



CRITERIA NO :3

RESEARCH, INNOVATIONS AND EXTENSION

METRIC NO. 3.3.2

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Soft computing-based fuzzy time series model for dynamic vehicle routing problem

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Abstract

Utmost models for vehicle steering detailed in the writing accept consistent travel times. Plainly, disregarding the way that the movement time between two areas does not depend just on the separation voyaged, yet on numerous different variables including time, sways the use of the models to genuine issues. In the present research, a multi-target dynamic vehicle-directing issue with fuzzy time series is displayed. In this issue, majority of the work where information is known ahead of time, some setoff ongoing solicitations arrive arbitrarily after some time and the dispatcher does not have any deterministic or probabilistic data on the area and size of them until they arrive. The manuscript utilizes an immediate understanding of the multi-target dynamic vehicle-directing issue with fuzzy time series as a multi-target issue where the required armada measure, generally all out voyaging separation, and hold-up time forced on vehicles are limited, and the general clients' inclinations for administration are boosted. The presentation of the proposed methodology is assessed in various strides on different test issues summed up from a lot of static occasions in the writing. In the initial step, the exhibition of the proposed methodologies is checked in static conditions and after that, different presumptions and improvements are included progressively, and changes are analyzed. Computational tests on informational collections represent the productivity and adequacy of the proposed methodology.

Keywords Multi-target dynamic vehicle-directing issue with fuzzy time series (MTDV-FTS) · Vehicle routing problem (VRP) · Fuzzy time series · Vehicle routing · Fuzzy inference · Vehicle capacity · Distance

1 Introduction

Vehicle routing problem (VRP) plans were initially presented in 1959. The VRP comprises of finding suitable solutions and minimizing the cost for 'r' indistinguishable vehicles based at the terminal, with the end goal that every

one of the vertices is stayed precisely, though limiting the general steering cost. Past this traditional definition, a few variations have been contemplated. Among the most well known are the Authorize VRP (AVRP), where every client has an interest to possess a decent and effective vehicle. The VRP with time series is VRPTS, where every client will be seen during a particular time spam. In case of vehicle routing problem with pick-up and delivery, the paths are traverses by explicit sums at the vertices. With respect to Heterogeneous Weet, the vehicles come across various limits. Steering issues that include moving individuals between areas are alluded to as Dial-A-Ride-Problem for land transport. As opposed to the old style meaning of the vehicle directing issue, true applications regularly incorporate two significant measurements, they are advancement and nature of data. Development of data identifies with the way that in certain issues the data accessible by organizer might differ during accomplishment of courses, for instance, as a novel client demands as they enter. Nature of data regards conceivable vulnerability

Communicated by V. Loia.

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Hybrid Swarm Intelligence Algorithm for Solving Vehicle Routing Problem with Time Windows

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ABSTRACT

Vehicle Routing Problem is formulated to tackle the issues related to distributing fuel to delivery stations, in certain cases, the client shall specify a period-window for the delivery and this comes under the class of vehicle routing problem with time windows. The vehicle routing issue considered in this paper is the dynamic VRPTW with Solomon's data sets. The target is to find the minimum number of vehicles and distance travelled based on hybrid swarm intelligence algorithm. The proposed methodology hybridized the exploration and exploitation ability of the Multi Verse Optimization Algorithm (MVO) and the Ant Lion Optimizer (ALO) algorithm. The performance of the proposed hybrid optimization algorithm is analyzed with respect to the number of vehicles, distance travelled, and computational time for all the developed techniques and to validate the proposed models. Assessed results registered utilizing the proposed hMVO-GHO technique is compared with the available techniques of literature for solving the Solomon VRPTW problem to illustrate the effectiveness of the proposed hMVO-GHO algorithm.

Keywords:

Vehicle Routing Problem, VRPTW, Solomon's data set, hybrid MVO-GHO

1.Introduction

The optimal route selection for specific number of vehicles that are scheduled to serve the customers who are available in certain time windows is a serious problem of concern. The ultimate aim of the problem is to reduce the transportation cost by reducing the travelling distance with constrain of all the customers should be visited only once, such problem is termed as vehicle routing problem with time window. One of the important combinatorial optimization problems is the VRPTW and is a notable problem in transportation problems. VRPTW is more towards finding the optimal routes for the movement of identical vehicles with limited capacity and as well that gets departed from a central yard and function for different customers who are geographically located with pre-set time windows and of known demands. The vehicles return to the central yard (depot) at a specified time window and with an optimal route. In this process, each customer is visited only once by one vehicle with respect to the specified time window (Moradi 2019). The time window definition will be based on the initial and final time for beginning the service. VRPTW problems are widely employed in real-time scenarios of food delivery, postal services, waste material accumulation, college and school bus routing, Delivery of cash at bank and ATM points and several other maintenance operations. In large-scale VRPTW, a multi-objective optimization problem is one of the difficult problems wherein the exact techniques fail to find required solutions because of the run time parameter. The key objectives to be determined in this multi-objective combinatorial optimization problem is,

- Minimization of the number of vehicles in the routing path
- Minimization of total distance travelled employing a minimal number of vehicles.

Twitter Sentimental Analysis Using Augmented Naive-Bayes Algorithm

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Abstract

Sentimental analysis is used in text mining. Twitter is one of the prominent social media. Twitter offers organizations a quick and active way to analyze customer viewpoints toward the critical to success within the marketplace. Natural Language Processing, algorithms like the Support vector machine, Naive Bayes is employed to predict the polarity of a sentence. Sentiment scrutiny of Twitter data may be classified upon sentence and document level. The outcomes classify customer perspective via tweets into positive negative and neutral comments, which is represented in a pie chart. This method mostly used in the Market Analysis to the prediction about a product or review about a product. In our proposed method the Naive Bayes algorithm is used for effectiveness and faster processing.

Keywords: Sentimental analysis, Machine Learning, Augmented Naïve Bayes Algorithm, Natural language processing.

1. Introduction

Sentiment analysis is the method to analyze the various customer's emotions which may be good, bad or neutral from the text data employing text analysis methods. Sentiment analysis tools provides businesses and enterprises to identify the feedback of customers towards brands, products or services based on the feedback acquired through online. Sentiment analysis is an approach used to scrutinize the text sequence and categorize it into varying labels based on the users input from the social media. The result will be in the form of positive or negative response. In business perspective, sentiment analysis is used to evaluate the effect of their product or ad promotion or response of end users towards their recent updates on social media. By this only they make an analysis or judge about a product and they will make changes to the product using the comments. This kind of product review helps in market reach and improves the sales of the product. It is impossible to review each and every review. By entering the hash tag, itself we will get a whole analysis how much percentile it is positive and negative.

KDT or Knowledge-Discovery in Text (KDT), refers to the methodology of attaining non-trivial information and knowledge through extracting and stimulating from unstructured script. Text mining can be proposed as an interdisciplinary field which deals with retrieval of

Investigation of mechanical and wear behaviour of graphene reinforced aluminium alloy 6061 metal matrix composite

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Received 14 October 2019, received in revised form 4 July 2020, accepted 8 July 2020

Abstract

Owing to its outstanding mechanical and thermal properties, graphene has shown enormous potentials as an improvement material for composites. This paper investigates the properties of graphene-reinforced 6061 aluminium alloy Metal Matrix Composites (MMCs) with varying weight percentages (5 and 10 wt.% graphene) of reinforcement. Energy Dispersive Spectroscopy (EDS) and Scanning Electron Microscope (SEM) studies of the MMC confirm the presence and distribution of graphene particles in the Al6061 matrix materials. Mechanical properties such as tensile strength, hardness, and impact strength of MMCs were studied and assessed. Tensile and impact strength of the MMC's increased from 25 to 60 % by the addition of 10 wt.% graphene in aluminium 6061 alloys. The percentage of elongation diminished with the addition of reinforcement in the matrix. The most significant improvement in hardness can be found in additional graphene particles. Wear-test had been performed using the pin-on-disc machine at 10 N load. It was observed that the tribological behaviour of the composite improved after the addition of graphene in Al6061.

Key words: aluminium alloy 6061, graphene, tensile strength, impact strength, voids, debris

1. Introduction

Aircraft, automotive, defence, and transportation industries are in the process of replacing the conventional aluminium alloy material to particle reinforced aluminium alloy composites. For the replacement, scientists, metallurgists, and engineers across the world have been conducting research and development focusing on the aluminium alloy particle reinforced with the Metal Matrix Composite (MMC) for the past decade [1]. One of the essential objectives is to develop an MMC material with a combination of mechanical and wear resistance properties. MMC possesses good mechanical properties, creep and wear-resistance when compared to aluminium alloy [4]. Al6061 is widely used for structural fabrication applications due to its reliable strength, weldability, and corrosion resistance [3]. The heat-treatable 6061 aluminium alloy has replaced the most commonly used matrix alloys of the MMCs [5].

MMCs can be produced by solid state processing, liquid state processing, stir casting, squeeze casting, spray forming, semi-solid forming, and powder metallurgy [3]. Solid state processing provides a desirable mechanical properties, but the investment cost is high [11]. Some of the hard ceramic particles like SiC [12], Al₂O₃ [12], B₄C [15, 17, 19], Si₃N₄ [18] have been mixed with AA6061-based metal matrix using stir casting technique. The optimum amount of reinforcement particles for MMC and carbon-based reinforcement was determined [26].

The effect of flexural strength on graphene Al6061 MMC processed by powder metallurgy was investigated, and its improvement in flexural strength was highlighted as 47 % [26]. Graphene was found to have superior tribological properties even with a minimum usage of 0.3 % [19]; moreover, its additives with lubricant oils [20] reduce the friction. The properties of Al/B₄C nanocomposite were also superior when compared to Al/B₄C micro-composite [15]. A signif-

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An Energy Efficient Neighbor Node Based Clustering (EENNC) Algorithm for Wireless Sensor Networks

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Abstract — Wireless Sensor Networks (WSNs) encompasses a number of inexpensive energy constrained in sensor nodes which collects the data from sensing remote location and transmit the data towards the base station. By applying the clustering technique, power consumption is reduced thereby prolonging the network life time. This paper addresses the cluster formation based on neighbor node and residual energy, which overcomes the drawbacks such as network early dead, excess energy consumption, poor efficiency in packet delivery, link stability problem, etc., that occurs in the existing clustering protocol. The simulation result shows that the proposed algorithm increased performance in packet delivery ratio, throughput, energy consumption, network life time and is more suitable for high mobility environment and large scale wireless sensor networks.

Keywords — EENNC, Spontaneous Node, WSN, LEACH, MBC, HEED

I. INTRODUCTION

WSNs play a vital role in various applications such as Environmental monitoring, Industrial sensing, diagnostics, Infrastructure protection, Battlefield awareness and Context-aware computing [1]. The main objective of WSNs is that, it senses and gather data from the remote location and forwards the data to the base station. Energy efficient utilization is a key premise in order to increase the lifetime of WSNs. Another important quality required for WSNs is that have a rapid query response [2], [3].

WSNs can be broadly classified into infrastructure and infrastructure less (ad-hoc) networks. The earlier scheme is very flexible as it relies on the pre-deployed or structured topology and provides better support. To ensure collision free access in the shared wireless medium, the infrastructure based networks use deterministic routing protocols and contention free Medium Access Control (MAC) protocols[1].

Infrastructure less network provides flexibility for adaptive network changes, but at the cost function unpredictable performance. Real time environments offer numerous challenges to WSNs such as channel fading, interference, radio abnormality and multi path propagation. These challenges tend to complicate the design procedure further. Energy competence, reliability, QoS and security are some of the important parameters that determine the effectiveness of the WSNs.

The clustering technique is a proficient scheme to solve scalability problems, which increases the overall network lifetime and energy consumption challenges. However, it is very crucial to resolve the number of mandatory cluster heads and satisfy the cost of desired level of coverage to the entire WSNs. Clustering is the significant task for grouping the sensor node with neighbor sensor nodes. Each cluster has one cluster head, which control all the functions of cluster members within a cluster and forward the packets to the BS [4].

Non-overlapping network uses a lower transmission range in order to avoid the interference between the clusters. This type of network may introduce a spontaneous node problem that creates a connection failure between the sensor nodes [5]. The sensor node often changes its position, which means high mobility sensor node moves from corresponding CH coverage region to another CH coverage region. This will cause the communication link failure with its corresponding cluster head. Consequently, the sensor node cannot send data to the corresponding CH in a meticulous time instance [6].



An improved approach for automatic spine canal segmentation using probabilistic boosting tree (PBT) with fuzzy support vector machine

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Received: 21 February 2020 / Accepted: 20 June 2020
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Abstract

Spine canal segmentation is an emerging zone in research proposed to help interpretation and processing of advanced MRI and CT images. For instance, high resolution three-dimensional volumes can be divided to provide an estimation of spine canal atrophy. Spine canal segmentation is complex because of assortment of MRI contrasts and variation in human life structures. This investigation illustrates the details of spine canal segmentation techniques and gives a few measurements that can be utilized to contrast with other segmentation strategies. The details of background and foreground subtraction techniques, spine canal segmentation approach and optimization approach which are utilized in the different applications have been considered. In this paper, spine canal segmentation on probabilistic booting tree (PBT) with fuzzy support vector machine performance measures and metrics are analysed in state-of-the art technologies. Proposed approach is performed on the base of the automatic spine canal segmentation with the group of data MR. This proposed segmentation continue with fuzzy support vector machine (FSVM) technique to make fully automatic stream pipeline. The declaration in an automatic segmentation of stream pipeline was implemented with flexible voxel wise classification accompanying dimensions analogous with 3D Haar and labelled machine learning algorithms i.e. probabilistic boosting tree combined fuzzy support vector machine (PBT-FSVM). The novel segmentation technique correlated with MR data sets provides better accuracy than the exiting techniques and it is shown in experimental outcomes. To still improve performance of the results, online learning classification method can be in the proposed work.

Keywords PBT · FSVM · Spine canal segmentation · MR

1 Introduction

The spine canal of people is essentially a dainty long barrel shaped construction of the Central Nervous System (CNS) to reaches out from the medulla oblongata just before the lumbar vertebrae. This goes about significant direction utilized

for conveying nervous signals to the mind and rest of the human body. The assessment of the spine canal magnetic resonance (MR) image was fundamentally the investigation of different neurological ailments (Di 2007). It mostly brings about breaking down of CNS work, similar to Multiple Sclerosis (MS), where the spinal canal has demonstrated relationship through incapacity (Lin et al. 2004) and furthermore acts as a measure for the appraisal of the effects of amazing neuro-defensive treatments (Kalkers et al. 2002). Segmentation is one of the most significant levels of monitoring the diseases that occurred through nervous system of spine canal.

Prior there were a few quantities of concentrates available for the spine canal segmentation was demonstrated connections among the movement about illness along with measurements identified with the spine canal degeneration and alteration that fit as a contour. A significant number of the spine segmentation methods that are accessible in the literature are generally self-loader (Benezeth et al. 2010;

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LEUKEMIA DIAGNOSIS IN BLOOD MICROSCOPIC IMAGES USING LOCAL BINARY PATTERN AND SUPERVISED CLASSIFIER

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ABSTRACT- Acute lymphoblastic leukemia (ALL) is a group of hematological neoplasia affects in childhood characterized by a large number of lymphoid blasts in the blood stream. It mostly not occurs in the age group of adults. Symptoms of ALL often leads to wrong diagnosis and the nonspecific nature of the signs. Childhood leukemia occur only 80% of ALL. ALL often leads to wrong diagnosis, the nonspecific nature of the signs and symptoms. Imitation of similar signs by other disorders like diagnostic confusion The microscopic examination of bone marrow aspirate or stained blood smear is the only way to effective diagnosis of leukemia. Immunophenotyping, cytogenetic analysis and cytochemistry are also employed for specific leukemia detection are the techniques such as fluorescence in situ-hybridization (FISH). Leukemia detection arises since the above specific tests are time consuming and costly the need for automation. Discriminative features like nucleus shape, texture are used for final detection of leukemia. The current paper of two novel shape features Hausdorff Dimension and contour signature is implemented for classifying a lymphocytic cell nucleus. Employed for classification are NN Classifier.

