

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**BENDING AND TORSION PERFORMANCE STUDY OF PLASTIC GEARS USING
FEA**

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Abstract

Nowadays, gears made of polymer and advanced thermoplastics find increasing application of mechanical power transmission due to their superior properties. This paper reports the transmission efficiency and dynamic characteristics of Polyimide Nano composites (PNC), HDPE 40(High- Density Polyethylene) and Nylon 66 spur gears. Numerical studies were conducted to predict bending and torque characteristics. The stress and deformation were investigated under static conditions. Also, the effects of stress and applied torque on the transmission efficiency of all the three spur gears are reported. The static and torque analysis were obtained using ANSYS. The enhancement in mechanical properties of pristine polyamide HDPE 40 gears results in higher power transmission efficiency compared to PNC and Nylon 66 gears.

Key words: PNC, HDPE40, Nylon66, Static, Dynamic, and ANSYS 15.0.

1.0 Introduction

Gears are used to transmit rotary motion and power. Recently, polymers are replacing metals in light-duty applications such as measuring devices, medical instruments, computer spare parts, printing machines, mobile phones and ATM machines, due to light weight, anti-corrosive property, easy manufacturability, and able to run under dry and critical loading condition. Many experimental and theoretical studies were conducted to study the performance of metallic gears [1–4]. However, there are only a few articles available on the study of performance of polymeric gears [5–10]. For gears made of metals, the gear module is the most influential parameter on gear mesh mechanical efficiency for the high-speed and high-torque operating conditions, followed by gear tooth surface roughness and viscosity of lubricant [11]. Sliding friction between the gear teeth is recognized as one of the main factors of power loss in geared transmission as well as a potential source of vibration and noise. In this study the effects of the geometrical characteristics of the teeth and the operating conditions on the distribution of the stresses and deformations induced by the loads in the gears as a function of the wear is proposed by using analytical and numerical methods. More over in this study the influence of the transmitted torque and dynamic output is present. The advantages of plastic, nylon and polymers gearings are easy to manufacture in various shapes and size and also, they have greater consistency. Since, there are many parameters responsible for failure of gears especially, bending stress, normal stress, principal stress, Stress due to torque and stress due to dynamic condition etc.



A Novel Approach to IoT-Based Solar Energy Measurement and Monitoring Model

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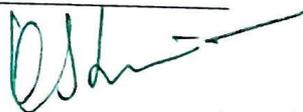
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Abstract

This research presents a novel approach to IoT-based solar energy measurement and monitoring. The proposed system incorporates various components such as solar panels, current and voltage sensors, temperature sensors, an ESP32 microcontroller, LED display, BLYNK cloud, and a battery for energy storage. The system enables the conversion of sunlight into electric energy and accurately measures and monitors the current, voltage, and temperature of the solar panels. The collected data is transmitted to the cloud and displayed on a mobile application for convenient access and analysis. A mathematical model is developed to establish the relationship between temperature, voltage, and current. The model accurately predicts the electrical output of the solar panel based on temperature variations. The experimental results demonstrate the reliability and accuracy of the model, with close alignment between the predicted and actual measurements. The power consumption readings


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Evaluation of mechanical and microstructural properties of aluminium AA7075/TiB₂ in -situ aluminium metal matrix composites

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Abstract

Sub-micron sized TiB₂ particle reinforced AA7075 (Al-Zn-Mg) composite prepared by in-situ reaction technique. In-situ reaction takes place between inorganic salts such as K₂TiF₆ and KBF₄ with molten Al. The reinforcement particles concentration varied (2.5 w.t%, 5 w.t%, 7.5 w.t%, 10 w.t%) to study its influence on age hardenability of the composite. The work followed by detailed age hardening kinetic study, and microstructural examination. The precipitation behaviour, mechanical properties of AA7075 alloy and AA 7075/TiB₂ in-situ composite aged at different time were examined by optical microscopy (OM), X-Ray diffraction (XRD), Field Emission Scanning Electron Microscope (FE-SEM), and Energy Dispersive Analysis of X-rays (EDAX). SEM images show the in-situ formed TiB₂ particles have hexagonal structure and sub-micron in size. EDAX spectrum confirms the weight percentage of TiB₂ particles in matrix. The Aging result revealed that with increasing aging time at 120°C, the AA 7075/TiB₂ Composite attained higher peak than base alloy with less aging time. AA7075/TiB₂ - 10% attained peak hardness 188.09 HV at 10th hour, TiB₂ -7.5 wt% attained 184.04 HV at 30th hour, TiB₂ -5 wt% attained 172.35 HV at 50th hour, TiB₂ -2.5 wt% attained 171.66 HV at 70th hour, and Base Alloy attained 171.595 HV at 70th hour. The result shows that hardness of the age hardened composites increases along with increase in weight percentage upto 10 w.t% and attained peak hardness with less aging time.

