3.3.2 Number of research papers per teachers in the Journals notified on UGC website during the academic Year 2020-2021

Title of paper	Name of the author/s	Department of the teacher	Name of journal
Image Denoising using Modified Fuzzy C Means and Fractional Convolutional Method	S.Mohan, Dr.V.Jayaraj, T Prabu	Electronics and Communication Engineering	International Research Journal on Engineering and Technology
Low power Area Efficient Carry Select Adder	Dr.V.Jayaraj, k.Sivakami, M. Mohammed Kasim	Electronics and Communication Engineering	International Journal on Applications in Information and Communication Engineering
Comparison of Coding Techniques of OFDM for High Bandwidth Applications	K.Nagarajan, Vinod Kumar V, Dr.V.Jayaraj	Electronics and Communication Engineering	International Journal on Applications in Information and Communication Engineering
A Study on the Analysis of HRV Signals	Dr.V.Jayaraj, T.Prabu, S.Mohan	Electronics and Communication Engineering	International Journal on Applications in Engineering and Technology
A New VLSI Architecture for Modified Booth Algorithm using Vedic Multiplier	Dr.V.Jayaraj, S M Deepa, M Jeba Paulin	Electronics and Communication Engineering	International Journal on Applications in Engineering and Technology
Classification of Retinal Images Using Convolutional Neural Network	S.Mohan, Dr.V.Jayaraj	Electronics and Communication Engineering	International Journal on Computer Trends and Technology
An Efficient Authentication Scheme for IOT based WBANs	Dr.M.A. Raja	Electronics and Communication Engineering	European Journal of Molecular & Clinical Medicine
World-class manufacturing through ‘Total Productive Maintenance’ via ISO 9001:2015 standard	Dr.V.M.M.Thilak	Mechanical Engineeirng	Tierärztliche Praxis

Modelling and evaluation of Combustion emission characteristic of COME biodiesel using RSM and ANN - a lead for pollution reduction	Dr.M.Santhosh	Mechanical Engineeirng	Environmental Science and pollution Research
An experimental study and analysis of various cylindrical pin diameters in friction stir welded AA7075-T6 and A384.0-T6 aluminium alloys butt joint	Dr.K.Anganan	Mechanical Engineeirng	Materils Today: Proceesings
Enhanceent of Energy Efficiency using Environmentally Benign Refregient Blends in Vapour Compression Regreigeration System	Dr.P.Elumalai	Mechanical Engineeirng	Advances in Industrial Automation and Smart Manufacturing
Leagile manufacturing paradigm in the production of jet pump – an implementation experience	Dr.V.M.M.Thilak	Mechanical Engineeirng	International Journal of Productivity and quality management
Indoor Safety Monitoring system using IoT in workplace environment for protecting against covid -19	Dr.M.Dhurgadevi, Mr S Mani	Computer Science and Engineering	Piadeuma Journal of Research
Android Based Diet Consultant using RulePattern-based algorithm	Dr.M.Dhurgadevi	Computer Science and Engineering	Journal of science technology and research
Finite Automata Model for Leaf Disease Classification	Mr. T. Krishnaprasath	Computer Science and Engineering	CAAS CZECH Agriculture Journals
A Soil prediction Classification of crop Yield using intelligent technique with Big data	Ms. S. Priya	Computer Science and Engineering	Annals of the Romanian society for cell biology
Explicit Link Discovery Scheme Optimized with Ontology Mapping using Improved Machine Learning Approach	Mr. S.Mani	Computer Science and Engineering	SIC
AUGMENTED REALITY WATCH TRY - ON APPLICATION	Mr. Madan Mohan	Computer Science and Engineering	Journal of Science Technology and Research (JSTAR)
Identification of plant Syndrome using IPT	Mr. Madan Mohan	Computer Science and Engineering	Journal of Science Technology and Research (JSTAR)
Automatic Face Mask Detection Using Python	Mr. Madan Mohan	Computer Science and Engineering	Journal of Science Technology and Research (JSTAR)
A Multiple Sensor Data-Fusion for EFD Using IoT	Mr. Madan Mohan	Computer Science and Engineering	Journal of Science Technology and Research (JSTAR)
Growth and XRD, Elemental, Mechanical, Dielectric, Optical and Photoconductivity, and Surface Morphological Characterizations of 2-[4-(Trifluoromethyl) phenyl]-1H-benzimidazole (TFMPHB) Crystals for Electronic, Mechanical Applications	Dr P.Periasamy	Department of Physics	Brazilian Journal of Physics

Literary Depictions and Artistic Adaptations of Rani Lakshmibai of Jhansi	Susmi Mariam Varghese	Department of English	ROOTS International Journal of Multidisciplinary Researches
A STUDY ON RURAL AND URBAN LEARNERS IN LEARNING ENGLISH LANGUAGE AND THEIR DIFFICULTIES IN SENTENCE FORMATION IN ENGLISH	Dr. R.Deepa	Department of English	International Journal of Multidiscipinary Educational Research
Neutrosophic gpr Continuity and Neutrosophic Contra gpr Continuity in Neutrosophic Topological Spaces	Mr. K. Ramesh	Department of Mathematics	Strad Research
2-D Nanostructures of Advanced Hybridized WO_3 Nanocomposites for High Performance of Supercapacitor Application	Dr P.Periasamy	Department of Physics	Nanostructured Materials and their Applications
Multi response optimization of machining parameters on phenolic bakelite HGW 2088 using desirability function approach	Dr. P. Maniarasan & Mr. S. Balaji	Aeronautical Engineering	International Journal of Mechanical & Production Engineering Research & Development (IJMPERD)
Effect of V Addition on Dry Sliding Wear Behaviour of Titanium Matrix Composites	Dr. P. Maniarasan & A. Senthamilselvi	Aeronautical Engineering	Digest Journal of Nanomaterials and Biostructures
Abrasive water jet experimentation on zirconium boride and boron carbide reinforced molybdenum metal matrix	Dr. Sankar	Aeronautical Engineering	Materials Today: Proceedings
Optimization and Modeling of Drilling Variables on AMCS Using Taguchi Technique and Regression Analysis	Dr. P. Maniarasan & Mr. S. Balaji	Aeronautical Engineering	Materials Today: Proceedings
Investigation of Mechanical Properties of Jute Epoxy Composite with Fruit Waste (Citrullus Vulgaris Peel) Filler for Automotive Applications	C. R. Raajeshkrishna	Aeronautical Engineering	Polymer and Polymer Composites
Characterization and Microstructure study of AL5083/FLY ASH/SILICON carbide particulate composites fabricated by stir casting methodology	Dr. P. Maniarasan & Mr. S. Balaji	Aeronautical Engineering	International Journal of Advanced Research in Engineering and Technology
Numerical study of effect of drag reduction add on device on a Generic Car	Dr. A. Sankaran	Aeronautical Engineering	International Journal of Engineering Research & Technology

Thrust Vectoring of a Supersonic Rectangular Nozzle by Using Different Plate Extensions	Ezhilmaran G	Aeronautical Engineering	Journal of Xidian University
RSM based Modeling and Investigation of Emission Characteristics on Cotton-Seed Oil Biodiesel	Dr. M. Santhosh	International Journal of Vehicle Structures & Systems	International Journal of Vehicle Structures & Systems
Comparative Numerical Analysis of CD Nozzle with Hydrogen and Deuterium as Fuel	Dr. S. Rathinavel	Aeronautical Engineering	Tierärztliche Praxis
Static Structural Analysis of Spur Gear Using Ansys 15.0 and Material Selection by COPRAS, MOORA Techniques	Dr. S. Selva Kumar	Aeronautical Engineering	Materials Today: Proceedings
Friction and thermo mechanical characterization of nano basalt reinforced epoxy composites	Dr. C. R. Raajeshkrishna	Aeronautical Engineering	International Journal of Polymer Analysis and Characterization
Dry sliding wear behaviour of aluminium metal matrix composite using response surface methodology	Dr. P. Maniarasan & Mr. S. Balaji	Aeronautical Engineering	Materials Today: Proceedings
Selective activation of Forearm muscles for improving Wrist Joint Stability	Mr.A.Arulkumar	Electrical and Electronics Engineering	IOP Conf. Series: Materials Science and Engineering
Improving the performance of grid-connected doubly fed induction generator by fault identification and diagnosis: A kernel PCA-ESMO technique	Daison Stallon	Electrical and Electronics Engineering	International Transactions on Electrical Energy Systems
Fault identification in a grid connected solar PV system using back propagation neural network Controller	M.Mano Raja Paul, R.Kannan	Electrical and Electronics Engineering	IOP Conf. Series: Materials Science and Engineering
Harmonics control of thtee phase voltage source inverter with random carriers and modified reference	Dr.R.Anand	Electrical and Electronics Engineering	The Internal Journal of Electrical Engineering and Education
Cross-Tier Interference Avoidance Prioritized Dynamic Resource Allocation Algorithm in Coexistence of MTC and LTEA Networks	M.Mano Raja Paul	Electrical and Electronics Engineering	Natural Volatiles and Essential Oils

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Image Denoising using Modified Fuzzy C means and Fractional Convolutional Method

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Abstract - Noises in the image leads to pixels degradation and the quality of the image will be reduced. Removal of noises (Gaussian, Poisson and Speckle) from the image leads to develop the better image. Lowering of radiation dose leads to deterioration of quality of the image. Hence we proposed the new modified fuzzy C means algorithm and fractional convolutional method for image denoising. Modified fuzzy filter is applied at the post processing step to remove the noise in the filtered image. Parameters are carefully formulated and evaluated. Experimental results show the better improvement in image denoising.

Index Terms – **Modified fuzzy C means and Fractional Convolutional, Peak Signal to Noise Ratio (PSNR), Root Means Square Error (RMSE)**

1. INTRODUCTION

Computer Tomography (CT) is widely used in diagnostic, industrial and other applications. One of the challenging tasks in image processing is noise removal. Noises are affecting the visual appearance of the images. Poor generation of transmission in electronic circuits leads to generation of gaussian noise. Poisson noise originates due to movement of packets (Photons). Speckle noise is generated by backscattered signals which affect the image interpretation. Noises will be introduced in the image during transmission or acquisition or hardware issues. General methods of reducing the radiation dose are reducing tube voltage, tube current and scanning time. Quantification of the noise will be determined by the corrupted pixel in the image. If the pixel range becomes high then the quality of image increases and it reduces the noise. The image quality has been represented by distance between the pixels. Over the past decades, many algorithms and techniques were proposed: Fractional Integral filtering [1] - [3], KSVD[4], BM3D[5][6], Convolutional Neural Network (CNN)[7], etc. Various noise detectors are also introduced for the removal of noise ie., DWM[8], RILD-EPR[9], ROR-NLM[10]. Existing algorithms are having less PSNR value, high RMSE and during filtering process additional pixels will be neglected i.e., loss of original information. To overcome these problems, a modified algorithm is proposed. This proposed algorithm shows improved Peak Signal to Noise Ratio (PSNR) and reduced Root Means Square Error (RMSE).

2. ALGORITHM PROPOSED

The proposed algorithm for image denoising is given in the following steps.

After the preprocessing and histogram equalization,

i) Addition of artificial noise with the original image

ii) Application of fuzzy c means and fractional convolutional method

iii) Obtain mask coefficients

iv)Calculation of weighted sum of coefficients

v) Approximation of pixel derivative

vi) Filtering through modified fuzzy c means filter.

vii) Calculation of PSNR and RMSE.

In addition to the above algorithm, a modified fuzzy filter is applied to remove the gaussian noise. Some of the existing filters are mean filter, wiener filter, geometric filter, harmonic filter, etc. The original information will be lost when converting RGB to grayscale image. But this modified filter performs its function on both color and grayscale images.

$$F = \begin{pmatrix} 1, & if\ fp = 0\ or\ 255 \\ \exp\left(-\frac{fp-\mathrm{fmax}}{2X8X\sigma}\right)^2, & otherwise \end{pmatrix}$$

The membership value is 1 if the intensity is either 0 or 255, otherwise the value can be calculated by the function $\exp\left(-\frac{fp-\mathrm{fmax}}{2X8X\sigma}\right)^2$.

Initially gaussian noise is introduced with zero mean and standard deviation of 0.001 and it is reduced to 0.0001

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Low Power Area-Efficient Carry Select Adder

Dr.V.Jayaraj, Mrs.K.Sivakami, Mr.M.Mohammed Kasim

Abstract— Carry Select Adder (CSLA) is one of the fastest adders used in many data-processing processors to perform fast arithmetic functions. From the structure of the CSLA, it is clear that there is scope for reducing the area and power consumption in the CSLA. This work uses a simple and efficient gate-level modification to significantly reduce the area and power of the CSLA. Based on this modification 8-, 16-, 32-, and 64-b square-root CSLA (SQRT CSLA) architecture have been developed and compared with the regular SQRT CSLA architecture. The proposed design has reduced area and power as compared with the regular SQRT CSLA with only a slight increase in the delay. This work evaluates the performance of the proposed designs in terms of delay, area, power, and their products by hand with logical effort and through custom design and layout in 0.18-m CMOS process technology. The results analysis shows that the proposed CSLA structure is better than the regular SQRT CSLA.

Keywords— Application-specific integrated circuit (ASIC), area efficient, CSLA, low power.