Keywords: leukemia, XGBoost, ANN, Random Forest Classification, Machine Learning

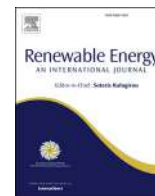
I. INTRODUCTION

Medical imaging is a technique for the visual representation of the interior body for diagnosis of diseases. It reveals the internal structure of the body to detect the diseases. A record is to be created to store the captured image that it will be easy to identify the diseases [2]. The fundamental component to human life is Blood. A human body has approximately 70 liters of water of which five liters are blood. The essential system for maintaining homeostasis is blood. It refers to hydration, temperature regulation and ion concentration [1]. A Red Blood Cell (RBC) smaller than White Blood Cell (WBC). The blood gives valuable information of White Blood Cell (WBC) in the diagnosis of different diseases. The mesoderm gives raise to the blood cells. Through hematopoietic process the blood cells are differentiated as White Blood Cells (WBC) or Red Blood Cells (RBC). The growth of immature in White Blood Cells (WBC) causes Leukemia. The blast cells of immature growth are considered about 30%. These cells provide the greatest defense beside infections, and can help specialists to distinguish between the presences of pathologies [1]. Data collection technology is a growing speed of development study of data- intensive region. Classification of blast cell and analysis is a requirement for the diagnosis of leukemia and has a positive



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Microscopic characteristics of biodiesel – Graphene oxide nanoparticle blends and their Utilisation in a compression ignition engine

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ARTICLE INFO

Article history:

Received 26 April 2020

Received in revised form

2 July 2020

Accepted 6 July 2020

Available online 9 July 2020

Keywords:

Combustion

Emission

Graphene oxide

Injection timing

Performance

Rice bran biodiesel

ABSTRACT

Use of nano-additives in biofuels is an important research and development topic for achieving optimum engine performance with reduced emissions. In this study, rice bran oil was converted into biodiesel and graphene oxide (GO) nanoparticles were infused into biodiesel-diesel blends. Two blends containing (i) 5% biodiesel, 95% diesel and 30 ppm GO (B5D95GO30) and (ii) 15% biodiesel, 85% diesel and 30 ppm GO (B15D85GO30) were prepared. The fuel properties like heating value, kinematic viscosity, cetane number, etc. of the nanoadditives–biodiesel–diesel blends (NBDB) were measured. Effects of injection timing (IT) on the performance, combustion and emission characteristics were studied. It was observed that both B15D85GO30 and B5D95GO30 blends at IT23° gave up to 13.5% reduction in specific fuel consumption. Compared to diesel, the brake thermal efficiency was increased by 7.62% for B15D85GO30 at IT23° and IT25°. An increase in IT from 23° to 25° deteriorated the indicated thermal efficiency by 6.68% for B15D85GO30. At maximum load condition, the peak heat release rates of NBDB were found to be lower than the pure diesel at both IT. The CO, CO₂ & NO_x emissions were reduced by 2–8%. The study concluded that B15D85GO30 at IT23° gave optimum results in terms of performance, combustion and emission characteristics.

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1. Introduction

Biodiesel is considered to be a suitable replacement for pure diesel for using in the compression ignition (CI) engine. This biodiesel can be extracted from various feedstock such as vegetable oil, animal fats, non-edible oils [1]. Used cooking oil is one of the commonly used feedstocks which can be converted into high-quality biodiesel [2]. The use of non-waste based feedstock such as blends of hazelnut oil and rapeseed oil biodiesels were also investigated by the researcher [3]. However, the biodiesel application in compression ignition (CI) engine is hindered by some drawbacks such as higher viscosity, higher density, lower cloud point, inefficient fuel atomization, and higher NO_x emissions [1,4,5]. To overcome these drawbacks, some of the techniques

investigated by the researchers are (i) use of fuel additives, (ii) use of hybrid fuels, and (iii) engine parameters modification. One such technique is the inclusion of nano-particles additives with biodiesel blends (BDB) [2]. Literature reported that nano-additives improved thermo-physical properties, performance characteristics (specific fuel consumption, brake power, etc.) [6], and combustion characteristics such as heat release rate (HRR) [7–10] of the pure diesel fuel. The performance and emission characteristic of the engine depends on the type and amount of nano-additives, and engine parameters (injection timing, injection pressure, compression ratio, etc.) [11–14]. The following literature investigated the behavioural variations of commonly used nano-particles (aluminium oxide, iron, and cerium oxide) and recently evolved nano-particles like graphene oxides and carbon nanotubes (CNT) when added to biofuels.

Adding the metal oxides of aluminium, titanium, silicon, etc. with biodiesel increases the thermo-physical properties (viscosity, cetane number and heating value) and helps in augmenting the

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List of Research papers per teachers in the Journals notified on UGC website

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2	Grid Partitioning for Anomaly Detection (Gpad) in High Density Distributed Environment for Mining Techniques	Dr.N.Rajkumar, Dr.C.Viji	CSE, ECE	International Journal of Engineering and Advanced Technology (IJEAT)	2249 -8958
3	An Efficient Software Fault Prediction Scheme to Assure Qualified Software Implementation using Improved Classification Methods	Dr.N.Rajkumar, Dr.C.Viji	CSE , ECE	International Journal of Innovative Technology and Exploring Engineering	2278-3075
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8	Modified Master Key Based Multipath Reinforcement Pre-Distribution Scheme for Wireless Sensor Networks	Dr.J.Jaya	ECE	International Journal of Innovative Technology and Exploring Engineering	2278-3075
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Applicability Evaluation of Web Mining in Healthcare E-Commerce towards Business Success and a derived Cournot Model

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Received: 8 March 2019 / Accepted: 18 June 2019

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Abstract

Internet has become integral part of day-to-day business to almost everybody, this result in diversified interests of customers. So as to catering to this intrinsic need, any E-Commerce firm to survive must be of cutting edge and competitive edge. The providers should not only to stay abreast with technologies where the life cycle of a technology is at its bare minimum and further dwindling. They should also entertain the customers through inventively fine tuning the delicate parameters of website. This involves evaluating the usage pattern and trails of the customer left as a log, deriving pattern from click stream etc. However, the cutting edge technology applied by the big healthcare E-Commerce industries like private Cloud utilization (John et al., *Optimization and Computing*, 2012), web content mining enables them to attract and retain innumerable number of customers even during peak hours. According to the research carried out in this paper, there are two distinct types of online business based on web content promoted towards buy, they are classified as exhaustive promote and partial promote. Typically exhaustive promote website perform even complex web mining operations for identifying and enticing the potential customers to buy various healthcare products based on various factors such as buying habits, interests etc. However for the partial promote in the observed cases, they are not even aware of the existence of such techniques. Based on the analysis performed on various renowned online websites, if 60% and above of the web content leads the customer to perform the 'buy', then it is exhaustive promote the rest is considered as partial promote. Moreover a huge gap is observed between Partial and exhaustive promote when it comes to the deployment of the web mining techniques. Consequently to understand the varying role of web mining in the online business successes, this paper models the web mining as a Game in Cournot Model. The results show that the model suits the economics behind the online businesses in both the cases and thus helps to identify or enhance the underlying web mining techniques towards business success.

Keywords Web mining · E-Commerce · Healthcare · Cournot model · Game theory · Web content mining

Introduction

Internet has been the prime attraction to all businesses this makes the Internet crowded with various services, most of them is hosted in World Wide Web (WWW). Moreover for

the sake of simplicity, processing towards the client side is greatly reduced to mere click stream which is nothing but the user navigation pattern [1]. However to ensure the competitive edge the website owners has to analyse various aspects of the client without bothering them. Though it appears simple, the kind of effort and subtle methods needed to identify the potential customer are much more complicated and always been the subject of research due to the ever evolving nature of WWW. For instance, website visitors may visit the website for various reasons without being the customer, it requires not only the log analysis but also study their psychology, browsing habits etc. [2]. This gets even more complicated due to the growing nature of the Internet where visitors nowadays use the anonymized IP address from the available pool. In such case, there is no way for the online businesses to clearly identify the genuine potential customers if therefore

This article is part of the Topical Collection on *Transactional Processing Systems*.

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Published online: 04 July 2019

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Grid Partitioning for Anomaly Detection (Gpad) in High Density Distributed Environment for Mining Techniques

EXHIBIT NO. 3.3.2 – A2

C. Viji, N. Rajkumar

Abstract: Anomaly detection is the most important task in data mining techniques. This helps to increase the scalability, accuracy and efficiency. During the extraction process, the outsource may damage their original data set and that will be defined as the intrusion. To avoid the intrusion and maintain the anomaly detection in a high densely populated environment is another difficult task. For that purpose, Grid Partitioning for Anomaly Detection (GPAD) has been proposed for high density environment. This technique will detect the outlier using the grid partitioning approach and density based outlier detection scheme. Initially, all the data sets will be split in the grid format. Allocate the equal amount of data points to each grid. Compare the density of each grid to their neighbor grid in a zigzag manner. Based on the response, lesser density grid will be detected as outlier function as well as that grid will be eliminated. This proposed Grid Partitioning for Anomaly Detection (GPAD) has reduced the complexity and increases the accuracy and these will be proven in simulation part.

Keywords: Grid partitioning, density based outlier detection, Grid Partitioning for Anomaly Detection (GPAD), low complexity, high density environment.

I. INTRODUCTION

Data mining is used to extract the required data from the data sets and that require information will be used for future uses. The data sets are collecting all the data in the database systems. The database system is used to transfer and store the data between the two different users. Databases are split into the different form of sets and then will be formed as data sets. Before the data mining process, it has to apply two different stages such as selection and preprocessing. In the selection stage, the data set will be selected. In the preprocessing stages, noise and unwanted source will be deleted from the dataset. Data mining involves different types of tasks such as:

- Outlier detection
- Clustering method
- Marketing based
- Classification rule
- Regression scheme

Outlier detection is used to detect the unwanted data, data errors and failure rate in the database management system. Clustering method will make the cluster groups and then the task will be done for each clustered group. Marketing based task is based on the dependency modeling scheme. It will do the data mining for repeated datasets. Classification rule will

split the data sets into two types one is needed dataset and another as unwanted datasets. Regression scheme is used to find the data model which one has the least error. If any of the datasets have the high error due to the fault, and that will be regretted using the regression scheme.

Outlier detection is the most important task in data mining technology. Here the usage of credit card, outlier issue may generate. The outlier is the outsourced data is trying to mingle to the original source data. That outlier data may increase the failure rate and produces more issue in a form of noises. To avoid that, different approaches are suggested such as proximity-based, model based and cluster based outlier detection.

In proximity based outlier detection, detection of outlier data is based on either distance or density. Compared the distance or density of the data sets are equal to the nearest neighbor data set. If it is equal, the outlier is not affected otherwise, the outlier is detected. In model based outlier detection, implement the data sets into Gaussian model. After the few process, check the Gaussian model status of data sets, if it varies outliers is detected. In cluster based outlier detection, data sets will be split into clustered data sets. Each clustered data sets are compared with their neighbored cluster data sets. The number of data varies, outlier has been detected. To implement this outlier detection in the big data environment, can use the angle based outlier detection scheme. This scheme makes the angle at one point and then another point. Between the two angles, data may vary outlier will be detected.

II. LITERATURE SURVEY

Bai et al [1] suggests the security mechanism to save the local outlier data from the network intrusion. Here used the two different methods to increase the efficiency such as grid-based partitioning algorithm and distributed LOF method. Grid based partitioning algorithm will portion the data into several grid and after that using the second method, each grid will be verified. Ma et al [2] explains the density based outlier detection algorithm to increase the detection rate in the high-density traffic rates. With the help of spatial-temporal signals, it will avoid the collision and congestion even in high traffic rate. Wang et al [3] discusses the cluster based outlier scheme to calculate the outlier and to increase the efficiency. This technique uses the cluster approach and it will form the data into clusters. Chen et al [4] suggests the grid based outlier detection with the help of pruning and searching techniques. This technique will improve the

Revised Manuscript Received on 14 August, 2019.

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Retrieval Number: F11930986S319/2019@JEIESP
DOI: 10.35940/jeat.F1193.0986S319

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Blue Eyes Intelligence Engineering
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An Efficient Software Fault Prediction Scheme to Assure Qualified Software Implementation using Improved Classification Methods

Rajkumar N, Viji C

Abstract: Software quality is a main concern of software developers to ensure the required software that can provide user required services. However quality of software would be degraded considerably due to presence of the software faults in the programming language. Detection and removal of software faults requires more concern to be taken which needs to be concentrated more for improved performance. In the existing research work, accurate software fault prediction is done by introducing two stage data pre-processing stage which would select the more important features from the training data set and will result with the optimal training dataset thus the training accuracy can be improved. However existing research method doesn't concentrate the dependencies between software modules and it doesn't focus on the classification performance. These challenges are highlighted in the newly introduced research methodologies to obtain the accurate software prediction outcome by introducing the novel proposed research methodology namely Optimal and reliable Prediction of Software Faults (ORPSF).

In the proposed research methodology, Optimal feature selection is performed by considering the inter relationship between the different features using Genetic Algorithm. This technique would select the optimal features which can detect the software faults accurately than the existing research methods. And the SVM classification approach is introduced to perform classification which can learn the training instances more accurately. Thus software fault prediction can be done accurately. The overall implementation of the proposed research technique is performed in the java simulation environment from which it can be shown that the proposed research methodology yields optimal results compared to the available research techniques.

Keywords: Software fault prediction, feature selection, Training software instances, optimal analysis, Software quality

I. INTRODUCTION

Quality of the software is a primary factor for any software company. Software defect prediction is essentially a data mining process that helps in quality improvement [1]. Software fault prediction is considered to be a core process in software engineering used for improving the quality and guarantee of software in minimal amount of time and reduced expenditure [2]. Its implementation is done prior to the testing stage of the software development life cycle. Also, software defect prediction models help in delivering the defects or the number of defects.

Software defect prediction has inspired lot of researchers to yield various models with a project or cross project to boost the different quality and monitoring guarantee of software. Two schemes are available to develop a software defect prediction model such as supervised learning and unsupervised learning [3].

Supervised learning faces the challenge of training the software defect prediction model, which requires past data or few outcomes that are known. The training performance of the model present within the project is good, however it results in challenges in knowing about other novel projects. Several openly available datasets that freely are accessible for the researcher such as PROMISE, Eclipse and Apache exists to get over the challenge while the training is carried out on a fresh project. Several researchers have focused on building a cross project defect prediction model having several metrics set such as class level metric, process metrics, static code metrics, however they may not be able to develop more practically accurate models [4].

Several classifiers or learning algorithm are used for selecting a huge array of software metrics such as Naïve Bias, Support Vector Machine, Random Tree, J48 and Logistic Regression. These classifiers have reached various resourceful conclusions. Nearly, all of the current software prediction models have been developed with the help of non-simple metrics using which the prediction model attained the accuracy with satisfaction. In this research work, the contribution made is associated with the present position of research. It also demonstrated the prediction model having the simple group of metrics used for feature selection. It also suggested that the software prediction model developed with minimal set of metrics can attain the desired outcome.

The general software defect prediction process adopts the machine learning technique, [5][6][7]. The first step in the prediction process is to get the instances from the software, and an instance could be code, function, class or method etc. These instances could be generated from various issue tracking system, version control system or e-mail records. An instance uses various metrics that is obtained from the software. These instances could be classified in buggy B or the number of bugs and clean C or number of clean ones.

Once the instances are recognized with the group and metrics, the first step of machine learning pre-processing approaches made use on instances for creating a new similar kind of instance. The process is used for the extraction of the features, scaling of the data and eliminating the noise [8][9][10]. However, it is not mandatory to use it on every kind of defect prediction model [11].