Keywords: composite, increases, reinforcement, microstructural, application, hardness.

1. Introduction

The mechanical and physical properties that can be gotten from Metal Matrix Composites (MMCs) have made them engaging hopeful competitor material for aerospace, automotive and numerous other applications. Particulate reinforced MMCs have pulled in extensive consideration concerning illustration an after effect about their relative low costs and characteristics isotropic properties. Reinforcement debris are numerous carbides, nitrides, and oxides. Metal Matrix Composites (MMCs) involve a metal or an alloy because the continuous matrix and a reinforcement that may be particle, short fiber alternately whisker, or continuous fiber. The advancement of metal matrix composites has been centred on three metals, aluminium, magnesium, titanium and machining of composites emerges. Reinforcement materials for metal matrix composites can be produced in the form of continuous fibers, short fibers, whiskers, or particles. The parameter that enables us to recognize these distinctive types of fortifications is called the aspect ratio. Aspect ratio is nothing but the ratio of length to diameter (or thickness) of the fiber, particle, or whickers. Thus, continuous fibers have an aspect ratio of around one. Ceramic reinforcements combine high strength and elastic modulus with high temperature capability. Continuous ceramic fibers are likewise however costlier than fired particulate fortifications Aluminium



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Performance Analysis of MIMO-FBMC Transceivers in Multi-Path Fading Channels

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Abstract

Multiple-input multiple-output (MIMO) technology has become an integral part of wireless communication systems, enabling high data rates and improved spectral efficiency. Filter bank multi-carrier (FBMC) modulation is another promising technique that offers several advantages over traditional orthogonal frequency division multiplexing (OFDM) in terms of spectral efficiency and robustness to frequency-selective fading channels. In this paper, we investigate the performance of MIMO-FBMC transceivers in multi-path fading channels. We first review the basics of MIMO-FBMC systems and their advantages over traditional MIMO-OFDM systems. Then, we present a detailed analysis of the performance of MIMO-FBMC transceivers in Rayleigh and Rician fading channels, considering different antenna configurations and modulation schemes. We evaluate the performance of the MIMO-FBMC system in terms of bit error rate (BER) and channel capacity. Our simulation results show that the MIMO-FBMC system outperforms the MIMO-OFDM system in terms of BER and channel capacity, especially in highly dispersive channels. We also show that increasing the number of antennas at the transmitter and receiver improves the performance of the MIMO-FBMC system, but at the cost of increased complexity. Finally, we discuss the practical implementation issues of MIMO-FBMC systems and their potential applications in future wireless communication systems.

Keywords: IoT, Humidity, Robot, Farming, Android, Blynk

INTRODUCTION

The ever-increasing demand for high data rate and reliable wireless communication has motivated the development of advanced modulation and transmission techniques. MIMO technology, which exploits the spatial diversity of the wireless channel, has been shown to significantly improve the performance of wireless communication systems. FBMC is another promising modulation technique that offers several advantages over traditional OFDM, including spectral efficiency, robustness to frequency-selective fading channels, and low out-of-band radiation. In this paper, we investigate the performance of MIMO-FBMC transceivers in multi-path fading channels, which is of practical

interest for future wireless communication systems. The demand for high data rates and reliable wireless communication has driven the development of advanced modulation and transmission techniques. Filter bank multi-carrier (FBMC) modulation is one such technique that has attracted significant attention due to its several advantages over traditional orthogonal frequency division multiplexing (OFDM). FBMC offers higher spectral efficiency, robustness to frequency-selective fading channels, and lower out-of-band radiation. On the other hand, multiple-input multiple-output (MIMO) technology has been widely used in wireless communication systems to