I. INTRODUCTION

Design of area and power efficient high speed data path logic systems are one of the most substantial areas of research in VLSI system design. In digital adders, the speed of addition is limited by the time required to propagate a carry through the adder. The sum for each bit position in an elementary adder is generated sequentially only after the previous bit position has been summed and a carry propagated into the next position.

The CLSA is used in many computational systems to alleviate the problem of carry progpagation delay by independently generating multiple carries and then select a carry to generate the sum [1]. However, the CSLA is not area efficient because it uses multiple pairs of Ripple Carry Adders (RCA) to generate partial sum and carry by considering carry input and then the final sum and carry are selected by the multiplexers(mux).

The basic idea of this work is to use Binary to Excess-1 converted (BEC) instead of RCA with in the regular CSLA to achieve lower area and power consumption [2]-[4]. The main advantage of this BEC logic comes from the lesser number of logic gates than the bit Full Adder (FA) structure. The details of the BEC logic are discussed in Section III.

This brief is structured as follows. Section II deals with the delay and area evaluation methodology of the basic adder blocks. Section III presents the detailed structure and the function of the BEC logic.

The SQRT CSLA has been chosen for comparison with the proposed design as it has a more balanced delay, and requires lower power and area [5], [6]. The delay and area evaluation methodology of the regular and modified SQRT CSLA are presented in Sections IV and V, respectively. The ASIC implementation details and results are analyzed in Section VI. Finally

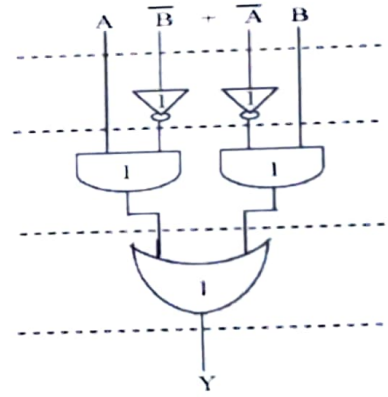
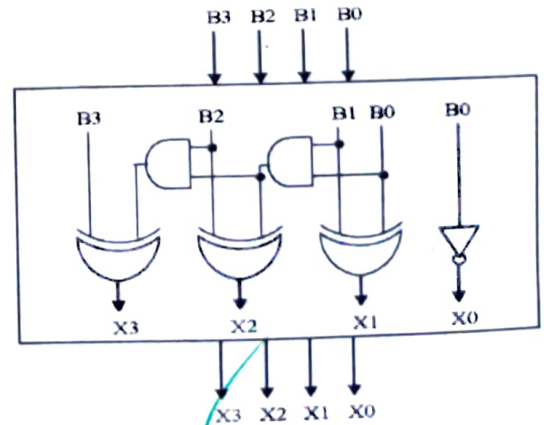


Fig.1 Delay and area evaluation using XOR gate



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Comparison of Coding Techniques Of OFDM For High Bandwidth Applications

K Nagarajan, Vinod Kumar ,Dr.V. Jayaraj

Abstract—Orthogonal frequency division multiplexing (OFDM) is an entrancing methodology used in remote correspondence applications which require enormously gigantic measure of information rates. In any case, OFDM flag experiences its sizably voluminous Peak-to-Average Power Ratio (PAPR), which brings about principal twisting while at the same time going through a nonlinear contraption. Due to the high Peak to average power ratio, the involution in High power amplifier and additionally digital to analog conversion withal increments. The reduction of Peak to average power ratio in orthogonal frequency division multiplexing numerous procedures is accessible. Commanding was enthralling less multifaceted design system for the orthogonal frequency division multiplexing flag's peak to average power ratio lessening. A hybrid straight commanding system limits commanding flexibility. Here, an aggregate hybrid straight commanding discrete Hartley transform technique relied upon decreases top to-normal orthogonal frequency division multiplexing all things considered. Reproduction comes about demonstrates that this early proposed strategy acquires foremost PAPR lessening while at the same time keeping up changed execution in the bit error rate and Power spectral density contrasted with piecewise straight commanding technique.

Keywords— orthogonal frequency division multiplexing, Peak to average power ratio, DHT, Commanding, Linear Commanding

I. INTRODUCTION

Orthogonal frequency division multiplexing is the balance arranges that is being used by a large portion of the most recent remote and broadcast communications measures. A sizably voluminous amount in proximately spreading small transporter flags. Each sub-transporter signals are regulated with a customary adjustment positions like Quadrature amplitude modulation or Phase shift keying at a low image count. Significant focal points of OFDM are low multifaceted nature in Receiver configuration, identifies usages need data rates, gives resistance to inter symbol interference by using cyclic prefix, less touchy to timing counterbalance than single transporter frameworks. It sanctions concurrent transmit of subdivided frequencies over an unremarkable channels; the way makes productive usage of acceptable level. In spite many favorable circumstances, OFDM influence from high variance of the transmitted envelope flag.

To describe the envelope variances in orthogonal frequency division multiplexing flag, Peak to average power ratio for the most part used by relating top power and mean esteem intensity. At the point when non straight power enhancer (HPA) is used, at that point high PAPR causes serious corruption in execution. A few systems are proposed to lessen PAPR in OFDM signals [1,2]. Particular level mapping (SLM) fractional transmit succession (PTS), companding procedures are proposed in [3-9], Discrete Hartley Transform [4].In these systems, companding plans acquire consideration because of their strength (adaptability) and effortlessness. The idea of commanding procedure was first presented in [5], which uses the μ-law commanding system, which going for decreasing PAPR by augmenting the normal energy of the flag while keeping the pinnacle control stays unaltered. Exponential commanding initiated[6], which can revise reduce orthogonal frequency division multiplexing peak to average power ratio by (circulation) in signals and desired strength stays consistent. As of late, an early nonlinear commanding strategy is proposed [7] which transmutes the Gaussian dispersed flag into dissemination frame by using a straight capacity arrange. This improper linear companding system diminishes the peak to average power ratio in orthogonal frequency division multiplexing motion. At that time two hyprid companding method chosen in [8] where pack cosmically monstrous flag increases.

Mentioned above techniques, it decreases peak to average power ratio by inducing companding mutilation. As of late, a piecewise straight companding strategy was explored [9] into decrement the mutilation by adjusts the signs directly with amplitudes proximate to the given companded top adequacy and hacking the. The DHT Precoded [10] framework indicates preferred PAPR lessening over WHT precoded framework and Culled Mapping OFDM framework. This DHT precoded OFDM framework has the favorable position that it doesn't require any adventitious power essential, Intricate advancement and side data to be sent to Receiver.

II. RELATED WORK

A. Proposed System

In this segment, the creators propose a crossover companding change (DHT Precoded OFDM with PLC) to lessen the PAPR of OFDM motion by cumulating Piecewise

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A Study on the Analysis of HRV Signals

Dr.V.Jayaraj, T.Prabu, S.Mohan

Abstract—Heart rate variability is a cardiac measure derived from the ECG signal (called RR interval) which is a measure of variability in heart rate. In the method, the non stationary signal is first modeled with a time-varying autoregressive model. Statistical analysis of HRV series display a significant departure from normality as reflected in excess kurtosis. For all series, the distribution has fatter tails and sharper peaks at the centre compared to normal distribution. Statistics of the obtained spectrum estimates are derived using the error propagation principle. The obtained spectrum estimates can further be decomposed into separate components

Keywords— Digital signal processing (DSP), HRV signals, Kurtosis.

I. INTRODUCTION

Heart rate variability is a cardiac measure derived from the ECG signal (called RR interval) which is a measure of variability in heart rate. The characteristics of heart rate variability signal are studied. It is studied based on the statistical analysis performed on those data. The results show that heart rate variability series display a significant departure from normality as reflected by the extreme excess kurtosis. Most of the series are positively skewed. All of them range from -2.44 to 2.26. The positive skew implies that the series have a higher probability of low risk. In addition the kurtosis values are much larger than three, ranging from 3.08 to 97.44. This shows that for all series the distribution has fatter tails and sharper peaks at the centre compared to normal distribution. The Jarque-Bera test was also conducted for those data.

A. Heart Rate Variability Signals:

Heart rate variability is a cardiac measure derived from the ECG signal (called RR interval) which is a measure of variability in heart rate. Mathematically modelling and generating the time series (RR intervals) for heart rate variability has been an ongoing research activity. HRV refers to the beat-to-beat alterations in heart. Under resting conditions, the ECG of the healthy individuals exhibits periodic variations in RR intervals. The analysis of HRV offers a non-invasive method of evaluating input in to cardiac rhythm. The major reason for the interest in measuring HRV stems from its ability to predict survival after heart attack. The reduced HRV predicts sudden death in patients and several other heart diseases.

Heart rate variability (HRV) provides a non-invasive method to monitor the functioning of the autonomous nervous system. The traditional methods of analysing heart rate variability based on means and variance are unable to detect subtle but potentially important changes in inter heart rate behaviour. Because cardiovascular system is not a stationary system, the traditional indexes of heart rate variability may lack the ability to detect subtle but important changes in heart rate behaviour. A number of new methods have been recently developed to quantify complex heart rate dynamics. They may reveal abnormalities in time-series data that are not apparent when conventional statistics are used.

B. Components of HRV

The RR interval variations present during resting conditions represent beat-by-beat variations in cardiac autonomic inputs. However, efferent vagal activity is a major contributor to the HF component, as seen in clinical and experimental observations of autonomic maneuvers such as electrical vagal stimulation, muscarinic receptor blockade, and vagotomy. More problematic is the interpretation of the LF component, which was considered by some as a marker of sympathetic modulation but is now known to include both sympathetic and vagal influences. For example, during sympathetic activation the resulting tachycardia is usually accompanied by a marked reduction in total power, whereas the reverse occurs during vagal activation. Thus the spectral components change in the same direction and do not indicate that LF faithfully reflects sympathetic effects. It is important to note that HRV measures fluctuations in autonomic inputs to the heart rather than the mean level of autonomic inputs. Thus, both withdrawal and saturatingly high levels of autonomic input to the heart can lead to diminished HRV.

II. STATISTICAL ANALYSIS

The study of heart rate variability series is done based on the statistical analysis done on those data. The analysis shows the characteristics of heart rate variability signal. It shows excess kurtosis with each data. Also, most of the series are positively skewed. The excess kurtosis implies that for all series, the distribution is having fatter tails and sharper peaks.

A. Methodology Used

The various statistics used for analysing the characteristics of heart rate variability series is given:

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A New VLSI Architecture for Modified Booth Algorithm using Vedic Multiplier

Dr.V. Jayaraj, Mrs.S.M.Deepa,Mrs.Jebapaulin

Abstract— In this paper, we proposed a new architecture of Multiplier-and-accumulator (MAC) for high-speed arithmetic. By combining Vedic multiplier with accumulation and devising a carry save adder (CSA), the performance was improved. Since hybrid type of the accumulator that has the largest delay in MAC was merged into CSA, the overall performance was elevated. The proposed CSA tree uses the modified array for the sign extension in order to increase the bit density of the operands. The CSA propagates the carries to the least significant bits of the partial products and generates the least significant bits in advance to decrease the number of the input bits of the final adder. Also, the proposed MAC accumulates the intermediate results in the type of sum and carry bits instead of the output of the final adder, which made it possible to optimize the pipeline scheme to improve the performance. The proposed architecture was synthesized with 250, 180 and 130 nm, and 90 nm standard CMOS library. The proposed MAC showed the superior properties to the standard design in many ways and performance twice as much as the previous research in the similar clock frequency. The proposed MAC can be adapted to various fields requiring high performance such as the signal processing areas.

Keywords— Vedic multiplier, carry save adder (CSA) tree, computer arithmetic, digital signal processing (DSP), multiplier and-accumulator (MAC).

I. Introduction

Multipliers play an important role in today's digital signal processing and various other applications. With advances in technology, many researchers have tried and are trying to design multipliers which offer either of the following design targets – high speed, low power consumption, regularity of layout and hence less area or even combination of them in one multiplier thus making them suitable for various high speed, low power and compact VLSI implementation. The common multiplication method is "add and shift" algorithm. In parallel multipliers number of partial products to be added is the main parameter that determines the performance of the multiplier. To reduce the number of partial products to be added, Modified Booth algorithm is one of the most popular algorithms. To achieve speed improvements Wallace Tree algorithm can be used to reduce the number of sequential adding stages. Further by combining both Modified Booth algorithm and Wallace Tree technique we can see advantage of both algorithms in one multiplier. However with increasing parallelism, the amount of shifts between the partial products and intermediate sums to be added will increase which may result in reduced speed, increase in silicon area due to irregularity of structure and also increased power consumption due to increase in interconnect resulting from complex routing. On the other hand "serial-parallel" multipliers compromise speed to achieve better performance for area and power consumption. The selection of a parallel or serial multiplier actually depends on the nature of application. In this lecture we introduce the multiplication algorithms and architecture and compare them in terms of speed, area, power and combination of these metrics. The multiplication algorithm for an N bit multiplicand by N bit multiplier is shown below:

The multiplier-and-accumulator (MAC) are the essential elements of the digital signal processing such as filtering, convolution, and inner products. Most digital signal processing methods use nonlinear functions such as discrete cosine transform (DCT) or discrete wavelet transform (DWT). Because they are basically accomplished by repetitive application of multiplication and addition, the speed of the multiplication and addition arithmetic's determines the execution speed and performance of the entire calculation. Because the multiplier requires the longest delay among the basic operational blocks in digital system, the critical path is determined by the multiplier.