Revised Manuscript Received on May 22, 2019

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Retrieval Number: H10010688519/190/BEIESP

Published By:
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& Sciences Publications
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A Hyper Heuristics Technique for Data Partitioning and Scheduling to Heterogeneous Systems using Genetic Algorithm and Improved Particle Swarm Optimization

Sundar Ganesh, R.Sivakumar, N.Rajkumar

ABSTRACT—Development of the load partitioning for multiple round load distribution and effective scheduling of partitioned load to heterogeneous processor is primary goal of distributed and parallel system. In this paper, we propose hyper heuristics scheduling algorithm for load partitioning using genetic and improved particle swarm optimization techniques. A communication model is used to predict the optimal activation order, optimal number of processor and optimal number of rounds of the load. Heuristics Based Scheduling Algorithm is proposed using Hyper Heuristic Scheduling which is used to find the candidate solution (low level heuristic) to form Scheduling Solutions (heuristics algorithms) for large scale system with diversity operator as sequence dependent and sequence independent scheduling. For this solution, processing time of the entire processing load will be reduced. Hybrid Real Code genetic algorithm(HRGA) computes optimal activation order with cross over and mutation operator without considering the processor latency and different types of variation in the perturbation parameters. In order to optimize this issue, we utilize Improved Particle swarm optimization (IPSO) determine the load fraction for generating activation order in terms of dynamically predicting fitness value of the processor with certain number. The Simulation analysis demonstrates the proposed model performance in terms of mean, standard deviation, computational complexity and Average Execution Time comparing against hybrid real coded genetic algorithm.

Keywords: Data partitioning, Processor Scheduling, Improved Particle Swarm Optimization, Real Coded Genetic Algorithm, Hyper Heuristic

1. INTRODUCTION

Data Partitioning is the main feature to obtain effective scheduling on available processor in the parallel and distributed system. To reach the minimum processing time on the load execution by several strategies using data partitioning. To improve the performance of load balancing on the multiple processors is scheduling [2]. With new developments in soft computing algorithms, many loads scheduling technique has been utilized in the recent years. Divisible load scheduling [3], Bandwidth centric scheduling

strategies [4] was discussed as it acts as effective approach. The load balancing techniques and scheduling techniques used in parallel and distributed system are still NP hard [4][9]. To determine the polynomial time for the load partitioning and scheduling, affine model of communication [5][8] is considered which include the communication latency towards formulating the effective data partitioning and processor scheduling tool.

A Method for efficient distribution of work load between different processing elements in heterogeneous systems is presented. [6]. An efficient technique to find the optimal number round of load distribution to create the optimal activation order for execution on optimal number of processor [7][10]. The optimal activation order needs to be computed based on the optimal load fraction and processing time.

The load distribution among different processors using improved PSO techniques has presented [9]. Hyper Heuristic Scheduling which is used to find the candidate solution (low level heuristic) to form Scheduling Solutions (heuristics algorithms) for large scale system with diversity operator as sequence dependent and sequence independent scheduling is considered as rule based scheduling [11]. Heuristics based Scheduling with heuristic selection will reduce the processing time of the load in scheduling and execution [12]. Initially Hybrid Real Code genetic algorithm is been processed on the activation order to computes optimal activation order with cross over and mutation operator without considering different types of variation in the perturbation parameters. The Proposed model integrates the several Heuristics. By the technique of Improved PSO, load distribution strategies are utilised to predict dynamically the fitness value of the processor.

2. RELATED WORK

There exists many predominal approaches related to the objective of the proposed research, the similar approaches utilized in the existing is as follows:

Revised Manuscript Received on August 19, 2019.

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Comparison of Genetic Algorithm, Particle Swarm Optimization and improved Ant Colony Optimization for Scheduling of Heterogeneous Systems

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Abstract

Heterogeneous systems scheduling is one of the important tasks in the field of parallel computing systems. Load partitioning is one of the effective solutions for this problem. Developing a heuristic algorithm gives better results for scheduling on this system. In this paper, we propose a hyper-heuristic scheduling algorithm based on a genetic algorithm and modified ant bee colony algorithm. An optimal model is developed to determine the number of load fractions, number of rounds in multiple processor systems. First, the best candidate solutions from the population are determined. Many heuristic algorithms like genetic algorithms and PSO are applied to find the optimal activation order of the heterogeneous systems. The improved particle swarm optimization and ant colony optimization is applied to find the optimum load fraction. The Simulation results show the comparison of performance in terms of standard deviation, mean, throughput and execution time.

Keywords: Heterogeneous Systems, Divisible load theory, Improved Ant colony optimization, Reproduction operators, real coded GA

1. Introduction

In parallel and distributed systems, load division is an important task to obtain effective scheduling on the available processor in the multiprocessor system[9,11]. The load is divided into small arbitrary sizes to process it in a minimum time[1,2]. Scheduling is a key feature to improve the performance of load division on multiple processors.[8] Divisible the load is a special type of method in which data is divided into small arbitrary sizes and it is processed by many parallel processors[3]. Memory centric scheduling is a technique where the data is divided into time division multiple access memory scheduling[4]. Band-width centric scheduling is a process where each node makes decisions using simulations on randomly generated trees[16].

A parallel sorting algorithm for multisets is designed by multi-threading and cache technology for multi-round distribution.[17]. A Particle swarm optimization algorithm is proposed for an artificial immune system[5]. A scheduling approach is proposed based on the low-level detection operators for resource scheduling[6,10]. An energy-efficient heuristic algorithm is developed for a heterogeneous computing system[7]. Hybrid real coded GA is used to find the optimal activation order for multiple processor systems. The proposed model combined all the techniques of several heuristic algorithms. By the technique of improved Ant Colony optimization algorithm, load distribution strategies are used to dynamically predict the fitness value of the processor[12,13].

2. Previous Related work

Many heuristic algorithms are available similar to the objective of the projected research, the related approaches used in the present is as follows

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Weighted Ternary Tree Approach for Secure Group Communication Among Mobile Applications

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Abstract

Recent trends and clustered technology in the IT industries create usage of various hand-held computing devices like mobile phones, digitizer, modem, tablets etc. The Mobile phones are pervasive and inevitable computing devices used for different purposes such as making calls, chat application, games, Online shopping, banking and multimedia broadcasting. To improve its services, many applications are communicating with each other. Example, the banking application may read the OTP message from the messenger automatically leading to security issues. The authorized applications installed in the mobile phones are combined as a group and monitored as secure group communications. Each application in the mobile phone is having its Private Key which is called as Member Key and a common key is shared to all the members in the group which is called as group key. To enhance the security of the group communication, the messages are encrypted using group key and decrypted with member key. In dynamic conditions, the fresh group key is generated whenever there is a change in group strength, directly depending on the computation cost and communication cost because of number of multiplication and key sharing to all the members of the group. Though the Tree Based Key Management System has used to maintain lower computation and communication complexity, this research proposes the novel technique which combines the Tree Based Key Management and Machine Learning Techniques to reduce the key generation cost and correspondingly enrich the key security for information sharing.

Keywords Secure group communication · Key management · Mobile application communication

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Detection and classification of mechanical faults of three phase induction motor via pixels analysis of thermal image and adaptive neuro-fuzzy inference system

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Received: 29 November 2019 / Accepted: 28 February 2020
 © Springer-Verlag GmbH Germany, part of Springer Nature 2020

Abstract

The fault diagnosis in motor is substantial as it results in breakdown of production line and the faults may damage motor and results in economic losses. Bearing failure, rotor eccentricity, shaft misalignment and load related faults are the most frequent failures under mechanical fault category. This paper addresses three such faults that may increase the stator temperature namely air gap eccentricity, shaft misalignment and cooling system failure. The thermography technique has been used widely for fault detection in induction motor. In three phase induction motor the thermal images are analyzed for healthy condition and the above mentioned faults conditions. This paper presents thermal pixels counting algorithm to calculate the diagnosis indicators and adaptive neuro-fuzzy inference system classifier is used to classify the faults based on the diagnosis indicator data base. Laboratory based experimental investigation are carried out to verify the accuracy of the proposed method. This method provides accurate diagnosis indicator that will be used as a bench mark value for preparing the maintenance schedule under non-destructive mode.

Keywords Induction motor diagnosis · Eccentricity fault · Thermography · Intelligent fault diagnosis · Adaptive neuro-fuzzy inference system (ANFIS) classifier · Thermal pixels counting (TPC) algorithm

1 Introduction

AC induction motors are the most common electric motors in the world. For industrial applications like wood working machines, furnaces, blowers, winders, pumps, conveyors, wind tunnels, elevators, compressors, mining, automotive industry, chemical industry etc. three phase Induction motors

are used because they are rugged, economical and reliable. Induction motor mainly experience mechanical and electrical related faults during the service period. The common mechanical faults are bearing fault, rotor damage, air gap eccentricity and shaft bending. Faults related to Eccentricity are most prevalent one thus demands special attention. The general electrical faults are insulation failure, short circuit fault and voltage imbalance (Henao et al. 2014). The probability and severity of the mechanical related faults are high compared than electrical related faults (Gritli et al. 2017).

A electric rotating motor degradation depends on factors like temperature, wetness and running time (Fernandez et al. 2017). Based on initial diagnosis from motor faults, losses and downtimes can be inferred to avoid accidents (Seera et al. 2014; Harzelli et al. 2019). Fault diagnosis and Motor's health monitoring is essential (Lee et al. 2016; Glowacz et al. 2017a, b) in order to mitigate losses and is economically justified. In between the stator and rotor there exists a condition of unequal air gap and is termed as machine eccentricity. It may cause unbalance of magnetic pull, increased magnetic pull, cause rub between stator and

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Modified Master Key Based Multipath Reinforcement Pre-Distribution Scheme for Wireless Sensor Networks

B.Paulchamy, J.Jaya, K.Kalpana

Abstract: *Wireless Sensor Network (WSN) is one of the budding fields of technology. It is mainly used for Environmental monitoring and Data accumulation. Due to the limited energy in WSNs, it faces many practical difficulties. The main challenge is the security issues. Objective of this project is to provide security against clone attack in a WSN that are arranged in cluster topology. In this paper, a method to implement three important security measures namely i) Master - Key Pre-distribution solutions, ii) Super imposed disjunct matrix code and iii) Multipath key reinforcement scheme is discussed. One method complements the advantage of other method and thus provides high security. The final analysis shows that the computational overhead is minimum.*

Key words: WSN, Data accumulation, super Imposed disjunct matrix code, Multipath key.

I. INTRODUCTION

Wireless Sensor Network consists of many small sensor nodes arranged in indefinite topology. The location of each sensor node with respect to its neighbour is calculated only after its deployment with the help of HELLO messages. The sensor nodes are helpful in collecting information from areas in which human access is not possible. They also have their use in defence. When used in such applications importance must be given for security [2]. The data collected by a sensor network must not be accessible to intruders or enemies. For this purpose many encryption and authentication schemes are used. Before choosing a security scheme for WSN, its topology, condition under which it is deployed and energy / lifetime of the network has to be taken into consideration. The sensor node has limited battery backup, so any security measures that are chosen must not deplete the energy of the sensors. The next important parameter to be considered is the memory. They have very low memory capacity which is often susceptible to override. Mostly pre-distribution schemes are preferred for WSNs since they reduce half of the computations. The aim of pre-distribution schemes is to establish secure network communication [1]. The main evaluation metrics are resilience against node capture, resistance against node replication and computational overhead.

In the first section the paper discusses about the various methods that are already available to provide security for WSNs. The second section gives the details that are shared in each sensor node before deployment. The third section gives information about topology in which the method is implemented and analysed. The consecutive sections describe how the above mentioned three schemes are one by one executed in the given topology.

II. RELATED WORK

Many works has evolved around pair-wise key pre-distribution scheme. Yen - Hua Liao et.al explained about the use of tame pool based pair-wise key pre-distribution for large scale sensor networks. In this scheme a mathematical function called Tame automorphism is implemented for WSN, Bulent Yener and Seyit A.Campetepe described about various key distribution schemes available for Wireless sensor Networks[1,6]. That paper included details for both the distributed and hierarchical wireless sensor networks. From these papers the various key distribution schemes available for WSNs are evident. Though the main concentrations were on pair-wise keys the master keys have the advantage of memory. A single key is enough. Even though the key is not kept as a secret, they provide high security.

III. TOPOLOGY

The topology considered for analysis is the cluster topology. Initially after deployment of the sensor nodes each sensor transmits a Hello message. If there is any sensor node nearby that hears this hello message, then it replies to the sender by transmitting its details as a response. Then the first sensor node which started the Hello message updates the information about the replied node in its Routing table. If it doesn't receive any reply after waiting for a particular period it again transmits another hello message. This process is continued till the whole topological information is gathered by a node (either directly or through the neighbours). Each sensor node is given an ID. Normally clustering of Sensor nodes is done to save energy. In a cluster topology, all the information is conveyed to the base station only through the Cluster Head. The network is divided into many small groups. Each group elects a leader called Cluster Head (CH). The main function of CH is fusion and aggregation. CHs are frequently re-elected in order to prevent the depletion of energy in Single Node [1].

Revised Manuscript Received on August 01, 2019

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An Efficient Architecture of Vedic Multiplier using FinFet Based Pass Transistor Logic

B.Paulchamy, K.Kalpana, J.Jaya

Abstract: Multiplier is an important component in Digital Signal Processing (DSP) and communication systems. It is utilized in signal and image processing applications including convolution, Fast Fourier Transform (FFT) and correlation. Therefore, it is necessary to develop a multiplier with power efficient and speed to reduce the cost of the system. Vedic multiplier has been introduced to solve the problems of existing multiplier. It is based on 16 algorithms. These algorithms use algebra, arithmetic operations and geometry. Urdhva Tiryabhyam is widely employed formula which provides high speed and efficient. Vedic multiplies generates partial sums and products in single step. It has been designed using pass transistor logic which reduces the number of components utilized to build logic gates by removing unwanted transistors. This paper design a vedic multiplier with FinFET based pass transistor logic. The developed multiplies provides better performance and suitable for high speed applications. 2x2 and 4x4 vedic multipliers are developed and executed 180nm approach with Tanner EDA Tool 3.0.

Index Terms— Vedic Multiplier, FinFET based Pass Transistor, High performance, Low power optimized circuit.

I. INTRODUCTION

CMOS technology dominates VLSI and other logic families. But, this technology has some drawbacks which have been solved. For an instance, the process technology has reduced the size from 180nm in 1999 to 60nm in 2008. Now it is reduced to 45nm. Several attempt being made to reduce it 32nm. However, die area shrunk during 2008 now is increasing due to the more number of transistors and its features.

A multiplier is an important parameter which is utilized in various electronic systems like DSP, Filtering, ALU, Image Processing and etc. High speed and low power multiplier has been in an increasing demand day-by-day. Multiplier like Array multiplier, Booth multiplier, Bit serial multiplier, Carry Save multiplier and etc. are used for as source of the algorithms. Vedic multiplies with different architecture is designed using carry save adder and ripple carry adder. Performances are compared and their merits and demerits are identified with respect to speed and area focused in [2],[3]. Adiabatic logic is utilized to minimize power consumption of Vedic multiplier and its performance is estimated by comparing it with traditional MOS design. Vedic multiplier with adiabatic logic consumes less power than Vedic multiplier without adiabatic logic analysed in [6],[7].

Power consumption is a crucial factor than efficacy the Fin-type field-effect transistors (FinFETs) are good candidate for bulk CMOS at the Nano scale in composed in [4],[10],[13]. FinFET implies Fin Field Effect Transistor. The power and zone productive plan of full adder with 6 transistors utilizing proposed 2 transistors XOR gate has been displayed in [4],[10]. The pass transistor is used to decrease the transistor count for any implementation logics utilizing privacy input to drive gate terminals, source and drain terminals. The main advantage is the use of FinFET which provide numerous profits and advantages over the bulk CMOS [1][8][9][14].

II. VEDIC MULTIPLIER

Sri Bharti Krishna Bhirthaji (1884-1960) was the person to discover the 16 sutra (algorithm) after the intense research on Arthira Sutra. An ancient Vedic mathematical algorithms are employed to solve various types of Mathematical operations like additions, subtractions, multiplications, divisions, fabrications etc. This mathematic is used to speed up the computation by cutting down the process complexity [2][3]. Two Sutras out of sixteen are utilized to perform multiplication namely UrdhvaTiryabhyam Sutra and NikhilamNavatashcaramamDashatah Sutra. UrdhvaTiryabhyamvedic multiplier sutra is used in this paper.