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ADVANCED VIDEO SURVEILLANCE SYSTEM USING COMPUTER VISION

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Abstract: In today's society, safety and security are highly valued, and individuals utilize security mechanisms to protect their homes and businesses. Current security systems employ motion detection sensors and video surveillance cameras, such as Perimeter Intrusion Detection Systems, to achieve this. The aim of this project is to develop an intrusion detection system for CCTV surveillance cameras utilizing a smart camera, thus ensuring the safety and security of personal properties. Multiple USB cameras are installed at various locations for live streaming and monitoring purposes. The system utilizes face recognition as an authentication procedure and sends an alert to the owner if an unknown face is detected, along with an email and SMS containing a snapshot of the unknown person. Live feeds from multiple cameras can be viewed on smart phones and computers.

Key points: Security, motion detection, surveillance, background subtraction, CCTV.

I. INTRODUCTION

The use of technology in daily life is growing along with how quickly it is developing. One of these technological innovations that is used for security is closed-circuit television (CCTV). CCTV is a type of security camera that gives the idea that there are always an additional set of eyes there. CCTVs are present in a variety of locations, both public and private. The deployment and maintenance of the system face additional difficulties as its use for security is increasingly put to use. A big storage space used up by video content is one of the most frequent issues that CCTV systems encounter. Usually, the footage is kept on hard discs. Hence several compression techniques are used to lessen the need for storage space.

The concept is to suggest a smart surveillance system that only records video when motion is detected, preventing the storing of pointless surveillance film and assisting in lowering storage needs for security systems. The suggested system also contains a face detection and identification capability. It makes it simpler to find trespassers, criminals, and thieves [1]. Businesses will be able to manage who has access to their premises and the technology will be able to verify IDs without halting anybody. It assists in automating high-accuracy individual recognition within a few seconds. The principal advantage of facial identification is

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Machine learning approach for measuring water quality of coastline and estuaries in Chennai coastal area

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Abstract

Chennai has had the longest coastline over other major cities of India. It is decidedly vital to monitor seawater quality due to the increased coastline population. This study presents an Android mobile application based on a machine learning approach to perform basic testing parameters of seawater by applying convolutional neural network concepts. A commercially available "saltwater master test kit" was used in this study to test the level of pH, Ammonia, Nitrite, Nitrate, and Total Phosphate (T.P.) in seawater. Six water samples collected from every 10 regions, including the coastline and coastal estuaries, were tested with the test kit in a microplate. Images were captured in the solely designed mobile app, and they were pre-processed, and RGB (Red, Green, and Blue) were recorded from the Region of Interest (R.O.I.) of the image. A supervised Convolutional Neural Network Image Classifier (SCNNIC) algorithm was developed to classify the RGB pixel values. CIEDE2000 (C2K) color difference algorithm was applied over the recorded RGB values with the datasets stored previously to result in the nearest color match between the ideal dataset and R.O.I. of the captured image. Grayscale and RGB methods results were compared with the standard APHA method. This C2K color difference algorithm produced a percent accuracy of over 98% compared with other methods used, and R2 recorded by curve fitting method for pH, T.N. and T.P. were above 0.98. Disquieting results were reported in this study, especially in Muttukkadu backwater and Adayar river backwater estuaries, reported high values of pH (7.82 and 8.17), TN (13.74 mg/L and 13.45 mg/L) and T.P. (0.266 µg/L and 0.724 µg/L). The mean for all 10 regions of 110 km chosen in this study for the 2 years was calculated, and values were obtained as pH-8.33, TN-5.321 mg/L, and TP-0.143 µg/L.