In general, a multiplier uses Booth's algorithm and array of full adders (FAs), or Wallace tree instead of the array of FAs. This multiplier mainly consists of the three parts: Booth encoder, a tree to compress the partial products such as Wallace tree, and final adder. Because Wallace tree is to add the partial products from encoder as parallel as possible, its

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Classification of Retinal Images Using Convolutional Neural Network

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Abstract *- In the early days, many computer vision algorithms approached this problem from signal processing based on the assumption that the vessels follow particular patterns. Fluorescein angiography (FA) is an established approach to visualize, verify, and understand the effect of retinal disorders. The proposed cross-modality technique, however, builds in invariance to contrast and publicity. The use of parametric chamfer alignment for our registration manner is also well-matched and advantageous within the proposed automatic method for education data technology for 2 motives matching function factors is pretty difficult for the massive one-of-a-kind CF and FA modalities. By means of the use of parametric chamfer alignment, we put off this undertaking. Second, the chamfer alignment components' uneven nature lets us gain a particular alignment using preliminary vessel detection with a low fake wonderful fee, even if the corresponding proper fine price is also low.*

Keywords - *pooling layer, ReLU layer, Matlab.*

I. INTRODUCTION

Analysis of retinal vessel networks provides rich information about conditions of the eyes and general systemic status. Ophthalmologists can detect early signs of the increased systemic vascular burden from hypertension and diabetes mellitus as well as vision-threatening retinal vascular diseases such as Retinal Vein Occlusion (RVO) and Retinal Artery Occlusion (RAO) from an abnormality in the vascular structures to aid such analysis, automatic vessel segmentation method, especially from Fundus images, has been researched extensively. In the early days, many computer vision algorithms approached this problem from the perspective of signal processing based on the assumption that the vessels follow particular patterns. Fluorescein angiography (FA) is an established approach to visualize, verify, and understand the effect of retinal disorders. The proposed approach has several advantages. First, the generation of education statistics from CF photos and fundus FA photos is attractive as it gets rid of tedious and time-eating guide annotation. Second, wide-area FA photos commonly exhibit version in photograph contrast, particularly in peripheral regions with low depth and contrast. Contrast and exposure pose a massive assignment for manual and automated annotation.

II. LITERATURE SURVEY

A. Locating Blood Vessels in Retinal Images by Piecewise Threshold Probing of a Matched Filter Response

The study describes an automated method to locate and outline blood vessels in images of the ocular fundus. Such a tool should prove useful to eye care specialists for patient screening, treatment evaluation, and clinical study. Our method differs from previously known methods in that it uses local and global vessel features cooperatively to segment the vessel network. We evaluate our method using hand-labeled ground truth segmentations of 20 images. A plot of the operating characteristic shows that our method reduces false positives by as much as 15 times over the basic thresholding of a matched filter response (MFR), at up to a 75% true positive rate. We also compared the ground truth against a second hand-labeling for a baseline, yielding a 90% true positive and a 4% false-positive detection rate, on average. These numbers suggest there is still room for a 15% true positive rate improvement, with the same false-positive rate, over our method.

B. Deep Sparse Rectifier Neural Networks

The networks suggest that rectifying neurons are an even better version of biological neurons and yield equal or better overall performance than hyperbolic tangent networks, no matter the tough non-linearity and non-differentiability at zero, growing sparse representations with true zeros, which appear remarkably suitable for certainly sparse data. Even although they can take benefit from semi-supervised setups with extra-unlabeled information, deep networks can attain their high-quality overall performance without requiring any unsupervised pre-education.On simple terms, supervised duties with massive classified datasets. Hence, these consequences may be seen as a new milestone within the tries at know-how the difficulty in schooling deep; however, merely supervised neural networks, and closing the overall performance hole among neural networks learned with and without unsupervised pre-education.

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An Efficient Authentication Scheme for IoT based WBANs

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Abstract— Due to the quick headway of remote advancements, remote body region systems (WBANs) have gotten broad consideration from the general population as of late. IoT-based WBANs are intended to give life support significantly by observing the essential body boundaries and the general situations of human bodies. These sensors gather the constant natural data, for example, circulatory strain, pulse and beat of a patient and afterward send the data through cell phones, for example, an information sink to a distant clinical worker. In light of the got data, the specialists and other clinical specialists can give appropriate diagnostics to the patients. They are utilized to give appropriate and opportune clinical diagnostics and invited method for electronic social insurance frameworks.

Keywords—body-parameters, e-healthcare systems, mobile device, remote medical server, wearable sensors.

1. Introduction

A body zone systems (BAN), moreover implied as a remote body zone systems (WBAN) or a body sensor systems (BSN) or a clinical body territory systems (MBAN), is a distant arrangement of wearable enrolling devices. Boycott devices may be embedded inside the body, embeds, may be surface-mounted on the body in a fixed position Wearable turn of events or might be went with contraptions which people can pass on in various conditions, in garments pockets, by hand or in different packs.

A WBAN system can use WPAN distant advances as entries to show up at longer ranges. Through entryway devices, it is possible to relate the wearable contraptions on the human body to the web. In this way, supportive pros can get to understanding information electronic using the web self-sufficient of the patient territory.

A WBAN offers new applications in the region of far off medicinal services watching, home/human administrations, sedate, blended media, sports and various other, all of which make piece of space of the unconstrained chance of improvement a WBAN offers. In the restorative field, for example, a patient can be equipped with a far off body zone compose involving sensors that persistently measure unequivocal regular limits, for instance, temperature, circulatory strain, beat, electrocardiogram (ECG), breath, etc.

WBAN system require certain safety efforts to ensure security, protection, information uprightness and secrecy of a patient's wellbeing records at all the occasions. A supporting WBAN framework must execute explicit security activities that assurance these highlights. Security and protection of patient data are the two vital highlights for inside each WBAN framework.

Security refers information is shielded from unapproved clients while it is gathered, prepared and remains securely put away. Then again, protection proposes the [illegible] control the social affair and

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World-class manufacturing through 'Total Productive Maintenance' via ISO 9001:2015 standard

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Abstract

In this work, a study is reported in which the proposition of implementing 'Total Productive Maintenance' (TPM) via ISO 9001:2015 standard was investigated. Two main contributions have been made to enhance knowledge in the existing domains of knowledge by carrying out the research described in this article. The first contribution is the design of the TPM 9001:2015 Model. In this model, the elements of TPM have been integrated with ISO 9001:2015 standard in such a way that a company implementing this standard will be able to smoothly implement the elements of TPM. Both ISO 9001 standard and TPM contain specific elements that would guide the organizations to plan implement measures and improve the performance. Hence, an organization implementing the TPM 9001:2015 model will be able to continuously monitor the implementation and ensure that the resources input for implementation is utilized for enabling the organization to implement 'World Class Manufacturing' (WCM) essentials. The second contribution is the quantitative and qualitative assessment of practically implementing the TPM 9001:2015 model. This assessment was made considering 'Diesel Machinery Works' (DMW) which is a typical organization included in implementing ISO 9001:2015 standard and TPM. This assessment indicates the additional actions required for implementing the TPM 9001:2015 model in today's organizations. Apart from the two main contributions, the knowledge gathered by reviewing the research paper was studied this knowledge is useful to the researchers and practices for adapting appropriate methodologies for implementing the elements of ISO 9001:2015 standard and TPM.

Keywords: *We would like to encourage you to list your keywords in this section*

1. Introduction

During the past 30 years, the world has been observing the increase in competition in the manufacturing field (Akçura and Ozdemir 2019). This intensification of competition has been occurring because trade barriers that were existing earlier along the borders of the countries and continent shave now been removed to enable the companies for competing globally (Kaur et al. 2015). This kind of globalization has been driving the modern companies to carry out WCM journey. While carrying out this journey, modern companies are required to adopt WCM strategies. One of the WCM

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GREEN APPROACHES IN SUSTAINABLE ENERGY, ENGINEERING, MATERIALS AND ENVIRONMENT

Modelling and evaluation of combustion emission characteristics of COME biodiesel using RSM and ANN—a lead for pollution reduction

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Abstract
Nowadays, the emissions from the diesel engines are focused lot to minimise the environmental pollutions in accordance with the emission standards. In this regard, biodiesels are found to be efficient for the diesel engines due to their higher energy contents and low exhaust emissions. Use of biofuel in association with diesel will be an efficient way for the cost-effective performance of the diesel engines with reduced pollutions. The COME is an efficient combustible oil, in which the diesel is blended at different proportions to identify their suitability in the diesel engines. In this regard, the properties of the COME-Diesel blends are determined and analysed for their influence on the combustion characteristics. To understand the performance and emission characteristics of blends, experiments are carried out on the variable compression ratio (VCR) engine keeping the blend, compression ratio, load, and speed as variables. The response surface methodology (RSM) used as a tool for designing and conducting the experiments according to the predetermined variables. The experimental sets generated are performed to determine the NO and HC emissions (response functions). The adequacy of the models is verified through ANOVA and through the p and F tests. The experimental design matrix is also used in training the artificial neural network (ANN) to develop the empirical models. The models from RSM and ANN are experimented and the results obtained from both the models are compared for their accuracy levels. Once the hypothesis is developed for the biodiesel and engine setup, the emission models will be used for the optimising the engine operating parameters and blends to minimise the pollutions from engine for wide operating conditions.

Keywords COME · Biodiesel · Emissions · Pollutions · VCR engine · NO · HC · RSM · ANN

Introduction

Biodiesel is an alternate for conventional fuel produced from vegetable oil and animal fats. Oils from crops like corn, cottonseed, rapeseed, soybean, sunflower and rubber seed are used to produce biodiesel. The biodiesel produced from plants are carbon neutral as the plants are naturally processing the dioxide (Celikten et al. 2012). Biofuel is suggested for IC engines to reduce the emission of greenhouse gases as it less engenders the combustion emissions. Recently, the development of the biodiesel for the IC engines is growing lot due to the depletion of petroleum fuels and increased emissions. Biodiesel is an

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An experimental study and analysis of various cylindrical pin diameters in friction stir welded AA7075-T6 and A384.0-T6 aluminium alloys of butt joint

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ABSTRACT

The Friction Stir Welding is one of the solid state pressure welding processes. To evaluate the joint characteristics, the three factors viz. Speed of the Tool rotation, Speed of weld process and various diameters of cylindrical pin are taken in to account. Without using any filler material, the two materials are joined by the application of the stirring action and an applied axial load using rotation of welding tool. The tool design, size and the shape will vary according to the material to be joined. The aim of the design of the tool is not to remove the materials but to develop the sufficient heat and the uniform mixing of the materials to join work pieces. During the mixing of the materials, the flow of the materials will affect the welding quality. So tooling design, size and shapes are the most important factors. In this article same thickness of the aluminium dissimilar materials were used with different diameters of the tool pin in cylindrical shape. The design of Experimental investigation has been performed and subsequently the major finding has been discussed. The ultimate tensile strength has been identified as 102.98 MPa.

Selection and peer-review under responsibility of the scientific committee of the International Conference on Newer Trends and Innovation in Mechanical Engineering: Materials Science.

1. Introduction

The FSW process has many advantages. No distortion during welding, No use of filler materials and fluxes. More safety [2,3] to the operator and many more advantages comparing to the conventional welding processes. The FSW was used in automobile industries, ship building industries, aerospace industries, railways and various civil and mechanical industries. Many materials like aluminium, copper, magnesium and its alloys, steel, plastics etc. can be joined by using FSW. In this type of welding process, a rotating tool was inserted between the close and tightly clamped work pieces and longitudinal movement of the tool with pressure force applied at the top of the work pieces. It produces the plastic deformation and the metals are joined together Fig. 1.

Sukhwinder Singh Sekhon et al. [4] conducted experiments in FSW to join pure copper and brass with three tool pin profiles of cylindrical, Taper threaded and square. In this experiment study, the tool rpm ranges from 1000 to 1200 with 100 rpm increments and welding speed of 25, 35 and 40 mm/min. The sound welds are obtained in the square pin profile at 1200 rpm with 35 mm/min welding speed.

Anganan K et al. [5] experimentally proved by using cylindrical pin of 6 mm diameter. The combinations of materials used for this research were AA7075-T6 wrought aluminium alloy and A384.0-T6 cast aluminium alloy. The variables used for this research are Speed of Tool rotation, speed of weld process and load in axial direction. The maximum tensile strength of 277.37 MPa was obtained at 920 revolutions per minute, speed of weld process being 46 mm/minute and at load of 9.2 kn in axial direction.

ÁkosMeilinger and ImreTörök [6] conducted experiments in 6 mm aluminium plates by using hot work tool steel. The pin has three stepped diameters and the pin shoulder have outward tapered edge. By using this tool FSW was made and obtained the joints with better mechanical properties comparing to the other welding processes.