A.Urdhva Tiryabhyam

Urdhva Tiryabhyam was derived from a Sanskrit word. It means vertically and crosswise. This multiplication achieves high speed by computing partial sums and products in a step. The main advantage is that this sutra is simple and saves time while solving the problem. It can be utilized multiplications of 2×2 , 3×3 and $B \times B$ upto $N \times N$ bit [5][6][14].

B.Pass Transistor Logic

The pass transistor logic is used to decrease the transistor count in any logic or in CMOS logic inputs are used to drive gate terminals, source and gate terminals [1]. In this paper, the circuits are driven with the help of the primary input itself by design AND gate and other design.

C.FinFET Technology

The main use of this technology is to get an advantage than bulk CMOS such as higher drive current for a given transistor footprint and lower leakage [4]. There are two working modes of FinFET, they are as follows.

1. Shorted Gate (SG)

In this gate, front and back gates are shorted together. In FinFET, the gates are isolated in the below Fig1.

Revised Manuscript Received on February 05, 2020.

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Retrieval Number: C5311029320/2020@BEIESP
DOI: 10.35940/ijeat.C5311.029320

2605

Published By: Akshaya College of Engineering and Technology
& Sciences Publications
Kannurukadavu, Coimbatore-642 109



CFD analysis on heat transfer and pressure drop characteristics of turbulent flow in a tube fitted with trapezoidal-cut twisted tape insert using Fe_3O_4 nano fluid

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ARTICLE INFO

Article history:

Received 13 April 2019

Accepted 15 May 2019

Available online xxx

Keywords:

CFD analysis

Twist ratio

Trapezoidal cut

Augmentation

Friction factor

Performance ratio

ABSTRACT

Heat transfer and friction factor characteristics of a circular tube fitted with full length twisted tape trapezoidal cut were studied for the Reynolds number range of 2000–12,000. The secured experimental data from plain tube were validated with standard correlations to make sure the authorization of experimental results. The thermal performance of trapezoidal cut twisted tape increase significantly than the plain tube. Performance ratio is more than unity is reasonable for trapezoidal cut twisted tape. Eventually twisted tape with water as the working fluid was compared with Fe_3O_4 Nanofluid as working fluid at a volume concentration of 0.06%.

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Peer-review under responsibility of the scientific committee of the International Conference on Recent Trends in Nanomaterials for Energy, Environmental and Engineering Applications.

1. Introduction

Great attention is paid to the optimization of the heat exchanger at the time of the design phase, to decrease the size of equipment in the petrochemical industry. Mechanical inserts are often used when the heat transfer process is not sufficient. By introducing a swirl motion and increasing the mixture of fluid from the wall towards the bulk, will increase the efficiency of heat exchanger operating upon the boundary layer. While the size of equipment decreases, an increase in the heat transfer coefficient is obtained in this way. Nowadays Nanofluids are used in many applications in the heat exchanger, chillers and domestic refrigerators etc. due to novel properties. When compared to the base fluids exhibits enhanced thermal conductivity and heat transfer coefficient. Paudel Lavanya Sarala, Nageswara Rao [1] investigated the Thermal properties of Al_2O_3 -water Nanofluids to examine the overall heat transfer coefficient and pressure drop. This paper studies briefly for a specified volume of concentration and temperature it tells how to prepare the Al_2O_3 -water Nanofluids and enhancement of overall heat transfer coefficient increases with a decrease in volume concentration. Ravi Kumar, Bhramara [2] studied the effect

of twisted tape inserts in a double pipe U-bend heat exchanger on heat transfer and friction factor of Fe_3O_4 Nanofluid.

Omid Ali Akbari [3] scrutinized the volume friction nanoparticles effect and aspect ratio of twisted tape in a tube using water- Al_2O_3 Nanofluid at Reynolds number range from 500 to 25,000 have been numerically investigated. It was concluded that by increasing the volume fraction of Nanoparticle sheet transfer rate enhances. Ramanathan [4] performance analysis on twisted tape inserts in a double pipe heat exchanger using Al_2O_3 -water based Nanofluid. It was that the heat transfer coefficient increases by 7.5% when compared with a plain tube. Smith Elamisa-ard, Khwan-chitwongcharee [5] examined the convective heat transfer enhancement using Ag-water Nanofluid in a micro-fin tube with non-uniform twisted tape. It was investigated that with decreasing the twist ratio and increasing the Nanofluid concentration heat transfer, friction losses and performance factor increases. Heydar maddah, Reza Aghayari [6] using Al_2O_3 - TiO_2 Hybrid Nanofluid to a double pipe heat exchanger thermal performance in an experimental design. It was studied that dispersion and random motion of Nanoparticles lead to an intensification of the momentum exchange rate between the Nano particles especially near the wall of tube leads to the high axial pressure drop of the flow inside the tube. Alok Kumar, Satyendra Singh [7] studied Experimental investigation on Thermo-Hydraulic performance of heat exchanger using

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<https://doi.org/10.1016/j.matpr.2019.05.451>

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Peer-review under responsibility of the scientific committee of the International Conference on Recent Trends in Nanomaterials for Energy, Environmental and Engineering Applications.



Automatic irrigation system with rain fall detection in agricultural field

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ARTICLE INFO

Article history:

Received 28 April 2017

Received in revised form 18 December 2019

Accepted 26 January 2020

Available online 26 January 2020

Keywords:

ARM microcontroller

GSM

Rain detector

Soil moisture sensor

Humidity sensor

Temperature sensor

Android app

ABSTRACT

Rainfall is an important natural phenomenon for agricultural activities to fulfill its water requirements. The proposed irrigation technique in agriculture saves water by making it as an automated one. By detecting the rain fall in real time, the amount of water needed for the field can be planned. A system is developed based on ARM micro controller combined with GSM module to inform the rain fall level to the farmer and as well as automatically regulates the water irrigation. The system can monitor the current state of the land and data is transmitted to the mobile. The results obtained from the prototype are compared with the actual data taken from the web and it is found that the difference in estimation is minimum. The results from the prototype are compared with the traditional systems and it is found that the automation reveals best results in terms of water utilization.

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1. Introduction

Rain fall monitoring is one of the important activities in automatic irrigation of agriculture. It is known that the hydrological factor affecting the total productivity of the agriculture is rain fall. To reduce the over irrigation and save the water resource the rain fall monitoring system is very much needed. In general, the arid and semi-arid agricultural areas are very closely dependent on the rainfall level for increasing the growth rate of the agricultural production and minimizing the water resource usages. The rainfall is the important phenomenon for cultivating the crop in the agricultural fields. In [1], the authors proposed the soft capacitive handy sensor to monitor the rain fall in the agricultural catchment and record the intensity of rain fall and water level. In [2], the authors discussed a method to increase the rain water usage by reducing runoff and erosion of cabo Verdi dry land. In [3], two different types of rain gauge are compared namely drop counter catching-type gauge and a tipping-bucket rain intensity gauge with two correction algorithm. The Ogawa catching type drop counter is used in [4] to measure the real world rain fall data and these data are taken as references for artificial rain generating system. The dynamic behavior of RI gauge is improved by including the laboratory simulation results of real world data. Interrupt driven Wireless Sensor Network (WSN) prototype has been designed in [7] to monitor the large scale and real time rain fall. Several

autonomous nodes are deployed in smart irrigation decision support system for sensing the climatic variables and soil moisture level to control the irrigation [13]. The sensors are playing vital role in several automation applications such as vineyard hail protection [19], smart city applications [21] and to develop the remote control system for optimize the power utilization of street lights in the city [18,20,17].

Solar energy operated nodes used WSN is proposed in [14] to collect multiple parameters of plant, soil and atmosphere. The measured data are sent to remote server which contains sensor information in database and permits future utilization of data in simple way. Power optimized electronic system design is proposed in [8] to detect the wind direction and rain fall. A low cost WSN system is proposed in [9] for monitoring the regular changes in crops due to pests, soil moisture droughts and floods in agricultural land.

In [15], the authors proposed a system having plumbed rainwater tanks in houses for adequate water management. It monitors the real rain fall data for a period of twelve months. Software design has been proposed in [10] to regulate the sprinkler through click and play menu in GUI according to measured input field data. A low cost microcontroller based prototype system is used to monitor the soil, canopy, and air temperature, and soil moisture status in cropped fields. The PIC16F88 microcontroller used in this prototype system and the data are collected throughout the growing season [5]. In [6], the authors proposed a Dual probe heat pulse sensor for measuring water content and thermal properties of soil. A sub optimal irrigation scheduling is proposed in [11] by

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Efficient fuzzy based K-nearest neighbour technique for web services classification

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ARTICLE INFO

Article history:

Received 20 January 2020

Revised 5 March 2020

Accepted 18 March 2020

Available online 21 March 2020

Keywords:

Web services

Classification

Improved fuzzy with KNN

KNN classification

ABSTRACT

Web services playing a vital role in the World Wide Web and generates huge amount of information across various domains of internet. Due to this evolution data in the form of articles, reports, digital galleries and web data of companies were increased everyday. To handle the huge volume of data each and every day, automatic query classification based on internet is more significant method. Research and development community has developed various techniques for the web services discovery, where it offers the mandated data for the improvement method. With respect to the literature survey, most of the researchers are concentrating to provide the efficient web service discovery. The amount of data that is available in the web is keeps on increasing and also it is used to differentiate the services, explanation and work of art. In order to achieve this method, machine learning algorithm is applied extensively for domain categorization. Various machine learning algorithm like KNN is applied for web service discovery. The systems are effectively learning the input and evaluate the performance accuracy with the given datasets. This paper, proposes an improved fuzzy with KNN algorithm for effective web service classification. This is used to increase an outcome in the form of accuracy and performance measures.

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1. Introduction

Capacities to comprehend regular language client questions were not small problems for web services discovery. For the most part client questions are mapped into comparing yield inquiries; explicitly those are referenced as domain explicit information can lead increment in proficiency then exactness in the web service search. Subsequently those upgrades were recognized in an application: such as inquiry likeness, question transformation and inquiry steering [1] Study 3 ways to deal with sort common web service search inquiries: outcome class point coordinating adjacent to client questions goes below regulated learning method

of classifiers method. Then the presentation in joined methodology provides 46.23% of question order. Recently, numerous systems is utilized for intelligent system based content arrangement [2] Highlight determination include choice basically diminish the feature in information. The outcome class label projects that the proposed highlight determination technique executes superior to another calculation. This is appropriate for content characterization. The below machine learning algorithms are applied for content characterization. Nearest Neighbor [3] Decision Tree Support Vector Machine [15] This paper an improved KNN with fuzzy algorithm for automatic web based inquiry characterization. Venkatachalam et al. [5] implemented the dimensionality reduction technique for reducing the random variables. The rest of the paper is organized as follows: section II provides information in certain related research and development happened so far under web services; classification domain. Section III describes the KNN web service classification technique. Section IV discloses the data set used for testing the performance of the proposed technique. Section V

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<https://doi.org/10.1016/j.micpro.2020.103097>

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WEDM Parameter Optimization for Silicon@r-GO/Magnesium Composite Using Taguchi Based GRA Coupled PCA

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Received: 3 July 2018 / Accepted: 3 June 2019
© Springer Nature B.V. 2019

Abstract

A combination of Taguchi methodology and Grey Relational Analysis (GRA) interm coupled with principal component analysis (PCA) has been proposed through this paper. This methodology is adopted in order to evaluate and estimate the effect of machining parameters over the output responses of Wire Electrical-Discharge Machining (WEDM) performed on Magnesium based metal matrix composite. In this research, an optimal combination of process parameter was expected to be finalized so as to attain a state of maximum Material Removal Rate (MRR) that too with minimal surface roughness (Ra) value. WEDM of developed composite specimens were confirmed to be of L27 orthogonal array(OA) using Taguchi's method, based mainly on control factors namely reinforcement weight percentage (wt.%), Doping (DP %), Pulse ON time (T-ON), Pulse OFF time (T-OFF) and wire feed rate (WF). ANOVA outcome reveals that wt.% and DP% are the most influencing parameter for MRR and Ra. Multiobjective responses were normalized using GRA; further PCA was applied to evaluate the weighting values corresponding to each performance. The optimal parameter was set and the final results obtained depending on the optimal combination was found to be with a maximum MRR of 14.9 mm³/min and a minimum Ra of 2.04 µm.

Keywords Magnesium · WEDM · Material removal rate · Surface roughness

1 Introduction

Rapid growth in modern business world accompanies with the growth of mechanical industries that demands for newer state of advanced materials that possess high hardness, impact and toughness. This fact instigates the investigators worldwide to focus them in the arena of progressive materials in order to satisfy the necessities of contemporary industries. Magnesium(Mg) and its alloys exhibits high strength to weight ratio; however, inferior

wear and corrosion resistance limits their broader assortments and subjective applications thereof [1–4]. These overlays the way for development of composite material into which vital behaviour of selected material be obtained simply by addition of relevant reinforcement particles into their base matrix material. In general, base matrix material gets reinforced with harder ceramic particles viz. TiC, SiC, Zr etc., to upsurge its hardness; similarly solid lubricant component like graphite, boron nitride etc., shall be utilized for enhancement of its wear resistance [5–8].

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Solving SDST Flow shop Scheduling Problems using Hybrid Artificial Bee Colony Algorithms

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Abstract: Sequence dependent setup time scheduling plays a vital role in real manufacturing industries. Setup time depends on the job sequence. Heuristic or dispatching rules are suitable for producing good initial seed sequence. For this reason, heuristic or dispatching rules based artificial bee colony algorithm is used to minimize the makespan and total flowtime in SDST shop problems. Computation result confirms that heuristic based method produced better result when compared to the dispatching based method. The result of the algorithms is estimated by conducting Statistical test.

Keywords: SDST Shop, Makespan, Total Flow Time, ABC Algorithm

1. INTRODUCTION

Setup time is necessary for setting the tools, jobs cleaning and inspection work in the scheduling. SDST means sequence dependent setup time. It is considered in all real-life situations for exploiting multipurpose machine. Setup time is required between the sequences. It is an NP-hard problem to solve even two machines. SDST scheduling is one of the types in scheduling. Corwin and Esogbue [1] considered dynamic programming method to reduce makespan value in SDST flow shop. Das et al. [2] used new heuristic technique to tackled SDST problems with the target of minimizing makespan. Parthasarathy and Rajendran [3] applied simulated annealing algorithm to minimize maximum tardiness and total tardiness of a job in SDST shop. Rios-Mercado and Bard [4] applied branch and cut method to optimize makespan in flow shop. Rios-Mercado and Bard [5] developed an enhanced heuristic to reduce the makespan value in SDST shop. They ascertained the parameter value and evaluated the problem instances. Rajendran and Ziegler [6] developed a heuristic method to solve SDST flow shop with the objective of flow time and tardiness. Ruiz et al. [7] applied genetic algorithm to solved SDST scheduling shop problem. They calibrated genetic algorithm parameter and operators by using design of experiment method. Tseng et al. [8] minimized makespan in SDST shop using penalty based heuristic algorithm. They compared the penalty heuristic result and saving index heuristic result. Gajpal et al. [9] solved SDST problems with the objective of makepan using an ant colony algorithm. Eren and Guner [10] developed integer

model and heuristics for solving two machine setup time problems. They minimized total flow time and tardiness. Eren [11] developed heuristic methods to solve two machine problems with the objective of makespan, total flow time, earliness and tardiness. Wang and Cheng [12] used heuristic algorithm for setup time scheduling problems with availability constraint. Allahverdi and Kovalyov [13] reported the setup time scheduling problems. Ruiz and Stutzle [14] proposed iterated greedy algorithm to minimize makespan and total weighted tardiness. They conducted statistical analysis and reported the algorithm performance. Mansouri and Hendizadeh [15] considered Pareto optimisation approach to minimize setups and makespan for two machine flow shop using genetic algorithms and simulated annealing. Dhingra and Chandra [16] developed heuristic based genetic algorithm for solving the SDST shop problem with the objective of makespan, earliness and tardiness. Dhingra and Chandra [17] developed modified heuristic genetic algorithm to minimize weighted tardiness and makespan in SDST flow shop scheduling with the objective. They reported that modified heuristic performance for large size problems. Eren [18] developed integer programming model to reduce makespan and total flow time. Kumar et al. [19] proposed genetic algorithm with different variant (GA^1 , GA^2 , GA^3 , GA^4) to reduce the total tardiness and makespan value in SDST shop. They reported that GA^3 produced better result than other algorithms. Hooda and Dhingra [20] proposed heuristic based simulated annealing algorithms to SDST shop with the objective of number of tardy jobs and makespan. They reported that SA (NEH) performed better than SA (NEH EDD). Vanchipura and Sridharan [21] conducted statistical analysis with different stages of setup time for confirming the algorithm performance with the objective of makespan. Vanchipura and Sridharan [22] carried out a full factorial experiment for settings the parameters. They applied hybrid genetic algorithms to solve SDST shop. Hatami et al. [23] applied both metaheuristic and heuristic algorithm for SDST permutation flow shop to problem with the objective of makespan. Satyanarayana and Pramila Devi [24] developed three new heuristic algorithms with the objective of tardiness, makespan, earliness and number of tardy jobs for SDST scheduling. They evaluated the algorithms regarding relative percentage difference (RPD). Jeong and Shim [25] proposed several heuristic algorithms to solve re-entrant shop problems. They tested the heuristic with randomly generated problems. They reported the performance of the algorithm and solution quality in real