KEYWORDS

android mobile application, Chennai coast, CIEDE2000 color difference algorithm, seawater quality monitoring

1 | INTRODUCTION

Indian coastline atmosphere plays an active role in the economy by the righteousness of the assets, beneficial territories, and rich biodiversity. Tamil Nadu has a coastline of 1076 km of the entire 7500

km coastal line of India (Ramesh R., 2008). Of the unlimited 1076 km of Tamil Nadu coastline, 12% (Chennai District-19 km, Chengalpattu District-79.2 km, and Thiruvallur District-27.9 km) of northern districts are accepting more prominent significance, interable from expanding human populace, urbanization and quickened formative exercises

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COMPUTATIONAL FRAMEWORK FOR HUMAN DETECTION THROUGH IMPROVED ULTRA-WIDE BAND RADAR SYSTEM

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This paper presents a framework for human detection using an ultra-wideband (UWB) radar system and proposes a novel UWB radar antenna design with double-winding structures for radar applications. The proposed antenna achieves high gain and bandwidth, overcoming the shortcomings of Vivaldi antennas, which are the preferred antennas for radar applications. In the proposed novel design, winding structures are incorporated nearer to the main resonator, which suppresses harmonic distortion and enhances the radar detection process. The proposed antenna is designed to cover a frequency range from 6 GHz to 10.5 GHz. The design is analyzed for different design configurations with and without winding structures. However, the dual-side winding structure configuration achieves better performance than the single-side winding structure. The proposed design achieves a maximum bandwidth of 2.09 GHz in the dual-side winding structure configuration, which is a remarkable achievement for radar and precise locating applications. The proposed design achieves improved return loss performance greater than -10 dB in all operating frequencies and voltage standing wave ratios equal to 1 with improved gain and directivity.

KEY WORDS: human detection, UWB radar, tri-band, microstrip, UWB antenna, positioning

1. INTRODUCTION

Surveillance through radar technology has emerged as an inevitable technology and finds its application in various fields such as rescue operations during disaster and battlefields, antiterrorism actions, autonomous driving vehicles, and so on. Radar technology also finds a potential application in human safety by detecting people in the vicinity of moving autonomous machinery. The rapid development of automatic machinery and autonomous robots to automate various manual operations has also increased the safety demand for protecting the people who operate these machines. Human safety is an inevitable consideration for people operating machines since these machines have

INCLUSION COMPLEX OF HISTIDINE- CYCLIC VOLTAMETRY

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Abstract

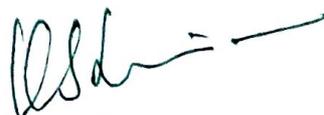
The reaction mixture of [β -cyclodextrin], [sodium acetate] and buffer. With the addition of histidine in the presence of Cu (II) ions the peak potential decreased. The decrease in the current potential is due to the formation of inclusion complex. Cyclic voltametry was used to confirm the formation of inclusion complex

Keywords— copper (II), Histidine peroxomonosulphate (PMS), β -cyclodextrin (β -CD) catalyst, inclusion complex, Cyclic voltametry

1. Introduction

Cyclodextrin modified electrodes and their applications as electrochemical sensors in pharmaceutical analysis based on the self-assembly of CD derivatives on metal electrodes and nanoparticles, (i). The interactions between rutin or the inclusion complex of rutin--cyclodextrin and DNA were investigated by cyclic voltammety [2]. Voltammetric responsive sensors based on organized self-assembled -cyclodextrin derivative monolayers on a gold electrode (-CD-SME) for electroinactive ursodeoxycholic and dehydrocholic acids have been studied [3]. The special characteristic of cyclodextrins is the ability to form an inclusion complex with various organic molecules through host-guest interaction with the interior cavity that provides hydrophobic environment to trap a polar pollutant (4). Kinetic data for the permanganate— β -cyclodextrin redox system are reported for the first time. Conventional spectroscopic method was used to monitor the progress of the reaction (5). Cyclodextrins were amongst the first chiral selectors employed in CE and their successful application has followed their use as chiral stationary phases in GC, TLC, and HPLC, and as mobile phase additives in TLC and HPLC (6). Kinetics and mechanistic study of β -cyclodextrin catalyzed oxidation of glutamine by peroxomonosulphate was investigated(7). EPR studies about interaction of CDs with flexible bi radicals were also reported [8-9].