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2214-7853/
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Chapter

Enhancement of Energy Efficiency Using Environmentally Benign Refrigerant Blends in Vapour Compression Refrigeration System

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References (14)

Abstract

This study involves theoretical investigations made on a simple vapour compression system working with R152a/R1270/R600 refrigerant mixture. The properties of the mixtures along with that of R22 were obtained from REFPROP 7.0 software for the operating temperature ranging from 0 to 60 °C. CYCLE_D software has also been used for finding the proposed refrigerant mixture's performance. Test results from theoretical study presented that the coefficient of performance of the HFCs and HC refrigerant mixtures being 2.1% higher than that of R22. Compressor power of the mixtures was 1.8% less than that of R22 at 7 °C evaporator temperature and 53 °C condenser temperature. Mixture of the refrigerants showed higher mass flow rate than that of R22, and also its deviation was 36% from R22. Compressor shell outlet temperature of the refrigerant mixtures was 9.6% lower than R22 at 7 °C evaporator temperature and 53 °C condenser temperature. In this study, the selected ternary refrigerant mixture was found to provide better energy efficiency, and hence, it can be used as a suitable replacement for HCFC 22 in residential air conditioners.

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Leagile manufacturing paradigm in the production of jet pump – an implementation experience

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Abstract: One of the types of pumps that find high demand from the customers is jet pumps. Today, pump manufacturing companies are required to produce conventionally designed jet pump as well as improved and innovative forms of the same to meet the demand of several customers. This kind of demand can be fulfilled only when leagile manufacturing paradigm is implemented around the production of jet pumps. In order to have a successful implementation of the same, while pursuing the research reported in this paper, a model named as 'pumping for leagility' (PFL) was designed and applied in the case of producing jet pumps in a typical Indian pump manufacturing company. The [illegible] of 21 activities. By applying PFL model,

Indoor safety monitoring system using IoT in workplace environment for protection against Covid-19

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Abstract- Corono virus is an infectious disease spreads primarily through droplets of saliva or from the nose when an infected person coughs or sneezes. Covid-19 diseases is spreading more and it can kill the people sometimes but the problem is lack of sufficient medicines and vaccines .To overcome this the proposed methodology can minimize the count of the people who are affected by Corono. It is impossible to test the temperature of the people individually and to check whether they wear mask or not. Now a day in shopping malls, schools, and college's person is doing this job of testing the temperature of the public before entering their workplace. To destroy the corona virus the safety measures are maintaining social distance, wearing masks, and washing hands frequently to avoid contact with COVID patients. To help Government and public automated detection of the above factors are planned to solve the problem.

Keywords – COVID-19, Corono, Mask, Temperature, Patients, Social Distancing

I. INTRODUCTION

Since the last days of the previous year, the occurrence of novel infectious flu alike respiratory disease COVID-19 caused by SARS-Cov-2 virus (also known as corona virus) has affected almost every aspect of people's lives globally. One among them is Corono virus which started first in China and blowout rapidly to other countries in just a few weeks. A survey reported says that until July 11th, 2020, the total number of identified cases in all over the world ranges 12,653,451, while 563,517 were dead worldwide [1-3].

Common symptoms of corona virus disease include fever, tiredness, sore throat, nasal congestion, loss of taste and smell. It is found that the virus is spread directly from one person to other person that is too through respiratory droplets [4]. Nurture period may be long and it varies among persons (between 14 and 27 days in extreme cases). Furthermore, even asymptomatic persons (almost 45% of cases) can spread the disease making the situation even worse. Therefore, the usage of face masks and sanitizers has shown positive results when it comes to disease spread reduction. However, the crucial problem is the lack of approved vaccine and medication.

Government and WHO is taking many protection and safety measures to reduce the disease spread, such as obligatory indoor mask wearing, social distancing, quarantine, self-isolation, limiting citizens movement country boarders and abroad, often together with prohibition and cancellation of huge public events and gatherings[5,6]. Despite the fact that this situation seemed weaker in most of safety regulations due to unstable situation. From workplace behavior to social relations, sport and entertainment, corona virus disease. Lot of researchers is doing researches for identifying diseases in patients [7].

Android Based Diet Consultant using Rule Pattern-based algorithm

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Abstract:

The proposed project is based on a Dietitian app. The proposed app let us discover what should we eat based on our weight, height, age, sex and physically activity. It calculates BMI and BMR and tells us how much calories should we ideally need to intake per day. The calories we should intake will be feed in and based on RETE algorithm the amount of food intake for the day will be decided.The proposed application is for any type of body person, it is also suits for any range of weight people . It will ideally inform how should we cut down the weight using target programs such as 1LB per week gain/loose . The given system will suggest food list according to the meal that is if it's a break fast lunch or dinner . It will accordingly organize heavy calorie food & light calorie food. The system will give more accurate results as it accepts the data entered by the user and processes it depending on some metrics already known to the application on the basis of which a diet plan is generated and ask the user if the user accepts the diet plan. If not accepted the system may also give and alternative diet plan

Key words: RETE Algorithm, Android Devlopment, Biomarker, Poultry, BMR, BMI, Semantic.

INTRODUCTION

The proposed project is based on a Dietitian app. The proposed app let us discover what should be eaten based on our weight, height, age, sex and physically activity. It calculates BMI and BMR and tells us how much calories should ideally need to intake per day. The calories that should intaken will be feed in and based on RETE algorithm the amount of food intake for the day will be decided. The proposed application is for any type of body person, it is also suits for any range of weight people. It will ideally inform how should be cut down the weight using target programs such as 1LB per week gain/loose . Similar way this system also provides the diet plan according to the information entered by the user.

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Finite automata model for leaf disease classification

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Abstract: In this modern era, the detection of plant disease plays a vital role in the sustainability of agricultural ecosystem. Today, India being second in farming, well-timed information related to crop is still questioning. Indian Government's farmer portal is available for pesticides, fertilisers, and farm machinery. To alleviate this problem, the paper describes a model to validate the leaf image, predicting leaf disease and notifying the farmer in an effective way on the harvest failure to stabilise farming income. For specific consideration on the validation, a data set library with predefined, uniformly scaled, regular image patterns of leaf disease, is maintained. The research suggests that farmers utilising the model can predict the breakout of leaf disease predominantly acquiring 100% yield.

Keywords: agriculture; automata model; image processing; plant disease; segmentation

India, the region of the largest economy in Asia having a population of 1.3 billion, almost eighty per cent of the population, relies on agriculture. The productivity of farming goods depends on the quality, and agriculture is a key contributor to the country's economy (Hoang 2018). Farming is a risky business; diseases affect crop yields making the production life cycle vulnerable, leading to harvest failure, and affecting farmers' livelihood (Kung 2018). Generally, the rapid prognosis and accurate prediction of leaf disease play a vital role in controlling plant disorders (Das et al. 2017). Globally plant diseases are a threat to farmers whose livelihood depends on healthy crops (Mohanty et al. 2016). Leaf shape supports plant visualisation; it is crucial to categorise leaves in agricultural industries. Leaves exhibit taxonomic characteristics surviving long term in plants compared to flowers and fruits. Leaves are classified based on colour, texture, and shape (Steiner 1990; Palanivel et al. 2017). A computer model Maryblyt predicts specific infection in pears and apples during fire blight epidemics. For an efficient disease predicting model, a strong mathematical base and statistical observation are required. The research aims to model a finite automaton accepting regular leaf images, the results validated using the data set library with 54 306 images for 14 species categorising 26 diseases considered from the PlantVillage project (Mohanty et al. 2016). The identification of affected leaf disease (Smita and Niket 2013) is stored in the finite-state system. In addition to finite-state validation, the machine incorporates techniques like virtual image processing, plant pathology, mathematical foundations of finite automaton, and other relevant fields. The contribution of this paper is to provide an analytical approach to identify specific leaf disease characteristics, assisting the farmers in plant treatment (Gusavac et al. 2019), planning and decreasing the loss that occurred on it. It will help the farmers, in monitoring crop health and disease diagnosis in the early stages, on a massive global scale (Anand and Ashwin Patil 2012). The model intimates farmer quickly on the existence of the leaf disease, proving an automata technique addressing user-friendly solutions for societal issues. From this description, the objective of our research influences

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A Soil Prediction and Classification of Crop Yield Using an Intelligence Technique with Big Data

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ABSTRACT

The precise and prompt spatial categorization of the soil varieties and the forecast of crop yield rooted in the spatial big data have emerged as significant factors for the realistic purposes. In this regard, the spatially explicit crop-type information may be fruitfully utilized so as to evaluate the crop areas for a host of monitoring and decision-making applications like the crop insurance, land rental, supply-chain logistics, and the financial market forecasting. The underlying motive behind the current investigation is to effectively describe a modified support vector machine (MSVM) technique to effectively classify the soil type. The recommended crop and crop yield forecast is solely dependent on the soil type. In this regard, it is highly essential for the effective farm management to have appropriate output forecast in accordance with the amalgamation of several factors having a corresponding impact. In the document, three key functions like the big data decrease, soil categorization, and the crop recommendation including output forecast are performed. As a matter of fact, the crop changes from one farm to another on the basis of the planting dates, diversity, soil environment and the crop organization. With the result, it becomes indispensable to have an effective determination on the category of soil to be used. In the paper, the input is represented by the big data. The category of soil is ascertained by means of the procedure of the map reduce framework. The map reduction, in turn, is effectively attained with the help of the kernel principle component analysis (KPCA). Incidentally, the map reduction involves two key procedures such as the mapper and reducer. While the soil category is decided in the mapper side, the investigating procedure occurs in reducer side. Further, the innovative technique takes due consideration of the recommendation and output forecast of the crop, by elegantly employing an Optimal Recurrent Neural Network classifier (OANN). In the document, the crop is recommended and the output forecast is carried out for the future years.

Keywords:
Soil, Crop Yield prediction, spatial big data, MSVM, KPCA, OANN and Map reduction.

Explicit Link Discovery Scheme Optimized with Ontology Mapping using Improved Machine Learning Approach

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Abstract: The web of data in the field of information and communication technology has been growing steadily in recent years, but there is a severe lack of association between the similar domains. The published web of data often reflects identical types of data that are described in various formats and generated at different locations. Interoperability and heterogeneity problems are generated when accessing such data, which can be solved by combining related ontologies with similarity-matching techniques. The semantic web allows information to be interpreted more meaningfully, providing a description of its contents and services in a machine-readable form called the web of data, which is typically structured in metadata. To process this data, different ontology matching methods are available, such as Silk, Kno Fuss, GLUE, LogMap, AgreementMaker, LIMES, CODI, SERIMI, RiMOM, etc. These approaches focus primarily on the classes of entities and their relationships, not on the principles of each type. In this paper a new model of similarity matching techniques is presented with the purpose of integrating related ontologies. The proposed model includes the entity behaviour and structural information of the ontology classes for the similarity matching process. The paper also includes two machine learning approaches, the first being lexical-based similarity matching using the Threshold-based Support Vector Machine (TSVM), whih is performed with restricted clustering and classification. The second is instance-based similarity matching using the Semantically enhanced Nearest Neighbour method (SeNN), which is employed in order to compare and quantify the semantic enhanced nearest neighbour entities/labels to predict the exact similarities. The final process involves the mapping of two sets of links based on the similarity of domain/ range criteria for accurate results. The proposed approach is compared with the existing state-of-the-art systems and the findings are analysed for precision, and specificity with respect to f-measure values that show better results in comparison with current approaches.

Keywords: Constrained based matching, Threshold-SVM, Semantic enhanced Nearest Neighbour (SeNN), Lexical similarity. Ontology matching. Similarity matching.

1. Introduction

The numerous data sources on the website have played a critical role in many semantic web applications in recent days. In the semantic web, data sources are interpreted as a class of entities with ontology, and their relationships are represented in structured format (Shvaiko & Euzenat, 2008). By combining related data sources one could navigate data sources more easily. So creating a set of binary relations between the vocabularies of two ontologies is the task of aligning ontologies (Yannis & Marco, 2003). Ontologies can be built by using the Ontology Web Language (OWL) (Shvaiko & Euzenat, 2008). It uses the *owl:sameAs* to interlink various definitions, knowledge and instances (Shvaiko & Euzenat, 2011).

The relationship between two entities is based on the concept of linked data principles that has a distinct meaning for various applications (Nentwig et al., 2017). Ontology Alignment is based on semantic similarities between entities in which data can be easily identified by performing machine learning classification. In general the Machine Learning and Deep Learning techniques are used by recent researchers for big data analysis to predict positive and negative groups (Al-Garadi et al., 2019).

Further, the large scale data is also performed using machine learning approach for various applications in semantic web. Pattern analysis is often considered and combined with machine learning techniques for a specific classification of a web of data. In addition to this, the ontology visualization technique in semantic web utilizes source and target data for concept model based relationships (Yuan et al., 2020). For the performance evaluation, the visual dimension of the retrieved data and its characteristics are considered and are categorized normally in a hierarchial manner (Zhang & Lee, 2004). Besides that, the inductive logic programming method for ontology mapping aims to find as many valid

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AR Watch Try – On Application for Android Devices

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Abstract: In recent days Augmented Reality is an emerging trend in marketing and sales strategies. Augmented reality ads are immersive, which means they help marketers create a certain emotional connection with customers. Unlike images or banners, for example, AR ads are interactive and lifelike consumers can see and even interact with them. Now-a-days people prefer online shopping rather than the traditional window shopping and Augmented Reality allows brands to give customers unique experiences with the convenience of tapping into their mobile devices. So the main purpose is to build an "AR Watch Try-On application" is to develop android application for trying different watches in a Virtual way using a mobile which supports AR camera. This application can be used on Online Watch Shopping websites and applications such as Titan, Fastrack, Sonata and so on. The application will eliminate the human efforts by physically visiting the Watch shops which is very time-consuming activity. User can try out multiple watches and different varients of those watches.