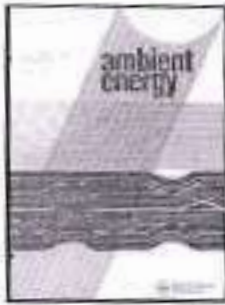
Revised Manuscript Received on November 15, 2019

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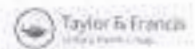
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International Journal of Ambient Energy



ISSN: 0143-0750 (Print) 2162-8246 (Online) journal homepage: <https://www.tandfonline.com/loi/taen20>

EXPERIMENTAL INVESTIGATION ON THE EFFECT OF COMPRESSION RATIO OVER THE PERFORMANCE OF CORN BIODIESEL - DIESEL BLENDS AS FUEL IN COMPRESSION IGNITION ENGINE

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To cite this article: S. Kannan, S. Nagaraja & N. Mathankumar (2020): EXPERIMENTAL INVESTIGATION ON THE EFFECT OF COMPRESSION RATIO OVER THE PERFORMANCE OF CORN BIODIESEL - DIESEL BLENDS AS FUEL IN COMPRESSION IGNITION ENGINE, International Journal of Ambient Energy, DOI: [10.1080/01430750.2020.1772871](https://doi.org/10.1080/01430750.2020.1772871)

To link to this article: <https://doi.org/10.1080/01430750.2020.1772871>



Accepted author version posted online: 26 May 2020



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Hybrid Artificial Immune System Algorithm for SDST Flow Shop Scheduling with Due Date

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Article Info

Volume 83

Page Number: 3080 - 3088

Publication Issues:

March - April 2020

Abstract:

Sequence dependent flow shop scheduling plays an important role in present situation. Setup time is used to set the tools, jigs, fixtures and cleaning work. System utilization is measured in terms of makespan whereas the system performance is measured in terms of tardiness for meeting the customer due dates. The objective of this paper is to minimize the makespan and number of tardy jobs. These two objectives are conflicting nature. It is a NP hard problem. Hybrid Artificial Immune System Algorithm is used to solve flowshop with the objective of makespan and number of tardy jobs. Computational result shows that the performance of the proposed methods for various size of problems.

Keywords: Makespan, Tardiness, Setup time, Due Date and Artificial Immune System Algorithm.

Article History

Article Received: 24 July 2019

Revised: 12 September 2019

Accepted: 15 February 2020

Publication: 21 March 2020

1. INTRODUCTION

Production system utilization is measured in terms of makespan whereas the system performance is measured in terms of tardiness for meeting the customer due dates. Many of the work is carried out by considering makespan as objective in flow shop only a few of them considered tardiness as objective. Parthasarathy & Rajendran (1997b) applied simulated annealing algorithm for solving SDST flow shop problem with the objective of minimizing the mean weighted tardiness in a drill bit manufacturing industry. They used random insertion perturbation scheme to generate the neighborhood sequence. Rajendran & Ziegler (2003) applied heuristic method to optimize the weighted flow time and weighted tardiness of jobs for SDST problem.

They used the improvement scheme to enhance the solution quality. They compared the performance of the proposed heuristic with greedy local search method. Eren & Guner (2006) developed integer programming model for two-machine flow shop with setup time problem. The objective is to minimize the total completion time and total tardiness. Ruiz & Stutzle (2008) proposed iterated greedy algorithm to minimize makespan and weighted tardiness in SDST flow shop problem. They conducted statistical analysis for evaluating the performance of the algorithm. Dhingra & Chandra (2009) solved SDST flow shop scheduling. They developed heuristic based genetic algorithm to optimize the combined objective of total tardiness, total earliness and makespan. Dhingra & Chandra (2010)

Numerical and Analytical Investigation of Heat Transfer Enhancement in Flat Plate Solar Collector using internal fins in Absorber Tube and Dissimilar Working Medium

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Abstract- Requirement and deficiency of fossil fuels are increasing day by day due to the continuous usage for various applications. In this paper flat plate solar collector with and without straight fin has been analyzed by analytical and numerical approach with dissimilar working medium such as air and water. Four conditions are considered for the investigation of the enhancement of heat transfer in the flat plate solar collector. Results are validated by the comparison and found the best one based on the heat transfer rate and thermal efficiency of the collector. Maximum efficiency of 26.09 % and 27.89 % were obtained for water with fins through analytical and numerical approach respectively when compared with air as a working medium.

Keywords - Heat Transfer, Solar Energy, Flat Plate Collector, Working fluid, Absorber tube.

I. INTRODUCTION

Recent years usage of fossil fuels are increasing continuously which leads to generate famine of fossil fuels and insanitary to clean and green environment. The emissions from fossil fuels affect the uncontaminated air into harmful which is horrific to human being and other livelihood. To overcome these issues it is necessary to find other energy sources which are not harmful to the environment. Renewable energy sources are the best replacement for fossil fuels because of continuous availability and also friendly to clean and green environment.

Solar energy is the most viable sources among dissimilar energy resources. The sun, which is at a distance of 1.495×10^{11} m from the earth and has a diameter of 1.39×10^9 m emits the energy of around 1353 W/m^2 on to a plane perpendicular to the waves. The world receives 170 trillion kw of solar energy out of this, 30% of this energy is reflected back to space, 47% is transferred to low temperature heat energy, 23% is used for evaporation/rainfall cycle in the biosphere and lesser than 0.5% is used in the kinetic energy of the wind, waves and photosynthesis of plants. Out of this energy distribution, transferred heat energy is used for the applications where it is required for conversion of thermal and mechanical energy sources. For this energy conversion process, implementation of solar energy technique is used and it is classified as active and passive based on the techniques used.

Active solar technology consists of the PV system, concentrated and non concentrated solar power and water heating. Passive technique includes the inclusion or modification of surfaces for heat transfer enhancement. Commonly, solar energy is separated into two categories such as thermal energy and radiation energy, thermal energy is heat energy which is applicable in the field of heating and drying, whereas radiation energy is light energy called electromagnetic waves which transfer itself without any use of particles of matter. Solar thermal collectors are used to transfer thermal energy into heat energy extracted by a medium through the collector such as water or air and fluids.

II. LITERATURE REVIEW

Flat plate collector performance was analyzed by changing the absorber tube material as galvanized iron to obtain the maximum efficiency at the temperature of 67°C [1]. Finned absorber always leads to the highest thermal efficiency with enhancement of up to 2.1% for non evacuated and up to 1.6% for evacuated tube collector [2]. Maximum of 3 to 5% was increased when finned tube is used instead of plain tube [3] and 10 to 15% of efficiency was attained with fin tube at the mass flow rate of 0.4 Kg/min [4]. Large surface area can produce maximum temperature between 60°C to 77°C for fin with air as working medium [5]. When the slope angle is of 45° and surface azimuth angle of 10° collector can produce

Acta Oceanol. Sin., 2019, Vol. 38, No. 5, P. 151–160

<https://doi.org/10.1007/s13131-019-1446-y>

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An interpretation of wave refraction and its influence on foreshore sediment distribution

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Received 21 March 2018; accepted 31 May 2018

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Abstract

To analyze the grain size and depositional environment of the foreshore sediments, a study was undertaken on wave refraction along the wide sandy beaches of central Tamil Nadu coast. The nearshore waves approach the coast at 45° during the northeast (NE) monsoon, at 135° during the southwest (SW) monsoon and at 90° during the non-monsoon or fair-weather period with a predominant wave period of 8 and 10 s. A computer based wave refraction pattern is constructed to evaluate the trajectories of shoreward propagating waves along the coast in different seasons. The convergent wave rays during NE monsoon, leads to high energy wave condition which conveys a continuous erosion at foreshore region while divergent and inept condition of rays during the SW and non-monsoon, leads to moderate and less energy waves that clearly demarcates the rebuilt beach sediments through littoral sediment transport. The role of wave refraction in foreshore deposits was understood by grain size and depositional environment analysis. The presence of fine grains with the mixed population, during the NE monsoon reveals that the high energy wave condition and sediments were derived from beach and river environment. Conversely, the presence of medium grains with uniform population, during SW and non-monsoon attested less turbulence and sediments were derived from prolong propagation of onshore-offshore wave process. These upshots are apparently correlated with the *in situ* beach condition. On the whole, from this study it is understood that beaches underwent erosion during the NE monsoon and restored its original condition during the SW and non-monsoon seasons that exposed the stability of the beach and nearshore condition.

Key words: foreshore, grain size, wave refraction, sediment transport, beach, India

Citation: Joelvivek Vincent Jayaraj, Chandrasekar Nainarandian, Jayangondaperumal Ramakrishnan, Thakur Vikram Chandra, Shree Purniema Krishnan, 2019. An interpretation of wave refraction and its influence on foreshore sediment distribution. *Acta Oceanologica Sinica*, 38(5): 151–160, doi: 10.1007/s13131-019-1446-y

1 Introduction

The waves and wave induced currents are the primary sea undulations that lead to the sediment transportation in the nearshore region. The direction of wave propagation depends on the seabed topography. The uneven nearshore topography influences wave celerity, breaking wave height and direction and thus the direction of the wave approaching the coast is altered. Therefore, the waves undergo refraction and tend to become normal to the shoreline. This phenomenon is called wave refraction (Kirby and Dalrymple, 1994; López-Ruiz et al., 2015). Munk and Traylor (1947) provided a detailed mathematical structure for constructing wave refraction and discussed the wave refraction impact on nearshore process. Followed by this, many researchers used computer based wave refraction models to examine the physical process of different types of coasts (Shepard and Inman, 1950; Harrison and Wilson, 1984; Orr, 1989; Skovgaard et al., 1975; Jing and Massel, 1994; Mathiesen, 1987; Kirby and Dalrymple, 1994; López-Ruiz et al., 2015; Joelvivek and Chandrasekar, 2016). From these studies, it is understood that four oceanographic parameters namely seabed topography, wave period, direction of wave approach the coast and deep-water wave height are the key para-

meters for constructing wave refraction diagram. In general, wave refraction helps to understand the wave process and the depositional environment at a particular region. Even though, quite a lot of papers had provided the spatial relationship between wave refraction and sediment distribution (Angusamy et al., 1998; Bird, 2000; Kunte et al., 2001; Short, 2006; Amrouni-Bouaziz et al., 2007; Soomere et al., 2008; Yates et al., 2011; Joelvivek and Chandrasekar, 2014, 2017; Seginan, 2014; Saravanan and Chandrasekar, 2015), this particular study provides a comprehensive view of the physical impact of wave refraction on grain size and depositional environment in accordance to the varying monsoonal condition.

In this research, about ten beaches were chosen between Thirukadaiyur and Velankanni along the central Tamil Nadu coast, India (Fig. 1). This area is mainly composed of the coastal plain, fringing the Eastern Ghats. The coastal plain is 25–30 km. As majority of these coastal plain forms a part of the Cauvery delta, a thick cover of alluvium is commonly observed (Joelvivek and Chandrasekar, 2014, 2017). Beaches are found to be in semi-diurnal tidal condition with mean high tide of 0.68 m and mean low tide of 0.28 m (Chart No. 3007, scale 1:35,000, Year 2010).

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2018 – 2019

List of Research papers per teachers in the Journals notified on UGC website

2018 – 2019

S.No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number
1	Region Based Seed Point Cell Segmentation and Detection for Biomedical Image Analysis	H.Anandakumar	CSE	International Journal of Biomedical Engineering and Technology	1752-6418
2	Automatic spray painting robot	N.Dhamodharan, C.Rajasekar, R.Balakrishnan	MECHT, MECHT, EEE	International Journal of Research and Analytical Reviews (IJRAR)	2348-1269
3	Assessing the Shoreline trend Changes in Southern tip of India	Dr. V. Jovivek	S&H	Journal of Coastal Conservation (Springer)	1400-0350
4	Eco Critical Study of Amitav Ghosh's The Hungry Tide	Dr. A. Anithasree	S&H	Journal of Emerging Technologies and Innovative Research	2349-5162

Region-based seed point cell segmentation and detection for biomedical image analysis

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Abstract: Salient region detection and segmentation from biological images is often a crucial step for image understanding. The initial contour selection during segmentation being a competent task and wrong differentiation between the foreground and background colours are compromised. In this paper, improved cell detection is introduced by using a region-based cell detection and segmentation method called Histogram Colour Contrast Seed Point Selection (HCC-SPS). In each pixel, the HCC model is able to group similar colour values, therefore addressing colour contrast in visual signal, resulting in accurate desired edge points. Second, considering the energy function, region-based seed point fine tunes the salient value and makes differentiation between salient and background points easier. Third, due to salient mapping function with pixel representation, the segmentation of biological images, done accurately. The results are compared with the existing system based on the parameters such as accuracy rate, segmentation time and mapping functions.

Keywords: cell detection; image segmentation; seed point selection; histogram; colour contrast.

Reference to this paper should be made as follows: Arulmurugan, R. and Anandakumar, H. (20XX) 'Region-based seed point cell segmentation and detection for biomedical image analysis', *Int. J. Biomedical Engineering and Technology*, Vol. X, No. Y, pp.XX-XX.

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AUTOMATIC SPRAY PAINTING ROBOT

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Abstract: This paper is proposed to develop an automatic spray painting robot. In current scenario construction industry is developed but it doesn't full fill all the required things, reason is lagging of labors and less automation. Due to this kind of issues the problems like extension period of the construction, reduction in construction quality and reduce the profit of the construction company were faced. In order to reduce afford said problems, introduced in automation in construction field. In this proposed system we only considered the painting area, because currently painting made through the human it is not an effective one. Because this process requires large number of man power, more time is needed for completion and also human could not able to paint in complicated architecture /construction. The paint chemicals create skin type diseases to the worker. The primary aim of this project is to design, develop and implement automatic wall spray painting robot which helps in achieving even and smooth painting and diseases to the human can be significantly reduced. Automatic spray painting robot can able to paint on both interior and exterior side of wall. The construction of the automatic painting robot is designed in simple so there is no need for skilled person to operate, because total system is controlled by a single controller. This automatic spray painting robot construction is made using few steels, conveyor shaft, spray gun and a controller unit. Control unit controls the entire operation of the robot. This robot have high speed pressure capabilities and easy to operate. It has a sensor for sensing the depth of the paint in the wall. Based on the sensor output, controller gives a command to the robot so that automatic painting robot can move both in horizontal and vertical directions. Automatic spray painting robot has simple in construction and operated in three axes. As the robot doesn't have complex construction structure, expected performance is high. It has very good endurance, flexibility, efficient and trust worthy.

Index Terms - Spray Painting Machine, Controller, Colour Sensors

I. INTRODUCTION

Development of building construction is one of the important growths of the nation. So now construction industries develop rapidly, but in current scenario construction industries could not able complete their projects in desired time period due to lagging of labors. In recent years, the construction industry is important one of the research areas in the field of service robotics. The main problems of the robotic in construction field is depending up on the construction environment and handling the heavy object. Therefore, a big effort is needed to be made in order to increase the level of automation. The first robot was introduced in the later 90's. At the initial stage robots was used for spraying the concrete in tunnel working. But nowadays robot is developed for the painting purpose because the painting process is quit complicated as it needs skilled labors. In order to avoid these kinds of issue in construction industries, automatic spray painting robots is to be involved. The spray painting robot not only used for construction field it can also used in automobile, fabrication and pipe industries. Fig.1 shows the benefits of spray painting robot.