The electrochemical studies were carried out using (CHI 760C – CH Instrument Inc., USA), three electrodes single compartment cell setup were employed for the electrochemical experiments. Here, glassy carbon, platinum wire, and Ag/AgCl electrode were used as working electrode,



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SYNTHESIZATION AND CHARACTERIZATION OF SILICON CARBIDE AND BORON NITRIDE-REINFORCED Al-Zn-Mg ALLOY HYBRID NANOCOMPOSITES USING SQUEEZE CASTING METHOD

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Abstract In the present investigation an attempt was made to synthesize nano-SiC/BN-reinforced Al-Zn-Mg alloy composites by varying its weight percentage of SiC (2wt%, 4wt%, 6wt%) and maintaining 3wt% BN using the squeeze casting method and comparing it with as-cast aluminium alloy. SEM and ASTM standards are used to examine the morphology and mechanical behaviour of the synthesized aluminium alloy hybrid nanocomposite. Morphological study reveals that synthesized nanocomposites show uniform distribution of reinforcement particles without indication of residual pores. Due to the presence of Mg₂Si interfaces and reduction in shrinkage

effects during solidification, the density and porosity of hybrid intermixtures are increased to a minimum of 0.08% and reduced to 0.0026%. In comparison with as-cast Al-Zn-Mg alloy the hardness (28.37%), tensile strength (32.53), and yield strength (34.13%), flexural (31.25%), and impact strength (27.27%) significantly improved due to enhanced wettability between the intermixture and improved grain refinement. By increasing the proportion of strengthening particles, it was found that reducible dislocation motion was observed, resulting in an improved wear rate (26.82%) of the synthesized intermixture.



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Multi-level Attention Augmented Deep Learning Model for Optical Cup & Disc Segmentation in Fundus Images

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Abstract:Glaucoma, a neuropathic eye disease, is characterized by increased Intraocular Pressure within the retina and ranks as the primary contributor to worldwide blindness after cataracts. Timely diagnosis stands crucial to avoid the complete blindness. To address challenges related to under-segmentation and over-segmentation in OC and OD segmentation, we present a multi-level attention-augmented U-Net model. This model incorporates different attentions, such as semantic and structural attentions, to refine convolutional features, enabling the model to learn discriminative global-centric features. By applying a conservative smoothing algorithm, we achieve a high ROI extraction accuracy of 98.67%. Moreover, the proposed Multi-level Attention Augmented U-Net architecture achieves a Dice Co-efficient of 0.930 and 0.870 for the partitioning of the OD and OC segmentation correspondingly.

Keywords: Optical disc, Optical cup, Segmentation, Unet model, Glaucoma, ROI

1. Introduction

Currently, there is no known treatment for glaucoma, the primary cause of visual impairment globally. Without early detection, it can progress to irreversible blindness. The optic nerve fibers, responsible for transmitting visual sensory information, are adversely impacted by glaucoma, posing a substantial risk to vision. Unfortunately, the condition is often asymptomatic, leading to delayed awareness until it is too late. Many researchers have primarily worked with datasets lacking real-time fluctuations in image quality, limited access to high-quality fundus photos, and small sample sizes. Consequently, the robustness of existing systems is compromised.



**DESIGN AND FABRICATION OF ON ROAD REAL TIME E CAR UTILIZE TO
TESTING AND IMPLEMENT THE SELF DRIVING CAR USING AI
TECHNOLOGY**

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Abstract: The aim of this project is to portray a constructed Electric Automobile for research purposes in order to build real-time on-road self-driving car utilizing machine learning and neural network algorithms with a Raspberry Pi controller. This autonomous automobile was built using a Raspberry Pi and an Arduino UNO with a camera. To manage the car, all impediments and traffic signs must be identified. As a result, in order to take use of advanced technology such as electric cars and artificial intelligence, this study paper depicts the design and manufacturing of a self-driving automobile that uses machine vision technology to operate a real-time driverless vehicle on the road. The driving motor is attached to the differential unit of this automobile, which has four tyres. A 24 V DC BLDC motor with a speed controller is utilized to adjust the speed. The driving motor is attached to the differential unit of this automobile. This BLDC motor runs on a 24V DC power supply and is connected to a 24V DC lithium battery through a speed controller. The entire setup is made out of 18mm square tube channel. The E car's steering is handled by a rack and pinion steering system.