Key words: Augmented Reality, Emerging trend, Augmented Reality ads, interactive and lifelike, Virtual component, AR camera, Time Consuming Activity.

Introduction

Augmented reality has been a hot topic in software development circles for a number of years, but it's getting renewed focus and attention with the release of products like Google Glass. Augmented reality is a technology that works on computer vision-based recognition algorithms to augment sound, video, graphics and other sensor-based inputs on real world objects using the camera of your device.

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Identification of plant Syndrome using IPT

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Abstract: Agricultural productivity is something on which Indian economy highly depends. This is the one of the reasons that disease detection in plants plays a vital role in agriculture field, as having disease in plants are unavoidable. If proper care is not taken in this area, then it causes serious effects on plants and due to which the overall agriculture yield will be affected. For instance, a disease named little leaf disease is a hazardous disease found in pine trees in United States. Detection of plant disease through some automatic technique is beneficial as it reduces a large work of monitoring in big farms of crops, and at very early stage itself if detected properly by identifying the symptoms of diseases can result in increased productivity. This paper presents an algorithm for image segmentation technique which is used for automatic detection and classification of plant leaf diseases. It also covers diseases classification techniques that can be used for plant leaf disease detection. Image segmentation is one of the method which will segment the raw images in to two or more clusters and the programmed algorithm will work fine in analyzing these clusters for disease classification and prediction of type of disease that a plant leaf gets affected

Key words: Image processing, Detection, Identification of plant leaf diseases, Convolutional neural network

Introduction

The agricultural land mass is more than just being a feeding sourcing in today's world. Indian economy is highly dependent of agricultural productivity. Therefore, in field of agriculture, detection of disease in plants plays an important role. To detect a plant disease in very initial stage, use of automatic disease detection technique is beneficial. For instance, a disease named little leaf disease is a hazardous disease found in pine trees in United States.

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Automatic Face Mask Detection Using Python

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Abstract:

The corona virus COVID-19 pandemic is causing a global health crisis so the effective protection methods is wearing a face mask in public areas according to the World Health Organization (WHO). The COVID-19 pandemic forced governments across the world to impose lockdowns to prevent virus transmissions. Reports indicate that wearing facemasks while at work clearly reduces the risk of transmission. An efficient and economic approach of using AI to create a safe environment in a manufacturing setup. A hybrid model using deep and classical machine learning for face mask detection will be presented. A face mask detection dataset consists of with mask and without mask images, we are going to use OpenCV to do real-time face detection from a live stream via our webcam. We will use the dataset to build a COVID-19 face mask detector with computer vision using Python, OpenCV, and Tensor Flow and Keras. Our goal is to identify whether the person on image/video stream is wearing a face mask or not with the help of computer vision and deep learning.

Key words: Machine learning, R-CNN algorithm, MobilenetV2, Keras OpenCV. Face Mask Detection.

INTRODUCTION:

The reason for this is that the virus that causes COVID-19 can be spread even before symptoms appear, by such things as coughing, sneezing, or even speaking at close range. Cloth face coverings have been recommended due to their low cost and ready availability. By using cloth face coverings, it preserves surgical masks and N-95 masks for healthcare workers who may be involved in direct care of patients with COVID-19.

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A Multiple Sensor Data-Fusion for EFD Using IoT

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Abstract: Multi sensor data fusion allows large scale deployments for environmental monitoring applications especially in the areas like homes, other buildings and infrastructures and industries. In such areas early fire detection is of great importance as the consequences of a fire are catastrophic. This project predicts the possibility of catching fire using a multi-sensor scheme of data fusion to enhance the performance of the early fire detection process by detecting the concentration of inflammable gases in the atmosphere and by measuring the atmospheric temperature.

Key words: Inflammable, GSM, Data-Fusion, Things speak IoT

Introduction

Wireless Sensor Networks (WSN) allows large scale deployments for environmental monitoring applications especially in the Wildland Urban Interface (WUI) (i.e. in areas where forests and rural lands interface with homes, other buildings and infrastructures) and industries. In such areas early fire detection is of great importance as the consequences of a fire are catastrophic. This project predicts the possibility of catching fire using Wireless Sensor Networks at the WUI using a multi-sensor scheme of data fusion to enhance the performance of the early fire detection process by detecting the concentration of inflammable gases in the

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Growth and XRD, Elemental, Mechanical, Dielectric, Optical and Photoconductivity, and Surface Morphological Characterizations of 2-[4-(Trifluoromethyl) phenyl]-1H-benzimidazole (TFMPHB) Crystals for Electronic, Mechanical Applications

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Abstract

Nonlinear optical crystalline material is the fascinating tool for the optoelectronic devices and for phase-matched equipments, frequency matching circuits and etc. Present study portrays the synthesize and utility of macro and nano scaled crystals of 2-[4-(trifluoromethyl) phenyl]-1H-benzimidazole (TFMPHB) by slow evaporation solution growth method and by milling conversion. As-prepared crystals were studied by XRD, CHNSO analysis, dielectric and tribology-mechanical, NLO, and photoconductivity. The orthorhombic phase structure with the average crystalline size of 21 nm was observed. The elemental composition of crystals was analyzed for the presence of elements. Tribological studies of macro and nano TFMPHB crystals were favorable for mechanical applications. Further, the high dielectric constant (363 K) at low frequency was suitable for microelectronic devices; NLO is analyzed with phase matching effect over particle size, and photoconductivity study also reported for the entitled crystalline specimen. The structural parameters by AFM and SEM, absorbance nature by UV spectra, and modeling data by computational methods are also reported.

Keywords NLO · Crystals · Dielectric constant · Tribology · Influx · Electronic material

1 Introduction

Present scenario on the material applications has greater and significant attention in organic nonlinear optical (NLO) crystalline materials with bulky optical nonlinearities in second-order second harmonic generation (SHG) appropriate to their striking prospective usage and applications in frequency convertors, in photonics, in speedy data progression, and in opto electronics [1–3]. Moreover, the figures of merit of NLO organic crystals are of superior one than that of their inorganic matching parts. Due to the above sort of applications, organic NLO materials and crystals are of higher demand. It has become a significant investigation hub to form and incorporate new NLO organic type of crystals and materials with extraordinary implementation. Among them, single crystals are one of the most appealing materials from their huge nonlinearities, high packing density, and superb orientational and photochemical stable and reliable, also with their prevalent optical quality.

Ultimately, an ideal organic material is the one, has an eminent as well as prominent efficiency, an extremely small absorption trivial cut-off (to permit pathway into the

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LITERARY DEPICTIONS AND ARTISTIC ADAPTATIONS OF RANI LAKSHMIBAI OF JHANSI

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Abstract
The exalted historiography of the 1857 rebellion propounded the importance of Indian nationalism that made the legacy of the warrior queen an excellent narrative and an influential investigation of pasts. This paper is an inscription of different genres that have taken Rani Lakshmibai of Jhansi as the subject of historic interest in the enduring works. A thorough examination and analysis of literary frameworks and historical sources configure her as a legendary saga that uplifts heroic womanhood. Her name and fame glitters the national archive which remains as an immortal theme and admiration of literature and art. The discursive writings and depictions with their spatiotemporal setting and distinctive artifacts highlight the contradictory perceptions and projections of the paradigm. Works of art that represent her quintessence ranging from mid-nineteenth century to twenty first century apparently underline the reliability and prestige of the enduring epitome. Indian schools devote several pages for the description of Lakshmibai as "a very brave and fearless lady who fought against the British in 1857;" and ends with the exhortation, "India needs ladies like Lakshmibai, so girls let's try to be like Chhabili." The present-day elucidation of the Rani as a feminist is a significant innovation.

Keywords: *projections, historiography, adaptations, admiration, enduring, perceptions, paradigm, depictions, nationalism, legacy, immortal, epitome*

Introduction

Your name, Rani Lakshmi Bai,
Is so sacred
That we invoke it
In the early hours
Of dawn 26

----Prayer sung by the Nagpur Rashtra Sevika Samiti

Rani Lakshmibai, the Rani of Jhansi and her legendary heroism could remain in various genres of literature as the inspired bards, talented painters, prominent sculptors, excellent novelists and advanced filmmakers brought her into the forefront. She has inspired artistic and cultural works till today. She has been the subject of historic interest in the enduring works of high art. Her representations in the popular culture are widely esteemed. She fired the literary throbs of the writers that was sprung up in the accurate portrayal of

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A STUDY ON RURAL AND URBAN LEARNERS IN LEARNING ENGLISH LANGUAGE AND THEIR DIFFICULTIES IN SENTENCE FORMATION IN ENGLISH

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Abstract

The study is on Rural and Urban learners' style and strategies in a learning an English language. A rural learner faces lot of problems in all the skills of English language. Rural learners have less knowledge about rule in Grammar, its usages, sentence patterns, poor Vocabulary etc. These children poorly memorize the sentences line by line whatever may be in Prose (or) Poetry essays, Grammar etc and write whatever comes to their mind. The reasons are many for the Rural learners. Route memories as well as mother tongue influences are also one of the reasons for the rural learners to commit lot of error in English Language. However, the urban learners have a little bit exposure in English and aware of some words in English. So, while learning the strategies applied by the urban learners is quite different from the rural learners. The urban learners are well enough to grasp the meanings easily because their style of learning and strategies is different when it is compared with rural learners'. Moreover, these urban learners have some idea about the four skills [LSRW] in English Language. This would enable them to learn the English language in an easy way than the rural learners. But at the same time even these urban learners are also poor/weak in English Grammar and commit error. Hence the problems of the rural learners and their difficulties are identified through error analysis as well their differences **(Ruraland urban)** both will be discussed in the Full paper.

Keywords: Route Memory, Mother Tongue Influences, Less Confidence.

Introduction

Rural and Urban learners

Language is one of the most wonderful creations of man. If there had been no language, it would have been difficult for a man to communicate his views to his fellow human beings, there could not be educational activity, no law making, no preaching, no lecturing and nothing like talking, singing, writing and exchanging views and there could not be a chance for the Existence of a book. So it is essential for the human beings to learn language. It is not an easy to learn a language. It takes years to learn language and it has own rules and regulations.

Aim

The main aim of the paper is about the style and strategies used by the Rural and Urban Learners in this 21st century and as well as their problems are discussed in a detailed way to give solutions for the rural and urban learners.

Objectives

This study talks about both rural and urban learners have problems in learning English language and reason for the grammatical error, not confident in Grammar, less practice in sentence formation and fear and hesitation to speak in English are also mentioned. However certain strategies are also mentioned to overcome the problems and reasons behind these problems are also discussed with detailed explanation.

Scope of the study

This Comparative study is mainly based on Rural and Urban learner's differences and their style and strategies. These rural learners face sufficient amount of problems and found difficult to grasp the English language when they were compared with urban learners. In such cases it was very pathetic to see those learners. But when we talk about urban learners, they were over confidence about themselves due to little bit exposure in English language. They speak with full of Grammatical mistakes. Therefore, this study would be helpful to know about the drawback of the rural learners and for their improvement certain points were highlighted to remove their difficulties as well as the style of the urban learners and their survival with little Knowledge in English were also mentioned.

Back ground of the rural learners and urban learners

The majority of the rural learners were poor in English because they are from poor educational Background. The parents with poor educational background do not know how to encourage their children because they were not aware about the English language. The rural parents send their children to the Tamil medium school due to the poor family background. The urban learner's parents have

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Ngpr Homeomorphism in Neutrosophic Topological Spaces

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Abstract: As a generalization of Fuzzy sets introduced by Zadeh [21] in 1965 and Intuitionistic Fuzzy sets introduced by Atanassav [8] in 1983, the Neutrosophic set had been introduced and developed by Smarandache. A Neutrosophic set is characterized by a truth value (membership), an indeterminacy value and a falsity value (non-membership). Salama and Alblowi [17] introduced the new concept of neutrosophic topological space (NTS) in 2012, which had been investigated recently. In 2018, Parimala M et al. introduced and studied the concept of Neutrosophic homeomorphism and Neutrosophic $\alpha\psi$ homeomorphism in Neutrosophic topological spaces. The impact of this article is to introduce and study the concepts of Ngpr homeomorphism and Nigpr homeomorphism in Neutrosophic topological space. Further, the work is extended to Ngpr open mappings, Ngpr closed mappings, Nigpr closed mappings and some of their properties are explored in Neutrosophic topological space.

Keywords: Neutrosophic generalized pre regular closed set, Ngpr open mappings, Ngpr closed mappings, Ngpr homeomorphism and Nigpr homeomorphism.

1. Introduction

Zadeh [21] introduced the concept of fuzzy set in 1965 and Chang C. L. [9] introduced fuzzy topological spaces in 1968. Later, Atanassov [8] proposed the concept of intuitionistic fuzzy sets in 1986, where the degree of membership and degree of non-membership are discussed. Intuitionistic fuzzy topological spaces was introduced by Coker [10] in 1997 using intuitionistic fuzzy sets. As a generalization of Fuzzy sets and Intuitionistic Fuzzy sets, Neutrosophic set have been introduced and developed by Florentin Smarandache [12]. He also defined the Neutrosophic set on three components, namely Truth (membership) (T), Indeterminacy (I) and Falsehood (non-membership) (F).