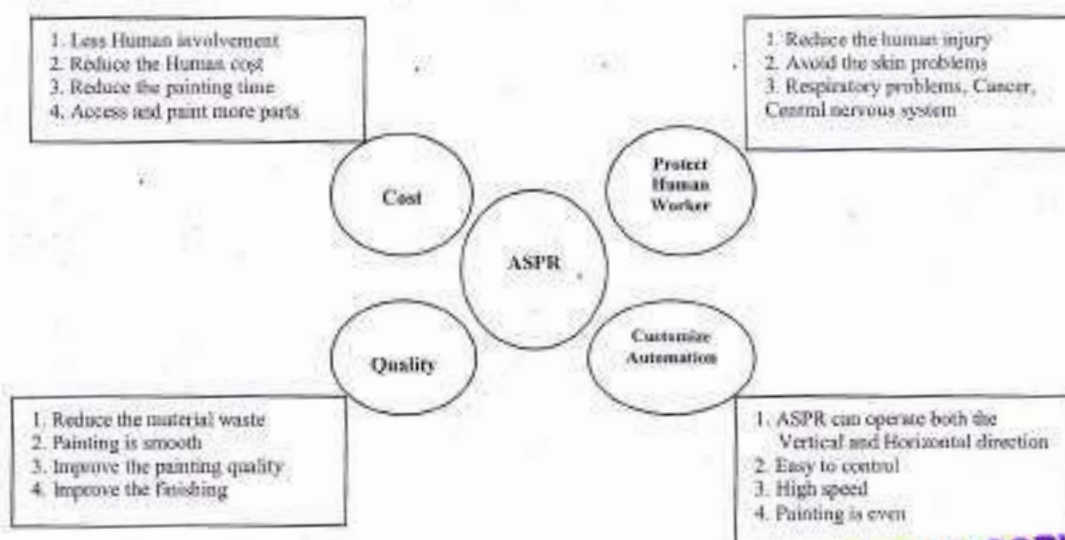


Fig.1 Benefits of spray painting robot

Even though there is advanced improvements in the robotic applications, painting is also one of the difficult process which has to be considered. The improvements in the automation industries are to provide benefits for the consumer to improve painting efficiency, quality of painting, cost reduction, reduce the time period and require less number of human. The painting robotic can paint both interior and exterior building so it can be used for any places. This proposed spray painting robot is designed in simple manner and also there is no need of a skilled person to operate because total system is controlled via controller. This automatic spray painting machine construction is made using few steels, conveyor shaft, spray gun and a controller unit. The rest of the paper is organized in the following manner Section II Existing system, Section III Proposed System Section IV Conclusion.

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Assessing the shoreline trend changes in Southern tip of India

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Received: 2 December 2014 / Revised: 1 September 2018 / Accepted: 3 September 2018
 © Springer Nature B.V. 2018

Abstract

Variations in shoreline trend was examined for 21 stations between Manuvai (in the west) and Vijayapathi (in the east), along the southern tip of India. Multispectral satellite data of Landsat MSS (9th Feb, 1973), Landsat TM 5 (4th Sep 2001) and Landsat ETM+ (21st Jan 2006) were used to assess the temporal dynamics of shoreline trend present in the region. The images were pretreated by radiometric calibration in order to avoid the temporal deviation of spatial and spectral information. The exact shorelines were estimated by two steps of image processing techniques: Normalized Difference Water Index (NDWI) is used to classify the land and sea water by and Sobel edge detection techniques are used to extract boundary line between land and water body. The rate of changes between the period 1973 and 2006 has shown that, the average shoreline rate is accelerated in the study area at 1.78 m/year. However, unusual shoreline changes ranging from 3.60 m/year to 15.60 m/year has been observed between the period 2001 and 2006 due to the impact of Tsunami. The station-wise shoreline data endorsed that Chinna mutton to Visvanarayanaapuram and Udayaram are under continuous depositional process whereas other stations are under erosional process. This result shows that littoral sediment movement, with respect to the wave climate and anthropogenic activities are the predominant factors that affect the shoreline trend and sediment drift prevailing in the coast.

Keywords Beach · Shoreline trend · Erosion · Deposition · Sediment drift · Southern tip of India

Introduction

Coastal areas have been imparting an economic and social importance to the human being since the beginning of time. About two-third of the world's population has settled in and around the coastal regions due to the enriched natural resources. In the recent years, various construction projects were performed around the coastal area that resulted in coastal hazards like erosion, accretion and shoreline change etc. Shoreline is an important parameter among the coastal parameters to understand the coastal landform changes (Morton 1996). Generally a shoreline is defined as the exact line of contact between the land and sea water. The rapid shoreline

fluctuations will lead to vulnerable changes in landforms around the coastal region. Hence, an accurate demarcation and monitoring of shorelines (seasonal, short-term and long term) are essential to understand the temporal shoreline trend present in the coast (Nayak 2002). The changes in shoreline position depends on the coastal environmental conditions such as, tides, winds, periodic storms, sea level change, sediment erosion or accretion and human activities. The long and short term monitoring of the shoreline trend helps to protect the coastal landforms against the formations and destructions of the active beach system.

Studies on shoreline response and sea level variation

Studies on sea level fluctuations and shoreline dynamics are in the primitive stage. A few detailed studies demarcated the sea level rise and shoreline variations along the Indian coast and parts of the world (Bruckener 1988, 1989; Banerjee 2000; Mathur and Pandey 2002; Hinkel and Klein 2009; Nicholls and Cazenave 2010; Hallegatte 2012; Jeevivek et al. 2013 and etc.). Singh (1997) suggested that beaches with prolonged erosional activity implies relative sea-level rise. Bruckener (1988 and 1989) discussed from mid 19th century the shoreline regression around Kudankulam as evidenced by the limestone, which

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ECO-CRITICAL STUDY OF AMITAV GHOSH'S THE HUNGRY TIDE

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"The Universe along with its creatures belongs to the lord. No creature is superior to any other: Human beings should not be above nature. Let no one species encroach over the rights and privileges of other species"

Isha-Upanishads (1500-60 B.C.)

Abstract- The literary and critical interest in environment and green politics is a recent development with a critical approach known as eco-criticism. In the present century many writers have emerged to demonstrate the centrality of environmental concerns and their profound connection with literature. One such writer is Amitav Ghosh. The relation between nature and society plays a prominent role in a country like India with ecosystems ranging from Himalayas in North to the Indian Ocean in South and from Sunderbans in the East to the dry Thar of the West. Moreover human culture is connected to the environment affecting it and also affected by it. The objective of this paper is an attempt to analyse the novel of Amitav Ghosh *The Hungry Tide* and explore how far an eco critical perspective illuminates this select novel.

Key Words: eco criticism, perspective, illuminate, ecological, humanity, resettlement, nature, environment, Sunderban, and region.

The Hungry Tide is a prophetic novel of remarkable insight, beauty and humanity. Human life is inconceivable without the existence of nature. Man is aware of his dependence on the bountiful flora and fauna. It is not just the artistic and aesthetic aspect of life which breathes the abundance of the beautiful earth. It is a precondition for survival itself. Like any other literary movement, ecological literary criticism is gaining momentum in the present day context of environmental concerns. The title of this paper indicates the reading of Amitav Ghosh's *The Hungry Tide* which is set in the world's largest mangrove ecosystem-the Sundarbans, which comprises both water and earth and the intersection of landscape, water, human beings and their culture. The tide which is always hungry comes in twice daily, resulting in a constant reshaping of the land and an uprooting of anything permanent. During partition in 1947, mass migration of East Bengali Hindus to West Bengal in India took place. It was especially the higher class Hindus who were persecuted by low class Muslim tenants. They fled and found refuge in the homes of their affluent friends and relatives of Calcutta. But low class Hindus 'squatted' on public and private land. The tides in Sunderbans reach nearly three hundred kilometers inland and every day thousands of acres of forest disappear underwater. It re-emerges hours later. The island is reshaped almost daily by powerful currents. The theme of the novel ranges from history to the current events which he reinterprets and weaves together. Though the novel deals with the danger of Sunderbans with the lurking tiger in the jungle and harmless looking but deadly crocodiles in the water, the fisherman who eke out a living, the study of Dolphins by Piya, a cetologist, Kanai a translator, the core of the novel lies in the ruthless suppression and massacre of East Pakistan refugees who had run away from the Dandakaranya refugee camps to Morichjhampi as they felt that the latter region would provide them with familiar environs and therefore a better life. This is a reality which is almost forgotten.

The story centres on two visitors to Sunderban Community. It is a story about adventure and unlikely love, identity and history, set in one of the most fascinating region on the earth. Amitav portrays the globalization embodied in Americanized Piya with her hi-tech GPS device, local identity symbolized by Fokir, and Kanai the Delhi resident. Part globalized modern entrepreneurs shifting in between a transcultural shift is seen when Kanai reads extracts from his Uncle's journals, the extracts are reproduced in English but the reader is asked to imagine Kanai reading them in Bengali. Some of the places mentioned in the novel are Lusibari, Garjontola, Canning, Gosaba Satjelia, Morichjhampi and Emilybari. Lusibari and Garjontola are fictitious. Gosaba, Satjelia, Morichjhampi and Emilybari are real places inhabited by refugees from East Bengal and other dispossessed factions of society. (P.401) Lusibari becomes the main focus-a places in the process of development. Lusibari is a small island that supports a population of several thousand. Some of the people were descended from the first settlers, who had arrived in 1920s. Others had come successively, some after the partition of the subcontinent in 1947 and some after the Bangladesh war of 1971. Many had come even more recently, when other nearby islands were forcibly depopulated. The focus of their arrival was to make room for wildlife conservation projects.

Nature is a great reminder of the transient nature of the divisions between individuals of whatever social class. In the wake of rising natural disasters like earthquakes and tsunami this paper will highlight the following factors - the power of Nature and its borderless state, lives of people living in such unusual settings and it also underscores the fragility of man's brief time on earth. The study reminds one that human beings are weaklings in the hands of immortal nature and emphasises forcefully the struggle of humans for survival in adverse conditions and the humility that is demanded in the face of nature and the place of man in it.

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2017 – 2018

List of Research papers per teachers in the Journals notified on UGC website

2017 – 2018

S.No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number
1	Potential landfill site selection for solid waste disposal using GIS and multi-criteria decision analysis (MCDA)	S.Kapilan	CIVIL	Journal of Central South University	2095-2899
2	Spatial and temporal correlation between beach and wave processes: implications for bar–berm sediment transition	Dr.N.Suguna, H.Anandakumar Dr.V.Joevivek Dr.J.Jaya	CSE, CSE, ECE, S&H	Frontiers of Earth Science	2095-0195
3	An Efficient Optimized Handover in Cognitive Radio Networks using Cooperative Spectrum Sensing	H.Anandakumar	CSE	Intelligent Automation and Soft Computing Taylor and Francis publication	1079-8587
4	Experimental Analysis in Wearable Temperature Sensor Using Advanced Encryption Standard for Energy Efficient Information Transmission in Wireless Sensor Networks	Madhavapandian S	EEE	Sensor Letters, 2018, American Scientific Publishers	1546-198X
5	Detection and Correction of Multiple Upsets in Memories Using Modified Decimal Matrix Code	Ms.S.Kamatchi	ECE	Journal of Computational and Theoretical Nanosciences	1546-1955
6	IOT Based College Automation with Smart Classroom Integration Using Raspberry Pi	N.Dhamodharan, V.Mohankumar	MECHT, MECHT	International Journal for Research in Applied Science & Engineering Technology (IJRASET)	2321-9653



J. Cent. South Univ. (2018) 25: 570–585
DOI: <https://doi.org/10.1007/s11771-018-3762-3>

Springer

Potential landfill site selection for solid waste disposal using GIS and multi-criteria decision analysis (MCDA)

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Abstract: Proper solid waste disposal is an important socioeconomic concern for all developing countries. Municipalities have their own policies, individual approaches and methods to manage the solid wastes. They consider wastelands outside the urban area as the best suitable for the solid waste disposal. Such improper site selection will create morphological changes that lead to environmental hazards in the urban and its surrounding areas. In this research, the site selection for urban solid waste disposal in the Coimbatore district used geographical information system (GIS) and multi-criteria decision analysis (MCDA). Thematic layers of lineament density, landuse/landcover, population density, groundwater depth, drainage density, slope, soil texture, geology and geomorphology were considered as primary criteria and weights for criteria, and sub-criteria were assigned by MCDA analysis. The resultant weight score was validated by consistency ratio so that the efficiency of the selected criteria was justified. The overlay analysis in GIS environment provides 17 potential zones in Coimbatore district, among which, four suitable sites were screened and refined with the help of field investigation and visual interpretation of satellite image. The result of landfill suitability map shows the effectiveness of the proposed method.

Key words: municipal solid waste; landfill site; multi-criteria decision analysis; remote sensing; GIS; Coimbatore

Cite this article as: S. Kapilan, K. Elangovan, Potential landfill site selection for solid waste disposal using GIS and multi-criteria decision analysis (MCDA) [J]. Journal of Central South University, 2018, 25(3): 570–585. DOI: <https://doi.org/10.1007/s11771-018-3762-3>.

1 Introduction

The increasing population and rapid urbanization are of great concern to the municipal authorities for the management of solid wastes. The rapid growth of population demands the use of non-renewable resources and dumps its by-products such as toxic solid waste into the environment. Such type of solid wastes has resulted in deteriorated soil, air and water bodies, which causes serious health hazards for the public [1]. The disposal of generated solid wastes is formed once in a day in urban and semi-urban areas. However,

rapid growth of cities with huge population creates a lack of basic infrastructure services for municipal solid waste (MSW) disposal [2]. The main reason for urban waste accumulation is somehow related with the living standard and well-being of the population through industrialization [3]. The management of solid waste disposal is still a complicated issue for the city planners, as it requires financial, environmental and political consideration [4]. Site selection for solid waste disposal is the primary task for solid waste management. Solid wastes in the urban areas mostly include wastes of plastics, glass, fabrics, and metals, which have complex composition and late

Received date: 2016-11-11; Accepted date: 2017-03-23

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RESEARCH ARTICLE

Spatial and temporal correlation between beach and wave processes: implications for bar–berm sediment transition

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Abstract Investigation of a beach and its wave conditions is highly requisite for understanding the physical processes in a coast. This study composes spatial and temporal correlation between beach and nearshore processes along the extensive sandy beach of Nagapattinam coast, southeast peninsular India. The data collection includes beach profile, wave data, and intertidal sediment samples for 2 years from January 2011 to January 2013. The field data revealed significant variability in beach and wave morphology during the northeast (NE) and southwest (SW) monsoon. However, the beach has been stabilized by the reworking of sediment distribution during the calm period. The changes in grain sorting and longshore sediment transport serve as a clear evidence of the sediment migration that persevered between foreshore and nearshore regions. The Empirical Orthogonal Function (EOF) analysis and Canonical Correlation Analysis (CCA) were utilized to investigate the spatial and temporal linkages between beach and nearshore criterions. The outcome of the multivariate analysis unveiled that the seasonal variations in the wave climate tends to influence the bar – berm sediment transition that is discerned in the coast.

Keywords beach, nearshore, sandbar, grain size, empirical orthogonal function, canonical correlation analysis

1 Introduction

The coastal region from the sea to the land can be divided into five categories: offshore, nearshore, foreshore, backshore, and dune. Among these, the nearshore and the foreshore are comparatively sensitive over a short period of

time owing to the interaction between the beach and the incoming waves (Short, 2012). The nearshore is the zone in which the wave action yields breaking waves, longshore current, and littoral transport; in contrast to this the foreshore zone lies between the mean low tide and the seaward beach berm which controls the morphodynamic state of the beach system. The seasonal trends have influenced a fair trade-off between the beach and the swash zone by means of cross-shore sediment transport. Such transition yields the cyclic process of two coastal environments: one is a flat berm with multiple sandbars in the surf zone and the other is a developed berm but absence of sandbars in the surf zone. This consequently proved that a possible correlation exists between the wave climate and the beach morphology (Joevivek and Chandrasekar, 2014). The diverse studies confirm this statement by various modes of beach and wave dynamics studies.