Keywords: BLDC motor, BLDC motor speed controller, lithium batteries,

1. Introduction;

Today in automobile industry making the four wheeler car uses the latest advanced technology utilizing Electronic Control Unit (ECU) with various sensors. Further in the advancement of artificial intelligence technology, the four wheeler car runs without the need of driver and so it is called self-driving car. To make the self-driving car, it is very important for automatic steering control and can be implemented in battery car reducing the so much of needed design. Already the battery cars are running in the road resulting zero pollution. To implement the self-driving car in real time mode, four wheeler battery car is needed.

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USING FUZZY COGNITIVE MAP TO DETERMINE THE SIGNIFICANTFACTOR OF MANPOWER PLANNING IN AN ORGANIZATION

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ABSTRACT:

Humans are considered as the most crucial, volatile and potentially unpredictable resource which an organization utilizes. Manpower planning seeks to make the links between strategy, structure and people more explicit. The purpose of manpower planning is to get a better matching between manpower requirement and manpower availability. Manpower planning is particularly suitable for the application of statistical techniques. In this paper to find the factors that mainly involve manpower in an organization using fuzzy cognitive map.

KEYWORDS: Manpower Planning, Organization, Fuzzy Cognitive map.

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INTRODUCTION:

In administrative as well as production-oriented organization it is a usual phenomenon that exit of personnel happens whenever policy decision regarding revision of wages, incentives and revised sales and targets are announced this in turn leads to depletion of manpower. Frequent recruitment is not advisable as it will be expensive due to the cost of recruitment. In [1], [2] the authors have discussed the manpower planning models. Many methods were employed in this regard which is also explained in the papers [3] and [4], even though these methods did not reduce the variables. In such a case, how can the cost be reduced? .Paper [6] gives the solution for the above problem by using the technique of Fuzzy Cognitive Map [5] for any number of variables illustrated using a washing machine. In this paper, using fuzzy cognitive map to

find the main factors that involve manpower in an organization.

Fuzzy Cognitive Map: Networks of complex system can be solved by Fuzzy Cognitive Map [8] which was introduced by Bart Kosko. A fuzzy relational matrix is created with the help of the equation given by,

$$\lambda_{ij} = (\mu_{ij}),$$

where μ_{ij} states for the impact of one variable on another with membership values.

THE PROBLEM'S MODELING:

The algorithm of Fuzzy Cognitive Map model is designed in such a way that the variables have both positive as well as negative impact on each other. Here, the motive of the work is which is taken as one of the variable. Also, the Linguistic term with membership values is to be fixed



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Bipolar Neutrosophic Frank Aggregation Operator and its application in Multi Criteria Decision Making Problem

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Abstract: Aggregation operators can be used to combine and synthesise a finite number of numerical values into a single numerical value. Many areas, including decision-making, expert systems, risk analysis, and image processing, rely heavily on aggregating functions. In real-world situations, the neutrosophic set can manage the uncertainties associated with information from any decision-making challenge, whereas the fuzzy set and intuitionistic set cannot. The term "bipolarity" refers to the propensity of the human mind to weigh pros and drawbacks when thinking through decisions. Triangular norms are aggregation operators in a variety of fields, including fuzzy set theory, probability and statistics, and decision sciences. Thus, the individual assessments in this paper's study of and approach to multi-criteria decision-making (MCDM) problems that use bipolar neutrosophic numbers as the individual evaluations. Frank operational laws of bipolar neutrosophic numbers, bipolar neutrosophic Frank weighted geometric aggregation (BNFWGA) and the bipolar neutrosophic frank ordered weighted geometric aggregation (BNFOWGA) operators have been developed with its desirable properties. Additionally, the suggested aggregation operators have been used in the selection of bridges. The outcomes demonstrate the applicability and validity of the suggested approach. Comparative analysis has been performed using the current approach.

Abbreviation:



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