Neutrosophic concept has wide range of real time applications in the fields of [1 - 6] Information Systems, Computer Science, Artificial Intelligence, Applied Mathematics and Decision Making, Uncertainty assessments of linear time-cost tradeoffs and solving the supply chain problem.

In 2012, Salama A. A and Alblowi [17] introduced the concept of Neutrosophic topological space by using Neutrosophic sets. Salama A. A. [18] introduced Neutrosophic closed set and Neutrosophic continuous function in Neutrosophic topological spaces and their properties are studied by various authors [7 & 11]. Since, Neutrosophic homeomorphism plays an important role in Neutrosophic topology. Parimala M et al. [14] introduced and studied the concept of Neutrosophic homeomorphism and Neutrosophic $\alpha\psi$ homeomorphism in Neutrosophic topological spaces. In this article, introduce and study few properties of Ngpr open mappings, Ngpr closed mappings, Nigpr closed mappings, Ngpr homeomorphism and Nigpr homeomorphism in Neutrosophic topological space. The present study demonstrates some of the related theorems, results and properties.

2. Preliminaries

2-D Nanostructures of Advanced Hybridized WO_3 Nanocomposites for High Performance of Supercapacitor Application

P. Periasamy, T. Krishnakumar, M. Sathish, Murthy Chavali, Prem Felix Siril, and V. P. Devarajan

1 Introduction

1.1 Overview of Supercapacitors

The twenty-first century is the victim of the numerous developments in the technological sector and in response to that it is also a victim for the demand of clean and renewable energy source to meet the depletion of natural energy resources like fossil fuels and required subsequent developments in the energy storage device with

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MULTI-RESPONSE OPTIMIZATION OF MACHINING PARAMETERS ON PHENOLIC BAKELITE HGW 2088 USING DESIRABILITY FUNCTION APPROACH

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ABSTRACT

The present investigation is, to determine the optimum parameter conditions in CNC turning process of Phenolic Bakelite HGW 2088 rod with multi response characteristics using Taguchi combined desirability function approach (DFA). The cutting speed (V), feed rate (F) and depth of cut (D) are the essential key process parameters that seriously affect the machining performance characteristics such as material removal rates (MRR) and surface roughness (SR). The experimental work was planned as per Taguchi's L9 orthogonal array design of experiments. A Taguchi combined desirability function analysis was employed to find out the optimum level of turning parameters with an objective to maximize the MRR and minimize the SR. Analysis of variance (ANOVA) was used to determine the significant effect of each process parameter on the multiple response characteristics. Experimental result shows that feed rate was the most influential parameter followed by depth of cut. The multiple response characteristics were improved drastically at the optimal level conditions as verified by the confirmation experiment.

KEYWORDS: Phenolic Bakelite HGW 2088, Turning Process, MRR, SR & Desirability Function Approach

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Original Article

1. INTRODUCTION

Phenolic Bakelite HGW 2088 material is a thermoplastic material which is used widely across a range of applications, primarily where high mechanical properties are required. Typical applications include insulation of low voltage machines, installations and equipment as well as machined parts in various executions. The material is often used for bushings, guide rings for hydraulic, gliding bearings, etc. These kinds of rods are highly suitable for use when thermoplastics cannot handle the high pressure that the application requires. The remarkable properties of Phenolic Bakelite HGW 2088 material include good mechanical properties, high wear resistance, very good weatherability and resistance against salt water, good chemical and heat resistance. In general, plastic components are prepared with the aid of injection moulding process, blow moulding process and compression moulding process. The plastic materials are required to be machined in many occasions so as to impart required dimensional accuracy. The turning operations of plastic materials pose challenges owing to its inherent problems in imparting required Surface Roughness (SR) and improved Material Removal Rate (MRR). In this work, the machining of Phenolic Bakelite HGW 2088 material using Computer Numerical Controlled (CNC) turning machining has been considered for identifying the optimal input parameters setting so as to yield the better output responses. Taguchi method guided

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EFFECT OF V ADDITION ON DRY SLIDING WEAR BEHAVIOUR OF TITANIUM MATRIX COMPOSITES

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The current study deals the dry tribological analysis of Titanium (Ti) reinforced with secondary particle such as vanadium (V). Powder Metallurgy (P/M) is used to manufactured the composite with varying the wt. % of the secondary particles such as 3 %, 6 % and 9 %. After successful fabrication of the composite, the composites were assessed the various properties such as physical and tribological behaviour. The density, hardness and tribological behaviour of the composites are assessed at room temperature condition. The results clearly evident that increasing the wt. % of secondary particles lead to decrease the specific wear rate and coefficient of friction. From the current analysis it clearly illustrates that Ti with the addition of 6 wt. % of vanadium composites significantly reduce the specific wear rate and coefficient of friction. Following to the extensive analysis such as scanning image analysis of the composite surface was assessed. It also shows that oxide layer is formed on 6 wt. % composite surface. It takes the composites into the passivation region.

(Received January 20, 2020; Accepted May 28, 2020)

Keywords: SEM, Ti-V composites, Wear.

1. Introduction

For the past some decades, titanium is a fast growing material in many sectors such as automobile, medical industries etc. However, titanium is more active material and it is not easy combined with most ceramics. For this drawbacks, powder metallurgy is one of the most significant and easiest way to manufacture the components. There are many advantages are there, while making the component through powder metallurgy such as low cost, ease to fabricate and the wastage of powder is very minimal [1-3].

Mainly the properties of titanium matrix composites such as mechanical and tribological properties, are depends on fine grains of the composites. The fine grains are mainly depending on the nature of the powders and manufacturing technique. If essential post heat treatment will also have performed, in-order to attain the fine grains/microstructure.

Selection of secondary particles is also a crucial one in-order to attain a better composite property. In this research vanadium (V) is choose as a secondary particle. It has outstanding properties such as low hardness and high chemical affinity. Many researchers are undergone the research on titanium matrix composites via various manufacturing techniques such as liquid metallurgy, powder metallurgy and infiltration. However, many techniques are there, but powder metallurgy is very prominent technique in-order to manufacture the composites [4].

Shuying Li et al. (2021) studied the effect of titanium and its impact wear behaviour on ferrous alloy and the results directs that the steel wear conflict is mainly depends on hardness and toughness of the composites. Furthermore, it also reveals that 0.04 wt. % of Ti possessed better mechanical and wear properties than other composites.

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Abrasive water jet experimentation on zirconium boride and boron carbide reinforced molybdenum metal matrix

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ABSTRACT

In metal industries, molybdenum has played an important role because of its properties and applications. It has high strength, hardness, electrical conductivity, resistance to wear and corrosion. This paper deals with parametric effects of abrasive water jet machining of Molybdenum Metal Matrix (Mo-MMC) which is made from stir casting technique. The two reinforcements such as Boron Carbide (B_4C) and Zirconium Carbide (ZrC) are considered with a mixture of compositions such as 2, 4 and 6% weight proportions. Further development of work and performance of metal properties, the prepared samples are involved for testing of materials. Based on these compositions, 6% of an alloy is provided the best performance. Hence, it has forwarded to the further investigations like as Abrasive Water Jet Machining (AWJM) process. The machinability characteristics are studied through this mechanical energy based method. The response of Material Deletion Rate (MDR) is measured through the change of input constraints such as water pressure, abrasive flow rate and traverse speed. The optimal parameters are derived from Taguchi method. The parametric effects on material deletion rate are investigated with the help of Pareto charts and Analysis of variance (ANOVA).

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1. Introduction

The molybdenum alloy is used in engines, cutting tools, heating elements, blades and electrodes. Abrasive water jet machining process was providing better dimensional accuracy and surface texture. Finally, water pressure was the major role on material deletion rate during water jet machining of duplex brass [1]. The ceramic particulate based aluminium metal matrix was fabricated through stir casting method [2–4] and then machined by abrasive water jet machining process [5]. An AWJM parametric investigation was carried out on mixture of composite which was formed with the help of multi stage stir casting route [6]. The justification of the experimental result was verified by analysis of variance [7–11]. The material deletion rate depended on water pressure and traverse speed [12–13]. Several research primarily focused on B_4C particulate reinforcement with MMC were achieved the desired properties [14–17]. The Taguchi parametric optimization was used to found the optimal constraints in abrasive water jet machining of aluminium [18] and mild steel [19]. The metal properties of the brass metal matrix were improved through various compositions of reinforcements [20]. The zirconium silicate used as reinforcement in aluminium metal matrix [21]. AWJM was used to cut various materials such as epoxy composite, graphite and glass [22].

In present work is used to explain the abrasive water jet experimentation on zirconium boride and boron carbide reinforced synthesized molybdenum metal matrix. The optimal parameters were found from Taguchi method. The parametric effects were studied through analysis of variance and Pareto charts.

2. Material and method

2.1. Material synthesis using stir casting process

The boron and zirconium carbide based molybdenum metal matrix was produced with the aid of the Stir casting process. The

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Optimization and modeling of drilling variables on AMCs using Taguchi technique and regression analysis

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ABSTRACT

This research work explores the optimum variables for the drilling process of AA7075 matrix composite filled with 10 wt% ZrO_2 particles was synthesized via stir casting route. A Taguchi approach was used to determine the optimum variables such as rotational speed (500, 750, 1000 and 1250 rpm), feed rate (0.06, 0.08, 0.10 and 0.12 mm/rev) and depth of cut (1.0, 1.5, 2.0 and 2.5 mm) on the surface roughness (SR) of the composite. The experiments were performed on a CNC machining centre using HSS tool. The signal-to-noise (S/N) ratio and analysis of variance (ANOVA) was applied to find out the optimum parameters and also compute the notable effects of factors on the SR. The result reveals that, the rotational speed of 1250 rpm; feed rate of 0.12 mm/rev and depth of cut of 1.5 mm were achieved the low SR. The ANOVA results understood that the feed rate was the most impactful factor on SR subsequently by rotational speed with a contribution of 60.37% and 32.66% respectively. The interaction effects of variables on SR were also reported. At last, regression equation was formulated to predict the SR and it was compared with experimental SR.

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1. Introduction

In the recent era, aluminium matrix composites (AMCs) are most promising materials for wide scope of applications like aerospace and automobile industries due to their tremendous properties such as high strength and stiffness, high hardness and excellent wear resistance [1]. In those foremost applications, the produced components are expected to be high accurate with good surface finish [2,3]. Drilling is the fundamental process of machining commonly associated with the production of machined holes. This process can be frequently conducted in metal removal as a primary step for various operations, such as boring, reaming and tapping [4,5]. So many factors like speed, feed, depth of cut and the geometry of tool are a chief control on the surface quality of drilled holes [6,7]. Hence, the better surface finishes attained in drilled parts is very difficult. The surface finish of the drilled parts can be improved by selection of the appropriate variables such as rotational speed, feed rate and depth of cut etc. The effects of these parameters can be optimized by using the Taguchi approach [8].

The present work is focused on low SR obtained at the drilled AA7075/ZrO_2 particulate composite. From the exhaustive studies, it has been understood that rotational speed, feed rate and depth of cut are key factors influencing SR. Eaben Rajkumar et al. reported that the addition of B_4C increases the subsurface depth deformation, whereas the addition of mica decreases the subsurface depth of deformation while drilling of Al/B_4C/mica MMCs [9]. Gul Tosun has predicted the SR for Al/SiC_p MMC by varying the speed, feed rate, type of drill and point angle. Taguchi method was used to predict the optimum parameter for SR. It was found that feed and drill type were the most effective parameter on SR [10]. Paulo Davim have optimized the drilling factors such as cutting velocity, feed and time by using Taguchi technique and linear regression modelling. They reported that the effects of cutting velocity and feed were the noteworthy parameters on SR [11]. Rajmohan et al. concluded that the low SR exhibited at high speed due to the induced force while drilling of Al356/SiC-mica composites [12]. Yahya Altunpak et al. concluded that the feed increases SR improved, whereas SR reduced with an increase in speed while drilling of Al/SiC/Gr composites [13]. Noorul Haq et al. studied the impact of variables on SR for drilling of LM25/SiC composites using TiN coated HSS drill [14]. Basavarajappa et al. Concluded that

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Investigation of mechanical properties of jute epoxy composite with fruit waste (Citrullus vulgaris peel) filler for automotive applications

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Abstract

In the current investigation, the mechanical behavior of watermelon (Citrullus vulgaris) peel nano debris (described as a fruit filler) with different weight composition (0 wt. %, 1 wt. %, 2 wt. %, 2.5 wt. %, 5 wt. %, 7.5 wt. % and 10 wt. %) is reinforced with jute fabric in an epoxy matrix. The effect of filler concentration on tensile, hardness, flexural and impact strength are investigated as per ASTM standards. The findings indicate that the addition of fruit filler improves the mechanical property of jute composite. It is found that the presence of 2.5 wt. % filler in the nanocomposite records the highest value of tensile strength, flexural strength, and hardness of the jute epoxy composite and the 10 wt. % filler nanocomposites achieve a noticeable projection in impact strength. The fracture surfaces are examined for the fiber alignment, fiber-matrix adhesion, voids, filler agglomeration, and fiber fracture. Furthermore, a glass visor was developed to show the best mechanical performing potential and analyzed for deformation behavior and modal analysis using ANSYS.