Bascom (1953) carried out a study on temporal correlation between the foreshore slope and sandbar formation along Carmel beach, California. His finding insinuates that the beaches attained flat foreshore with multiple nearshore bars during the high energy wave condition whereas steep foreshore with zero to one nearshore bar during low energy wave condition. Correspondingly, Wright and Short (1984) categorized the beach system as a reflective, intermediate, and dissipative state based on the monsoonal wave climate, while, in contrast to that, Galvin (1968) proposed a semi-empirical formula for evaluating the breaking wave type in the nearshore environment. Fascinatingly, the results of the beach morphodynamic state and breaking wave type with respect to the seasonal variations were consistent with the findings of Bascom (1953, 1955, 1964).

Many studies have been focused on the spatial and temporal relationship between the beach and the nearshore environment (e.g., Hunter et al., 1979; Araya-Vergara, 1986; Xie and Liu, 1987; Wang et al., 1998; Miller, 1999;

Received October 3, 2016; accepted March 15, 2017

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An Efficient Optimized Handover in Cognitive Radio Networks using Cooperative Spectrum Sensing

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ABSTRACT

Cognitive radio systems necessitate the incorporation of cooperative spectrum sensing among cognitive users to increase the reliability of detection. We have found that cooperative spectrum sensing is not only advantageous, but is also essential to avoid interference with any primary users. Interference by licensed users becomes a chief concern and issue, which affects primary as well as secondary users leading to restrictions in spectrum sensing in cognitive radios. When the number of cognitive users increases, the overheads of the systems, which are meant to report the sensing results to the common receiver, which becomes massive. When the spectrum, which is in use becomes unavailable or when the licensed user takes the allocated band, these networks have the capability of changing their operating frequencies. In addition, cognitive radio networks are seen to have the unique capability of sensing the spectrum range and detecting any spectrum, which has been left underutilized. Further this capability of recognizing the spectrum range based on the dimensions detected, allows for determination of the band, which may be utilized. The main objective of this paper is to analyze the cognitive radio's spectrum sensing ability and evolving a self-configured system with dynamic intelligence networks without causing any interference to the primary user. The paper also brings focus to the quantitative analysis of the two spectrum sensing techniques namely: Energy Detection and Band Limited White Noise Detection. The estimation technique for detecting spectrum noise is based on the detection of probability and probability of false alarms at different Signal-to-Noise Ratio (SNR) levels using Additive White Gaussian Noise signal (AWGN). The efficiency of the proposed Cooperative CUSUM spectrum sensing algorithm performs better than existing optimal rules based on a single observation spectrum sensing techniques under cooperative networks.

KEYWORDS

Cognitive radio networks; handover; spectrum sensing; spectrum allocation; spectrum detection; CUSUM

1. Introduction

The conventional cellular systems have been replaced to a considerable extent with the present advanced wireless communication system. There is a large requirement for higher data rates due to increased usage of mobile services, but the entire spectrum is allocated only to available users. Moreover, the frequency spectrum is allocated to licensed primary users thereby restricting a particular band of spectrum to secondary users and segregating their utilization, hence the availability of free frequency band becomes impossible. Frequency range is further diversified into channels with particular encoding and modulation schemes, which do not allow interference between users. These regulations work efficiently for certain frequency bands, but often they are just a legacy of telecommunication standards.

Wireless technology has always been growing rapidly and even more so now, with the greater traffic in the networks and greater spectrum allocation to users as a result of spectral crowding. With the limited bandwidths that are available overcrowding is unavoidable. The cognitive radio concept was proposed by Mitola (1999) due to the following reasons:

The cognitive radio (CR) has been a discovery with an enhancing field of research, where any device can automatically sense the environmental conditions and the communication

parameters Jeongkeun et al. (2009) can be adopted appropriately. The main components of Cognitive Radio Networks are primary networks and cognitive networks Haykin (2005). The primary network consists of the primary user (PU) and the cognitive network consists of the secondary user (SU) Lu, Huang, Zhang, and Fan (2012). The primary network users are known as the licensed users and the secondary network users are known as the unlicensed users McFenry, et al. (2007). Using cognitive radio technology the primary user's unutilized frequency bands are efficiently used by the secondary user. The cognitive radio technology is built upon software defined radio (SDR) technology. Cognitive radio networks (CRNs) are divided into two types i.e.; centralized and distributed. The centralized network is also known as infrastructure oriented network. Here the CR users are being managed by the secondary base station users. The distributed network is known as infrastructure less network.

The CRN architecture is shown in Figure 1, which is classified into infrastructure oriented CRN and infrastructure less CRN shows that, in the infrastructure oriented cognitive radio network, the cognitive radio user (CRU) has a Base Station (BS), which is a central network entity in cellular networks. The CR user is controlled by MAC unit.

In infrastructure less CRN the CRUs communicate in an ad-hoc manner with each other on both spectrum



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SENSOR LETTERS

Vol. 16, 1–9, 2018

Experimental Analysis in Wearable Temperature Sensor Using Advanced Encryption Standard for Energy Efficient Information Transmission in Wireless Sensor Networks

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(Received: 20 January 2018; Accepted: 5 June 2018)

The paper actualizes secure MIMO-OFDM frameworks to accomplish the information secrecy utilizing the following cryptographic method in particular; Advanced Encryption Standard (AES) is proposed impact of security and quality on the transmission information in sensor networks. Wireless sensor network is one of the important technologies which are used in the various applications like hospital, military and so on. These applications using the various characteristics such as energy harvesting, resilience, scalability while transmitting the information in the network. Even though the WSN having the efficient characteristics, it has some of the issues like network load routing, power consumption, node failure etc. Thus the paper introduces the MIMO concept with network coverage and energy efficient sensing model to avoid the above issues and new advanced encryption standard (AES) cryptographic encryption, decryption and key management set of rules for the safety of transmission control protocol/internet protocol (TCP/IP) protocol suite turned into carried out. Initially the network sensitive region is analyzed using the Shadow fading sensing model. From the recognized region, the clusters are formed according to the concept of multi scale fuzzy clustering process. Then the information is transmitted with the help of the Lifetime Maximizing Dynamic Energy Efficient Routing Protocol which reduces the power consumption process at the entire node life time. The efficiency of the system is analyzed with the help of the experimental results and discussion and analyzed for wearable temperature sensor network.

Keywords: Wireless Sensor Network, MIMO, Shadow Fading Sensing Model, Multi Scale Fuzzy Clustering Process, Lifetime Maximizing Dynamic Energy Efficient Routing Protocol, AES, Temperature Sensor.

1. INTRODUCTION

Wireless Sensor Network¹ consist a large scale sensor node deployed randomly or statistically distribution is predefined over a geographical region of interest. Sensor node resources are power, memory, processor, computation and communication. Since important criteria of WSN is node deployment strategy and efficient power consumption technique therefore going to shadow fading sensing model which is deploying the node randomly and movable. The coverage of sensing model is not uniform at all direction and move a number of nodes across sensing fields. This model aim to maximum nodes are detected when an event occur. Coverage and connectivity treated as a quality of

service in that sensing model.² In large scale network is usually partition into a small subgroup is known as cluster for reducing the power consumption. Determines the clustering is according to energy location of the information. Usually clustering has two methods which are classified into centralized clustering and distributed clustering. Centralized clustering requires all the nodes send the data packet along base station directly.³ Distributed clustering is performed by randomly.⁴

Basically the clusters have cluster head and the cluster members which collect the data from member and forward to base station.⁵ Some energy could be preserved long distance data transmission to the base station therefore going to organize unequal clustering and multi hop routing for save the residual energy.⁶ For the energy

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Detection and Correction of Multiple Upsets in Memories Using Modified Decimal Matrix Code

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When the data's are travelling from one system to another system the radiation in the space environment creates multiple upsets in the memories. These upsets can turn out to be a serious problem in terms of accuracy and performance of the digital system. The reliability of data transmission gets severely affected by these errors. Therefore, it is essential to detect and correct the errors and protect the memories from data corruption. Hamming code can be used to prevent the multiple upsets in memories by error detection and correction. But, the main disadvantage with that Hamming code is that it can correct only single bit error. The other error detection correction code are more complex and requires more area, power and delay, since the encoding and decoding circuits are more complex. The DMC is one type of Error detecting and correcting codes. It requires less area, power, delay and also can be used to detect and correct maximum errors. The DMC has high fault tolerant capability. In the DMC method more redundant bits was required and one combination of error could not be detected and corrected. In this paper redundant bits is reduced and the combination of Error which cannot be detected and corrected by DMC method, can be detected and corrected by Modified DMC method (MDMC) which integrates Electromagnetic Band-Gap (EBG). This MDMC was applied in the cache memory. The information bits are efficiently transmitted through cache memory through bloom filter and Error is detected and corrected by this Modified DMC method (MDMC).

Keywords: Error Detection (ED), Error Correction (EC), Multiple Upsets, Decimal Matrix Code, Modified DMC Method (MDMC).

1. INTRODUCTION

Error occurs when output message is not same as input message. When the data's transmitting from one system to other system, noise (otherwise called as error) will occur. That means logic 0 may change to logic 1 or logic 1 may change to logic 0. The error is detected and corrected by detector and corrector.

Error Detecting Codes. In transmitter side while encoding the actual information, the additional bits are added to actual information to detect the error, such bits are called an error-detecting code.

Error Correcting Codes. In receiver side while decoding, the error correcting codes are used to correct the error which occurred in the received information.

2. EXISTING SYSTEM

2.1. Hamming Code

The Hamming code¹⁴ is one of the linear error detecting and correcting codes. It is used to detect and correct the

single error. It detects the errors but it corrects only one error. The encoding and decoding circuits are more complex in Hamming code. The memory reliability is very high when compare to the other error detecting and correcting codes. In Hamming code parity bits are to be calculated and transmitted with the original information.

Problem Description of Hamming Code. One of the main disadvantages of Hamming codes is the fixed Hamming distance and there will be a problem in implementing coders for large blocks. The fixed Hamming distance of Hamming codes allows the detection of two error bits and has an ability to correct only a single error.

2.2. Decimal Matrix Code

The information is sending from the transmitter to receiver side, the received information is not same as the original information, because the transmitting information is been sent through the memories. As the memories are working in various environments, it will be affected by much type of ray's example cosmic rays. So some types of upsets can occur. These upsets are nothing but errors. These upsets are classified into single upsets and multiple upsets.

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International Journal for Research in Applied Science & Engineering
Technology (IJRASET)

IOT Based College Automation with Smart Classroom Integration Using Raspberry Pi

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Abstract: this project focuses on achieving college automation along with smart classroom integration. In today's world automation, gaining a lot of importance and iot is becoming more popular day by day; this project focuses on smart class rooms in college by installing small internet connected devices in each classroom. Raspberry pi, is used as the brain of the whole controlling system. An embedded linux is used as the operating system and allows us to make the classroom smart, offering various software and teaching tools to be easily installed. Python, a high-level programming language is used to fetch data from cloud and implement the control logic for controlling the appliances in the classroom. Flask, a micro web framework is used to develop the backend server application. Sqlite3 is used to manage the data on cloud. The ui to control the appliances in the classroom is developed with materialize, a framework allowing to develop responsive material design.

Keyword: Automation, Raspberry Pi, Linux, Python, Iot,

I. INTRODUCTION

A. Iot (Internet Of Things)

IoT (Internet of Things) is inter-networking of physical devices, embedded systems, buildings, sensors, actuators and other similar devices to stay connected and exchange data. The IoT allows objects to be sensed or controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit in addition to reduced human intervention.

B. Introduction To Raspberry Pi

Raspberry pi is a on its own board computer that finds its application in a wide range of IoT based and teaching applications. This tiny piece of electronic device is capable of stuff that a PC does, like opening spreadsheets, PowerPoint presentations, playing games and much more. At the same time it is also has 40 GPIO pins, which offers to connect various sensors and actuators and work around controlling physical things. The raspberry pi 3 features a Broadcom system on a chip (SoC), which includes an ARM compatible central processing unit (CPU) and an on-chip graphics processing unit (GPU, a Video Core IV). CPU of 1.2 and on board of 1 GB RAM.

- 1) **Existing Methods:** Shekhar H. et al discussed about the concept of eliminating the black board and replacing them with the smart electric board is discussed[1]. Dong-oh Kang et al has clearly pointed the applying SoD (System on-Demand) technology to the smart class by resilient usage of smart devices like smart phones and smart pads, which adopts I/O virtualization, system virtualization and application virtualization techniques[2]. M. Kim and N. Y. Chong focuses on implementation on electric board by eliminating the black boards[3]. G. Tanganelli C et al has defined the use CoAPthon, an open-source CoAP-based CoAP library, which aims at simplifying the development of CoAP-enabled IoT applications[4].
- 2) **Smart classrooms:** Existing smart classrooms system more focuses on providing digital forms of teaching and learning experience at the same time being a little rich to afford as it consists of a PC integrated with the classrooms. The smart classroom system does not allow controlling physical appliances inside the classroom through software.
- 3) **College Automation:** PLC's are widely used for such large automation applications. PLC can be Used to automate the college. PLC based systems are costly and It merely offers only automation, no smart teaching aids can be implemented.
- 4) **Proposed System:** The shortcomings of old existing system can be overcome by using a computer system that is capable of both, controlling and also extending the smart teaching aids. This project focuses on using a single board computer, Raspberry pi to serve the purpose. The proposed system offers a smart classroom with a computer capable of implementing all smart teaching aids. As the system also consists of an embedded system, the students also get exposed to the embedded systems. It also offers the user a

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2016 – 2017

List of Research papers per teachers in the Journals notified on UGC website

2016 – 2017

S.No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number
1	Supervised Machine Learning Techniques in Cognitive Radio Networks during Cooperative Spectrum Handovers	H.Anandhakumar	CSE	Cluster Computing - Springer	1386-7857
2	A novel Approach for Generation of power by harvesting microwave from the ambient environment	Dr.J.Jaya	ECE	Journal of Microwave power and electromagnetic energy	0832-7823
3	Identifying the Available Parking Area by the Assistance of Parked-Vehicle	Dr.J.Jaya	ECE	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	2456-3307
4	A feasibility study on Implementing Agile manufacturing in a Pump Manufacturing Industry	Gokulraju.R	MECHT	International Research Journal of Engineering and Technology (IRJET)	2395-0056
5	A Case Study on Reducing the Lead Time and Increasing Throughput by using Value Stream Mapping	Gokulraju.R, Vignesh.V, Vigneshwar.K	MECHT, MECHT, MECHT	International Research Journal of Engineering and Technology (IRJET)	2395-0056
6	Data on nearshore wave process and surficial beach deposits, central Tamil Nadu coast, India	Dr. V. Joevivek	S&H	Data in Brief (Elsevier)	2352-3409
7	Evaluation of optimal wavelet filters for seismic wave analysis	Dr. V. Joevivek	S&H	Himalayan Geology	0971-8966
8	Great earthquake surface ruptures along backthrust of the Janauri anticline, NW Himalaya	Dr. V. Joevivek	S&H	Journal of Asian Earth Sciences (Elsevier)	1367-9120

9	A Note on g rw-Closed Sets	N. Selvanayagi	S&H	European Journal of Pure and Applied Mathematics	1307-5543
10	Properties of α -generalized regular weakly continuous functions and pasting lemma	N. Selvanayagi	S&H	Scientific Studies and Research Series Mathematics and Informatics	2457-497X
11	Soft γ semi-open sets in soft topological spaces	A. Kalavathi	S&H	International journal of Mathematical Analysis	1312-8876
12	Soft g^* -closed and soft g^* -open sets in soft topological space	A. Kalavathi	S&H	Journal of interdisciplinary Mathematics	2169-012X



Supervised machine learning techniques in cognitive radio networks during cooperative spectrum handovers

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Received: 15 November 2016 / Revised: 27 January 2017 / Accepted: 17 February 2017
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Abstract Cognitive communication model perform the investigation and surveillance of spectrum in cognitive radio networks abetment in advertent primary users (PUs) and in turn help in allocation of transmission space for secondary users (SUs). In effective performance of regulation of wireless channel handover strategy in cognitive computing systems, new computing models are desired in operating set of tasks to process business model, and interact naturally with humans or machine rather being programmed. Cognitive wireless network are trained via artificial intelligence (AI) and machine learning (ML) algorithms for dynamic processing of spectrum handovers. They assist human experts in making enhanced decisions by penetrating into the complexity of the handovers. This paper focuses on learning and reasoning features of cognitive radio (CR) by analyzing primary user (PU) and secondary user (SU) data communication using home location register (HLR) and visitor location register (VLR) database respectively. The SpecPSO is proposed for optimizing handovers using supervised machine learning technique for performing dynamic handover by adapting to the environment and make smart decisions compared to the traditional cooperative spectrum sensing (CSS) techniques.