Keywords

Watermelon, jute fabric, epoxy, mechanical property, FESEM, glass visor, ANSYS

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Introduction

A fiber-reinforced polymer (FRP) has been developed to replace metals in critical-weight components with structural parts in aerospace, automotive, and other industries.[1-2] Interest in the use of natural fibers for the design and manufacture of composites has recently increased due to specific strength, substantial toughness, low density and cost.[3] Jute fibers can be used in polymer composites as reinforcement among the different natural fibers. Jute is cost-effective and commonly used in applications such as bags, ropes, chipboards, build panels, door frames. Due to its good wettability and adhesion with jute fibers, epoxy has been widely used in jute composites.[4]

Fabric is built from fibers. It is formed by yarn using weaving and knitting process. Fabrics are highly durable and extremely stable and are used in many commercial and industrial applications such as medical, automotive, textile, electronics and sports. Many researchers have investigated the characterization of natural, synthetic fabric-reinforced composites and its hybridization, and they reveal that mechanical properties of tensile, flexural, impact strength has been improved. The improvement depends on the chemical modification of fibers, fiber extensibility, fiber volume fraction, fiber-matrix adhesion, etc.[5-11] Fillers have recently been used in polymer to increase the composite value for mechanical properties. Many researchers have studied the mechanical properties of composites and their effect of various nanofillers.[12-29]

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CHARACTERIZATION AND MICROSTRUCTURE STUDY OF AL5083/FLY ASH/SILICON CARBIDE PARTICULATE COMPOSITES FABRICATED BY STIR CASTING METHODOLOGY

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ABSTRACT

AL5083 alloy having a decent corrosion resistance, light –weight with high strength and weld ability which reinforced with particulate of fly- ash/ silicon carbide (sic) and fabricated using stir casting technique. One of the major wastage of industrial item in thermal plant is flyash as first strengthening material addition with second reinforcement material(silicon carbide) which gives good bonding. fabrication of Al5083-Sic-Flyash composite samples are ready using stir casting method. The different specimens are attained for Al5083, Al5083-2 wt% Sic, Al5083-4 wt% sic,Al5083-6 wt% of Sic and each samples 2% weight of fly ash content was kept as constant all over. after preparing of particle samplings conducte mechanical characterize testing such Hardness Test, Impact test, wear test and Tensile Test on corresponding apparatus and also Scanning Electron Microscope(SEM) analysis was inspected. Finally the results of each experiment were discussed which indicates particles % of both sic, flyash improved properties of hybrid composites.

Keywords: Al5083, SEM, Mechanaical Behaviour.

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Numerical Study of Effect of Drag Reduction Add-on Device on a Generic Car

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Abstract—**This paper present the effects of drag reduction add-on device on the drag of a generic car model. In the present paper, modeling of the generic car with and without add-on device have been done using Catia V5 and numerical simulation have been performed using ANSYS Fluent 17.0 to evaluate the coefficient of drag and coefficient of lift for the generic car with and without add-on device. The introduction of add-on device at the generic car model results in reduction of drag coefficient at all the speed whereas about 29.04% drag coefficient reduction was achieved at maximum velocity of 33.33 m/s and the lift coefficient was decreased by 11.11%. Reduction of the drag and lift coefficient improve the fuel economy and the stability of the generic car.**

Keywords—Drag coefficient; lift coefficient; add-on device; stability; generic car

I. INTRODUCTION

Aerodynamics is the study of the interaction of air with moving bodies; it forms a major and specialized part of fluid dynamics. Whereas, the aerodynamics dealing with road vehicles is known as automotive aerodynamics. This part of fluid dynamics deals with the main objectives like the reduction of drag, reduction of undesired lift forces and improving the stability of the vehicle at higher speed, reduction of noise and thus producing an attractive profile for the vehicle. Also, there is a necessity to increase the down-force for better cornering abilities of the vehicle. A clear understanding of the profile of vehicle with respect to the aerodynamics can produce innovative thoughts so as to achieve the reduction in drag and therefore increase the fuel efficiency. The evolving technologies have led to the downfall of automobile industries, due to the fuel crisis. At present, it is not possible for everyone to replace their conventional car with an electric car, as they are costlier for the majority of our population. Also, the increased air quality index and air pollution are alarming. So, the need of the hour is to lower the fuel consumption applying vehicle aerodynamics. It is possible to modify the flow around the car body and wake

Fig 1. Flow around Austin A70

behind it using some add-on devices. There are many existing add-on devices like vortex generators and spoilers. Here the idea is to have an attachable device at the rear end of the car body.

The streamlines around a vehicle show the flow pattern around the vehicle as shown in "Fig. 1,"When the vehicle moves at a certain velocity, there is a formation of a thin layer called the boundary layer, within this layer the viscous effects of the fluid are dominant and outside this layer the in-viscid effects are dominant. As the flow moves towards the rear part of the car body, the boundary layers separate and fluid flow is detached. The boundary layers lose kinetic energy and swirl around to form vortices and result in drag and wake formation.

THRUST VECTORING OF A SUPERSONIC RECTANGULAR NOZZLE BY USING DIFFERENT PLATE EXTENSIONS

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Abstract

The present study focuses on the thrust vectoring by plate extensions of a supersonic jet flowing from a rectangular nozzle. A rectangular nozzle with circular converging section and rectangular diverging section was designed and fabricated for Mach number 1.8 with stainless steel. Three plates of lengths 1.4h, 2.7h and 4.1h (h=height of the nozzle exit) were used for thrust vectoring. Two plates with 33.33% and 16.67% cut section of 1.47cm x 3cm full plate were also used for the current study in addition to the full plates. Experiments were carried out for nozzle pressure ratio(NPR) of 4, 5.74 and 8 which corresponds to overexpansion, optimum expansion and under expansion respectively. Thrust measurement was carried out using a baffle plate which was attached with a load cell and shadow graph was utilized to investigate vectoring of jet for all the above cases.The experimental results showed that the jet flow structures over the flat plate were highly three-dimensional with strong bleeding flows from the plate sides, and that they were sensitive to plate length and nozzle pressure ratio.The maximum thrust deflection angle and thrust loss of the jet were 7° and 2.5% respectively for 1.4h at NPR 5.74(correct expansion), demonstrating the applicability of thrust vector control via a flat plate installed at the nozzle exit.

Key words: *Supersonic jet, Rectangular exit, Plate extensions, Thrust vector, Thrust loss*

Nomenclature

P_{des}	=	Design inlet stagnation pressure
P_0	=	Settling chamber pressure
NPR	=	Nozzle pressure ratio
TVC	=	Thrust Vector Control
h	=	Height of the nozzle exit
b	=	Breadth of the nozzle exit

Greek symbol

α	=	Thrust vector angle

Subscripts

i	=	Inlet
e	=	exit
∞	=	atmosphere condition

I.INTRODUCTION

Thrust vector control (TVC) has been widely used in aircraft, rockets, or other supersonic vehicles to manipulate the direction of thrust from their propulsive systems. Unlike conventional aerodynamic control technologies, which are usually driven by empennage or flaps, TVC uses accessional hardware or by-pass flow to direct the exhaust flow off-axis, and is capable of trimming the flight pose of the aircraft or rocket, or even helping them with the take-off and landing processes [1, 2].

The plates of different lengths at the nozzle exit is providing thrust vectoring and the plate width does not significantly influence on the overall jet-plate flow structures, if the width is larger than the nozzle width. The plate surface is able to introduce a linear variation of the jet deflection angle with 7.5° and the thrust loss associated with jet plate flows of maximum value of about 3.0% [3].

TVC can be realized by many methods, such as the shock vector control [4], throat skewing [5], counter flow [6], or Coanda effects [7]. In general, TVC methods can be divided into two major categories: mechanical and fluidic. Mechanical TVC employs actuated hardware to direct the thrust vector at the nozzle exit. Fluidic TVC utilizes the by-pass flow passage to inject a secondary flow for controlling the thrust. The optimization of

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RSM based Modeling and Investigation of Emission Characteristics on Cotton-Seed Oil Biodiesel

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ABSTRACT:

The biodiesel is the most promising fuel for IC engines as they have the higher calorific value and lower emission quantities. The use of biodiesel in the existing and new engines will increase the performance and reliability of the engine. Once the biodiesel is synthesised and produced in a bulk, it will minimize the cost of biodiesel and it will be lesser than the cost of regular diesel. The use of biofuel with diesel will be prominent as they can produce good performance when combined. In this research work, biodiesel from cotton seed is extracted and transestrified into usable and combustible fuel (COME). To test and improve performance of the COME it has been combined with the diesel in different proportions and prepared as biodiesel (COME-Diesel blends). The blends are tested and compared for various properties to identify the combustion characteristics. The blends are used and tested on the VCR engine to determine the performance and emission characteristics. To develop an empirical model for the emission characteristics, response surface methodology (RSM) design matrix is developed such that the blend, compression ratio, load and speed are the variables and NO and HC are the response functions. The RSM design matrix is experimented and to determine the empirical models, results are verified through the experimental results.

KEYWORDS:

Cotton Seed Oil; Biodiesel; Emission system; Response surface method.

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1. Introduction

Biodiesel is biodegradable, nontoxic, and has significantly fewer emissions than petroleum-based diesel when burned. Biodiesel is an alternative fuel and it is similar to conventional diesel. The largest possible source of suitable oil comes from oil crops such as corn, cottonseed, rapeseed, soybean and sunflower. Biodiesel is rapidly biodegradable and completely nontoxic as spillages represent far less risk than petroleum diesel. Biodiesel has a higher flash point than petroleum diesel, making it safer in the event of a crash. It has been proved by many researchers that the blends of 20% biodiesel with 80% petroleum diesel can be used in unmodified diesel engines. Biodiesel can be made from recycled vegetables and animal oils or fats and it is nontoxic and biodegradable. It reduces the emission of harmful pollutants, mainly particulates from diesel engines (80% less carbon dioxide emissions, 100% less sulphur dioxide). But emission of NO_x, the precursor of ozone, is increased. Biodiesel has a high cetane number when compared to diesel.

The high cetane numbers of biodiesel contribute to very good combustion at various conditions. The use of biodiesel can extend the life of diesel engines because it is more lubricating and furthermore power output is relatively unaffected by biodiesel. Yilmaza et al [9] studied the performance and emission characteristics of a diesel engine fuelled with waste vegetable oil biodiesel. As the load increased, increase in EGT and decrease in CO emissions is observed for all the cases. Park et al [11] studied the performance and emission characteristics of a diesel engine fuelled with soybean oil methyl ester at different blend ratios (5%, 10%, and 20% as volumetric ratio). The results inferred that an increase of biodiesel blending ratio recovered the reduced fuel density and the cetane number of bio-ethanol blended diesel fuel. The HC emission decreased with increase in blending and increase in ignition delay decreased HC emissions.

BTE has reduced at lower engine loads and improved at higher loads. Furthermore, the CO emission increased with the increase of biodiesel blend ratio and the decrease of engine speed. Celikten et al [7] studied performance and emission characteristics of a diesel engine fuelled with diesel, rapeseed oil and hazelnut oil methyl ester blends. Engine performance and emission tests were carried out with 4 different fuels; 100% diesel, 50% rapeseed oil methyl ester and 50% diesel, 50%

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Comparative Numerical Analysis of CD Nozzle with Hydrogen and Deuterium as Fuel

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Abstract

The Basic Rocket propulsion concept using the liquid Hydrogen as fuel and Liquid Oxygen as an oxidizer is re-modified with the liquid Deuterium, the isotope of hydrogen, to increase the thrust considerably and to increase the oxygen content on the atmosphere by nuclear interaction. The concept of Chemical propulsion and Molecular-level Expansion is integrated to increase the effective thrust and the fast-moving jet is made to interact with the atmospheric gasses to produce the desired effect so that the oxygen content is increased. This also stops the need for fossil fuels to explore space and emission of greenhouse gasses.

Keywords: CD Nozzle, Computational fluid dynamics, deuterium-di-oxide, Hydrogen-di-oxide

1. Introduction

Till date many vehicles are either polluting the atmosphere or tuned with less amount of emission of the greenhouse gasses [1]. So, in an objective of developing a vehicle in rocket propulsion that could rectify the effects of the other polluting

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Static structural analysis of spur gear using ANSYS 15.0 and material selection by COPRAS, MOORA techniques

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ABSTRACT

Structural analysis of components is an important task in design phase which ensures the suitability of the design before stepping for product manufacturing. The material selected for a product to perform particular function need validation through certain analysis for the application desired. The present work aims to conduct structural analysis of spur gear pair subjected to different torque values such as 132, 190 and 225 Nm. Structural steel, Aluminium Silicon composite, AISI 4140 alloy steel and Ti6242S are the materials considered for static structural analysis to evaluate total deformation, strain energy, equivalent von-mises stress and equivalent elastic strain by varying the torque for a spur gear pair. The analysis results are further taken as input for multi criteria decision making to identify the best and worst material options through COPRAS and MOORA. The weights of the individual output responses are evaluated through CRITIC method and utilized for calculating the weighted normalized matrix. COPRAS recommend Ti6242S as the best material and Structural steel as the worst preference. The recommendations of MOORA are in confliction with COPRAS. MOORA recommends Structural steel as the best material and Ti6242S as the worst option. The results are further validated through TOPSIS and it has a good agreement with COPRAS technique than MOORA. The novelty of the present work is that the results obtained from FEA have been taken as an input for multi criteria decision making for selecting the material.

Selection and peer-review under responsibility of the scientific committee of the 12th National Conference on Recent Advancements in Biomedical Engineering.

1. Introduction

The transmission of power from one location to other location is the prime importance for the transformation of our lives in this century. Power can be transferred through different means such as belts, chains, gears, shafts, pulleys, sprocket and many more. Among the array of options available for power transmission gear drive is the most preferable option when paramount importance is given for factors like efficiency, low friction loss, higher power transmission and low space. Spur gears or straight cut gears which rotate parallel to the shaft axis finds application in many industrial systems due to the positive benefits like simple in design, cost effective and highly efficient. The design of spur gear for different industrial requirement decides the material of the gear to be selected and also the technical requirements which it should satisfy when it is applied for service. Researchers in the area of gear and power transmission design has shown continuous efforts in analyzing the gears designed for a particular application inorder to identify a substitute material which can exhibit higher performance than the existing one with a reduction in total cost of the gear. Anisul Islam et al. [1] analyzed a couple of spur gears used in hybrid vehicle's power transmission with varying teeth such as 29 and 31 through ANSYS software. The design of both the gears have been created using solidworks software and imported the file

Abbreviations: ANSYS, Analysis System; AISI, American Iron and Steel Institute; CATIA, Computer Aided Three Dimensional Interactive Application; TOPSIS, Technique Order Preference Similar to Ideal Solution; MOORA, Multi Objective Optimization based on Ratio Analysis; COPRAS, COmplex PRoportional Assessment; ARAS, Additive Ratio Assesment; HDPE, High Density Polyethylene; MCDM, Multi Criteria Decision Making; PROMTHEE, Preference Ranking Organization Method for Enrichment Evaluation; ELECTRE, ELimination Et Choice Translating Reality; VIKOR, VIse Kriterijumska Optimizacija I Kompromisno Resenje; IGES, Initial Graphics Exchange Specification.

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Friction and thermo mechanical characterization of nano basalt reinforced epoxy composites

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ABSTRACT

In the present investigation nano basalt epoxy composites have been examined for its possibility in employing new wear resistant material with improved friction and thermo mechanical characteristics. The nanocomposites were fabricated by dispersing (1–5 wt.%) nano basalt particles in epoxy using sonication process. The density, mechanical properties (tensile strength and micro hardness), thermal stability along with friction and wear behavior have been investigated as per ASTM standard. The result shows that all the properties found to be increased with nano basalt content in the thermosetting epoxy matrix. The FESEM studies reveal the homogeneous dispersion of nano basalt (≤3 wt.%) in the epoxy matrix. This uniform dispersion improves the thermomechanical and friction characteristics. The specific wear rate of the nano epoxy composites reinforced with nano basalt particulates exhibits the superior wear-resistance properties. The results reveal that 3 wt.% nano basalt in the epoxy matrix yields maximum improvement in tensile strength, micro hardness, thermal stability, wear resistance and coefficient of friction when compared to other composites subjected to investigation. The excessive addition (>3 wt.%) forms basalt clusters as agglomeration which pull down the frictional and thermo mechanical performance.

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Basalt/epoxy composites; Thermogravimetric analysis; Tensile strength; Hardness; Specific wear rate; Coefficient of friction; Wear mechanism

Introduction

In the aim of developing friction materials, metallurgists translocate their idea to composites instead of metals due to their high strength to weight ratio and load carrying capacity. The usage of these materials in past decades is increased in automotive and aerospace sector due to its manufacturing ease and cost.[1] In the current scenario, the reinforcing materials in nano scale is one of the most assuring approaches in engineering applications.[2] Friction research peers focus their attention in exploring the effects of incorporating friction modifiers (fillers and fiber) along with various additives and inert fillers in different matrix and obtained optimum reinforcement in achieving the maximum tribo mechanical properties. The parameters evaluated by them are particle type, size and loading,[3,4] fiber type, aspect ratio and loading[5–9] and matrix type.[10] The density, tensile strength, hardness, thermal stability, specific wear rate, coefficient of friction and

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Dry sliding wear behaviour of aluminium metal matrix composite using response surface methodology

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ABSTRACT

Dry sliding wear is one of the most important aspects to be considered for selecting the material for aerospace and automotive applications. A novel aluminium metal matrix composites (AMMCs) offer less specific wear rate (SWR) for various tribological applications. The intend of this research work is, Al7050 alloy incorporated with 12 wt% of zirconium dioxide (ZrO_2) particulate composite was synthesized via stir casting route and a pin-on-disc was used to performing the wear test. The experimental work was performed by considering three input wear control parameters such as load (10–30 N), disc velocity (1–3 m/s) and sliding distance (500–1500 m). By using response surface methodology (RSM), three parameters at three levels Box Behnken design (BBD) were used to formulate the experimental design. Analysis of variance (ANOVA) showed that load exerted the main noteworthy parameter on SWR trailed by disc velocity. The surface and contour plots revealed that the SWR of produced composite augments with rising load at 30 N with disc velocity 2 m/s and a sliding distance of 1500 m. The confirmation test proved that the developed models are more accurate.

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1. Introduction

Aluminium alloys are broadly exploiting in aviation and automotive applications owing to its less density, high strength and better thermal stability [1]. However, these alloys obtain the low wear resistance. From previous literatures showed the wear resistance of aluminium alloys can be boosted by adding several kinds of hard or self lubricating reinforcement particulates such as boron carbide (B_4C), titanium carbide (TiC), titanium oxide (TiO_2), zirconium dioxide (ZrO_2), molybdenum disulphide (MoS_2), silicon nitride (Si_3N_4) and graphite (Gr) etc [2–8]. In particular, ZrO_2 particles reinforced AMMCs enhanced the wear resistance due to its hardness and self lubricating properties [9]. Arif et al. studied the hardness property of Al-SiC-ZrO_2 composite and concluded that the hardness of base alloy improved with the incorporation of 5 wt% of SiC and also the inclusion of ZrO_2 particulates improved the hardness at higher level [10]. Ramachandra et al. analyzed the wear behaviour of the ZrO_2 particles filled AMMCs and understood that less wear rate obtained by increasing trend of ZrO_2 content [11]. Pandiyarajan et al. studied the Rockwell hardness of the Al6061-ZrO_2 composites and reported that the inclusion of the ZrO_2 enhance the hardness of matrix metal. The reason is that, the insertion of the ceramic particles obtained high hardness nature [12]. Generally, AMMCs have been fabricated by powder metallurgy, spray deposition, stir casting and in-filtration technique [13]. Among all fabrication methods, stir casting route is one of the most preference process due to its simplicity, flexibility, most economical and mass production [14]. The various factors significantly affect the wear rate of AMMCs reported by several researchers. Radhika et al. studied the wear behaviour of Al-Si12Cu/TiB_2 composite and noticed that wear rate drastically improved when an increase in load at all velocities while diminished with rise in sliding distance [15]. Pardeep Sharma et al. analyzed the effect of parameters on wear behaviour of Al6082/Gr composite using RSM. They concluded that sliding distance was the important factor for reducing the wear rate [16]. Samson Jerold et al. predicted the wear rate of LM13/FeCu squeeze cast composite using RSM and found that the low wear rate was obtained at a load of 18.46 N, sliding velocity of 4.11 m/s and sliding distance of 923 m [17]. Alagarsamy et al. investigated the effect of control parameters on SWR of AA7075-TiO_2 composites and reported that

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Selective activation of Forearm muscles for improving Wrist Joint Stability

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RESEARCH ARTICLE

Improving the performance of grid-connected doubly fed induction generator by fault identification and diagnosis: A kernel PCA-ESMO technique

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Summary

In this manuscript, a novel Kernel PCA-ESMO technique is proposed for protecting the system and diagnosing the exact fault occuring in the DFIG. The proposed method is joined implementation of Kernel principal component analysis (Kernel PCA) and enhanced Spider Monkey Optimization SMO (ESMO) technique, and, hence, it is named Kernel PCA-ESMO approach. Here, two phases are considered for fault analysis; they are fault identification and diagnosis. Primarily, the first phase identifies the system fault conditions of DFIG in grid-connected system using Kernel PCA approach. After that, the ESMO classifies the type of fault that has occurred in the DFIG. The major scope of the proposed Kernel PCA-ESMO method is to guarantee the system with less complexity for fault identification and diagnosis for enhancing the power quality of whole system. The implementation of proposed model is made at MATLAB/Simulink, and implementation is evaluated by existing techniques. The statistic analysis of proposed and existing systems of mean, median, and SD is analyzed. The efficiency of proposed and existing technique is also evaluated. The obtained values for percentage recall and precision that are enhanced using proposed technique are 97.8% and 98%. Consequently, the simulation outcome indicates that the efficiency of proposed technique and implementation of proposed strategy is compared to existing systems.

Open Research

PEER REVIEW

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Fault identification in a grid connected solar PV system using Back propagation Neural Network

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Abstract. Albeit the government buoy up the penetration of renewable energy sources (RES) particularly solar photovoltaic (PV) system, the dependency on fossil fuels is still growing. The power generation using solar PV system may enhance when the enactment of solar PV system is improved. The faults occurred in the system is an important performance degradation factor. Incessant studies have been performed to identify and mitigate the faults. Currently, several smart techniques are utilized to identify the faults rapidly. In this study, Back Propagation Neural Network (BPNN) has been implemented to identify the faults. The output power get degraded when the faults happened in source side, Maximum Power Point Tracking (MPPT), DC-DC converter, rectifier and grid. The investigations has performed on 100 kW solar PV system using Matlab. The outcomes imply that the proposed method has detected the faults quickly, economically and effectively.

Keywords: Back propagation algorithm, fault identification, AC-GCPV system, Matlab

1 Introduction

The harmful effects of pollutant emitted from conventional power plants increases day by day. So, the penetration of RES in power generation is getting more attention worldwide [1]. All the countries around the world have fixed a renewable energy target and continuously increasing the RES penetration in power generation to achieve them. Photovoltaic (PV) system based electricity production plays a vital in achieving this target [2]. Recently, it is reported that the huge penetration of RES, significantly minimizes the pollutant emission [3]. However, it may cause certain problems for instance protecting equipment organization concerns, accidental islanding and power slaps. So as to attain the valued power it is essential to recognize and resolve the fault happening quickly. In this context, previously, modeling studies have been presented to diagnosis the faults occurring in the PV systems [4-7]. Most of them didn't utilize standard software and only focused in determinates occurrences such as shadowing or rectifier fault [6], maximum power point (MPP) progress [4,5]

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Harmonics control of three phase voltage source inverter with random carriers and modified reference

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Abstract

The Harmonics control of any inverters can be decided by the PWM incorporated for the switches. In recent years the carrier and reference modification based research is going on the inverter field. This paper suggests that the alteration of carriers and references of the three phase voltage source inverter enhance the ability to decrease the harmonic content.This enhanced realization deals with the carrier and reference modification arrangement for three phase voltage source inverter through amalgamating the boosted reference and random triangular carrier. The boosted reference is the addition of sine reference with injection of 1/3rd of reference amplitude ($3f_s$) in the middle portion of the reference wave. i.e., $\frac{\Pi}{3}$ to $\frac{2\Pi}{3}$ and $\frac{4\Pi}{3}$ to $\frac{5\Pi}{3}$. The proposed PWM scheme use two carriers, one is Triangle wave and another one is inverted Triangle wave. The process of

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Figures

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Cross-Tier Interference Avoidance Prioritized Dynamic Resource Allocation Algorithm in Coexistence of MTC and LTE-A Networks

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Abstract

Internet of Things (IoT) is a developing perspective which provides accessibility as well as connectivity of smart objects which enclose people at daily activities, like various methods of sensors, vehicle-to-vehicle communication, health care devices, RFID and NFC tags, etc. There are high expectations for IoT devices and networks concerning reliability, performance, quality, and long-term availability. Indeed, wireless connectivity is the most critical success factor for the IoT era. The demand for machine type communication (MTC) is increasing, so that the challenge for allocating resource blocks for users has also increased. The patented nature of existing hardware devices cost of contribution space as well as energy for a variation of intermediate boxes, as well as lack of trained executive to combine as well as continue this service is difficult. To maintain the Quality of Service (QoS) requirements for H2H communication and to provide data traffic for MTC networks, LTE faces a serious challenge for allocating the resources blocks to the users. A Cross-Tier Interference Avoidance Prioritized Dynamic Resource Allocation algorithm is presented in this work for optimizing the problems faced by critical MTC and H2H communication networks by maintaining the QoS requirements from a cross-layer design perspective. The resource allocation problem for different combinations of Channel Quality Indicator (CQI) modes is performed and the computational complexity is measured in terms of cell throughput and probability of delay bound violation (PBDV). Finally, the performance of the proposed scheduling algorithm is evaluated via numerical analysis.

Keywords: Dynamic Resource Allocation, Prioritized Channel Quality Indicator, Probability of delay bound violation (PBDV), Machine type communication, Quality of Service (QoS)

1. Introduction

LTE network is 4G wireless communication technologies, which provide IP-based voice, data and multimedia streaming at high speed of 1 GB per second. It is the current generation of cellular network and it partitioned with two parts. First part handles to technology of radio access and next part evolved packet core (EPC) handles to technology of core network. The user device (UE) connects with eNodeB through the interface of radio. The eNodeB handles the inter-cell interference and process the task for controlling the radio resource like allocating the radio resource and this eNodeB links network as mobile