Keywords Cognitive radio networks · Spectrum sensing · Machine learning · Handovers · Human experts · PSO · Cooperative spectrum

1 Introduction

Cognitive Radio (CR) is used to solve the spectrum under-utilization problem and to sense the radio environment to detect spectrum holes in terms of both time and domain [1]. Cognitive radio technology improves spectrum efficiency by allowing the low-priority secondary users (SUs) to opportunistically exploit the unused licensed spectrum of the high-priority primary users (PUs). Cognitive Radio facilitates efficient utilization of the radio spectrum holes by secondary users and in providing a standard and consistent communication for all users in the network. A user can avail efficient service availability by proper mobility management.

Mobility management in handovers includes updating location information in Visitor Location Register (VLR) and storing routing information in Home Location Register (HLR) of mobile users who are served by the system. Conventional international regulatory standards have been built for an analog model and are not optimized for cognitive networks [2]. Mobility management is classified as the following:

(i) *Location Management* is the route that allows the network to identify the correct location [3]. Location management occurs in two stages:

- *Location update* is the process where the terminal moves from one Location Area (LA) to another
- *Call delivery to the user* querying network for location information on the called Mobile Terminal (MT)

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RESEARCH ARTICLE

A novel approach for generation of power by harvesting microwave from the ambient environment

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ABSTRACT

To generate power by harvesting microwave from the ambient environment, this paper demonstrates the harvester operation and microwave signal strength analysis. The survey of signal was undertaken in urban and semi-urban regions, and the microwave signals available in space are digital television (DTV), GSM900, GSM1800 and 3G. Using the result of the survey, the harvester circuit was designed; the harvester circuit comprised mainly four parts, namely antenna, matching network, rectification and storage element. These four harvesters are generally known as rectenna. In order to capture the signal, at first, antenna was designed at printed circuit board (PCB) where the efficiency is low; therefore, the next method designed was patch-type antenna, which gives the efficiency greater than the PCB-type antenna. Finally, we got 3.3 V output voltage, which helps to charge the mobile phones without the need of wired process.

ARTICLE HISTORY

Received 27 April 2015
Accepted 30 July 2015

KEYWORDS

Antenna; matching network; rectification; storage element; PMM (power management module); MPPT (maximum power point tracking system)

1. Introduction

Wireless multimedia systems are receiving increasing research and application interests. But improvements are still required to provide higher data-rate links, for instance, the transmission of video signals. Therefore, ultra-wideband (UWB) communication systems are currently under investigation and the design of a compact wideband antenna is very essential (Pinuela et al. 2013). To overcome the inherently narrow bandwidth of microstrip antennas, various techniques have been developed to cover the entire UWB bandwidth, such as L-/F-shaped probe to feed the patch, triangular patch, U-/V-slot monopoles, among others. The use of antenna to collect the energy that is being radiated at several frequencies which is much more effective to harvest the energy of several services at the same time than collecting only one service at a time, so the idea of an UWB antenna for harvesting energy is entirely feasible. Energy harvesting is the process by which energy from different sources is captured and stored. The focus is mainly based on incident low-power density designing, measuring and testing. A rectenna is used to harvest electric energy from the radiofrequency (RF) signals that have been radiated by public communications

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Identifying the Available Parking Area by the Assistance of Parked-Vehicle

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ABSTRACT

By increasing auto demands, efficient parking management is by no means less important than road traffic congestion control. Identification of parking available in metropolitan areas during the peak hours is most complex process for the driving people. This is due to shortages of parking spaces within the limited land areas of the city centers in many metropolises. Identification of parking available in metropolitan areas during the peak hours is most complex process for the driving people. It requires a certain level of human interference or interaction to initiate the communication between the devices or between the system. The problem of parking information identification can be solved by collecting the information about vehicle parked in the parking area. The solution is proposed to solve the problem of identifying the parking lot with the assistance of parked vehicles in the parking area. To achieve the localization, a GPS module is installed on the device to actively send ranging requests to some fixed modules at known positions. Due to emerging of large set vehicles and limited parking area, identifying the availability of the vehicle parking lot is becoming critical problem. The VANET Technology oriented model can assist the vehicles to localize the parking information in an efficient way. The system is designed as completely automated and its require a certain level of human interference or interaction to initiate the communication between the devices or between the system. The localization and adaptive parking structure formation with parking reservation is applied to detect the parking area. The direction to the destination coordinates are routed using the simple multi-diversion routing algorithm.

Keywords : Dijkstra Algorithm , GSM system, AoA, TDOA, NLOS, TDOA, DTOA, RSSI, VANET

1. INTRODUCTION

VANET

The rapid advances of VANET make it possible for a large number of vehicles to communicate efficiently. The hybrid architecture opens the door to a wide variety of promising applications, with goals ranging from improving road safety to enhancing people's daily parking experiences. Such assistance systems call for reliable localization methods to track available parking spaces and guide drivers to the available parking spaces. A VANET is a technology which uses moving vehicles as nodes to form an adhoc network. VANET'S is a subgroup of MANET. VANET'S are a subset of MANETs in which communication nodes are mainly

vehicles. As such, this kind of network should deal with a great number of highly mobile nodes, eventually dispersed indifferent roads. In VANET's, vehicles can communicate each other V2V. Moreover, they can connect to an infrastructure V2I to get some service.

This infrastructure is assumed to be located along the roads. The vehicular networks can provide a wide variety of services, range of safety-related warning systems to improved navigation mechanisms as well as information and entertainment applications. Applications like collision alert, road surroundings warning, etc., will be classified undersafety associated applications where the main accent is on the timely broadcasting of safety critical alerts to nearby vehicles. Some challenges of VANET's are security, reliability,

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A FEASIBILITY STUDY ON IMPLEMENTING AGILE MANUFACTURING IN A PUMP MANUFACTURING INDUSTRY

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Abstract - Due to the absence of agile characteristics, many traditional products have been struggling to face the onslaught of intensive competition. Agile characteristics would enable a product to be reconfigured quickly in response to the customers' dynamic demands. One of the theoretical propositions is that, computer-aided design (CAD)/computer-aided manufacturing (CAM) technology possesses the capabilities to infuse agile characteristics in the traditional products. To examine this theoretical proposition, the research work being reported in this paper was carried out. During this research, the pump was chosen as a candidate of traditional product. The impeller and casing of the pump were subsequently modelled using CAD technology and design equations. Subsequently, four impeller and casing models were evolved. To examine the manufacturing aspect of these models, CAM technology was used. This research outcome indicated the feasibility of converting a traditional product into an agile compatible product using CAD/CAM technology.

Keywords: Agile manufacturing, Computer-Aided Design, Computer-Aided Manufacturing, Pump Design, Product Design, Product Development.

1. INTRODUCTION

Agile manufacturing can be defined as the capability of surviving and prospering in a competitive environment of continuous and unpredictable change by reacting quickly and electively to changing markets, driven by customer-designed products and services.

Agile manufacturing is a new expression that issued to represent the ability of a producer of goods and services to thrive in the face of continuous change. These changes can occur in markets, in technologies, in business relationships and in all facets of the business enterprise. Agile manufacturing requires to meet the changing market requirements by suitable alliances based on core-

competencies, organizing to manage change and uncertainty, and leveraging people and information.

Agile manufacturing is a vision of manufacturing that is a natural development from the original concept of 'lean manufacturing'. This requirement for manufacturing to be able to respond to unique demands moves the balance back to the situation prior to the introduction of lean production, where manufacturing had to respond to whatever pressures were imposed on it, with the risks to cost and quality. The move to lean production from agile and vice versa is a major challenging task.

The main objective of this particular classification is to develop a suitable framework for AMs along these four dimensions/criteria. Achieving agility therefore requires flexibility and responsiveness in strategies, technologies, people and systems. Table 1 shows the classification of the literature on AM and the corresponding references on the basis of strategies, technologies, systems and people.

Table 1: Classification Of Agile Manufacturing Literature

Criteria for classification of the literature	Sub-classification
Strategies	Virtual enterprise Supply chain Concurrent engineering
Technologies	Hardware - tools and equipments Information technologies
Systems	Design systems Production planning and control systems System integration and database
People	Virtual networks Top management support and employee empowerment Training and education



A Case Study on Reducing the Lead Time and Increasing Throughput by using Value Stream Mapping

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Abstract - Lean manufacturing is a method adopted to shorten the time between the customer order and the customer order and the product shipment by eliminating sources of waste. The purpose of this study is to develop plan for reducing lead-times and increase throughput in /M120 2" 5K gate valve body within cell no.2 of existing plant layout using value stream mapping. Related to the component required production data is collected from company's ERP system. Study of data and takt time calculated reveals a requirement in process improvement. Present state material flow, information flow and cycle time for the component is recorded. A current state value stream map is constructed.

Current state value stream map depicts the existence of long lead times and less throughput with present batch size of 15 Nos. A future state value stream map is created using takt time, machine layout configuration, line balancing, 5S and ergonomics to suggest ways to reduce lead times and increase throughput.

Key Words: Lean Manufacturing, Value Stream Mapping, OEE, Takt time, Line Balancing, Kaizen

1. INTRODUCTION

The customer driven and highly competitive market has rendered the old fashioned managerial style and inadequate tool to cope with new uprising challenges in the manufacturing and service sectors. While some companies continue to grow based on economic constancy, other companies struggle because of lack of understanding the changes in customer mindset and cost practices. To tackle this situation and become more profitable, many manufacturers have started to turn to lean manufacturing system in order to elevate the performance of their firms

The basic ideas behind the lean manufacturing system are waste elimination, cost reduction and employee empowerment. The lean manufacturing discipline is to work in every facet of the value stream by eliminating

waste in order to reduce cost, generate capital, being in more sales and remain competitive in a growing global market. The value stream is defined as "the specific activities with a supply chain required to design order and provide a specific product or value: (Hines and Taylor, 2000)

1.1 Objectives of Lean Manufacturing

Lean Manufacturing, also called Lean Production, is a set of tools and methodologies that aims for the continuous elimination of all waste in the production process. The main benefits of lean manufacturing are lower production costs; increased output and shorter production lead times. More specifically, some of the goals include:

- Defects and wastage- Reduce defects and unnecessary physical wastage, including excess use of raw material inputs, preventable defects and costs associated with reprocessing defective items and unnecessary product characteristics which are not required by customers.
- Cycle Times - Reduce manufacturing lead times and production cycle times by reducing waiting times between processing stages, as well as process preparation times and product/model conversion times.
- Inventory levels - Minimize inventory levels at all stages of production particularly work in progress between production stages. Lower inventories also mean lower working capital requirements.
- Labor Productivity - Improve labor productivity, both by reducing the idle time of workers and ensuring that when workers are working, they are using their effort as productively as possible.
- Utilization of equipment and space - Use equipment and manufacturing space more efficiently by eliminating bottlenecks and maximizing the rate of production through existing equipment, while minimizing machine downtime.



Contents lists available at ScienceDirect

Data in Brief

journal homepage: www.elsevier.com/locate/dib

Data Article

Data on nearshore wave process and surficial beach deposits, central Tamil Nadu coast, India

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ARTICLE INFO

Article history:

Received 21 April 2017

Received in revised form

13 May 2017

Accepted 26 May 2017

Available online 3 June 2017

Keywords:

Beach

Wave

Nearshore

Grain size

Placer minerals

India

ABSTRACT

The chronicles of nearshore morphology and surficial beach deposits provide valuable information about the nature of the beach condition and the depositional environment. It imparts an understanding about the spatial and temporal relationship of nearshore waves and its influence over the distribution of beach sediments. This article contains data about wave and sediment dynamics of the ten sandy beaches along the central Tamil Nadu coast, India. This present dataset comprises nearshore wave parameters, breaker wave type, beach morphodynamic state, grain size distribution and weight percentage of heavy and light mineral distribution. The dataset will figure out the beach morphology and hydrodynamic condition with respect to the different monsoonal season. This will act as a field reference to realize the coastal dynamics in an open sea condition. The nearshore entities were obtained from the intensive field survey between January 2011 and December 2011, while characteristics of beach sediments are examined by the chemical process in the laboratory environment.

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<http://dx.doi.org/10.1016/j.dib.2017.05.052>

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Evaluation of optimal wavelet filters for seismic wave analysis

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Abstract: Wavelet signal processing is broadly used for analysis of non-stationary data particularly, real-time seismic signals. In the geophysical analysis, numerous wavelet filters are developed to realize the signal characteristics by multi-level spectral synthesis. However, the selection of optimal wavelet family and wavelet filter for seismic wave analysis is a major issue and no rationale exists for choosing the appropriate wavelet filter. Our paper aims to solve this problem through evaluating various wavelet filters by two computational analyses, the first one is a descriptive statistical measure of spectral synthesis of seismic signals, and the second one is perfect reconstruction error of different wavelet filters. The test dataset contains 520 samples, which include normal tremors (i.e., ground motion signal with ambient vibrations), local-mining blasts and earthquake signals. These signals were subjected to single level decomposition by adopting Haar, Daubechies, Symlet, Coiflet and Biorthogonal wavelets families. Descriptive statistical measures (mean, standard deviation, skewness and kurtosis) are used to evaluate approximation (signal passed through low pass filter) and detail (signal passed through high pass filter) coefficients. Statistical results reveal applications of the descriptive statistics for characterising the seismic signals and understanding the ground response. The analysis of perfect reconstruction error of wavelets suggesting the strength of the wavelet filter is related to reducing the data redundancy. Based on these analysis, we found that Daubechies (db3 and db4), Symlet (sym3), Coiflet (Coif1), and Biorthogonal (BIOR3.5 and BIOR5.5) are the best wavelet filters to perform the seismic signal analysis.

Keywords: Discrete wavelet transform (DWT), Seismic signal, Descriptive statistics, Signal decomposition and Matlab.

भूकंपीय तरंग विश्लेषण के लिए इष्टतम तरंगिका छन्नों (फिल्टर्स) का मूल्यांकन

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सारांश: तरंगिका संकेत प्रसंस्करण (सिग्नल प्रोसेसिंग) मोटे तौर पर गैर-स्थिर आकृतियों के विश्लेषण के लिए विशेष रूप से, वास्तविक-समय भूकंपीय संकेतों के लिए प्रयोग किया जाता है। भूवैज्ञानिक विश्लेषण में कई तरंगिका छन्ने (फिल्टर्स) संकेत विशेषताओं का एहसास करने के लिए बहु-स्तरीय वर्णक्रमीय संश्लेषण द्वारा विकसित किये गये हैं। हालांकि, इष्टतम तरंगिका वर्ण (फिल्टर) और तरंगिका छन्नों का चयन भूकंपीय तरंग विश्लेषण के लिए एक प्रमुख मुद्दा है, फिल्टराल अपघटन तरंगिका छन्ना चुनने के लिए कोई तर्कसंगत तरीका मौजूद नहीं है। हमारे शोधपत्र का उद्देश्य विभिन्न तरंगिका छन्नों का दो कम्प्यूटेशनल विश्लेषणों के माध्यम से मूल्यांकन कर इस समस्या को हल करना है। पहला कम्प्यूटेशनल विश्लेषण भूकंपीय संकेतों के वर्णक्रमीय संश्लेषण का एक वर्णनात्मक सांख्यिकीय माप है, और दूसरा विभिन्न तरंगिका छन्नों की दोषहीन (परफेक्ट) पुनर्निर्माण त्रुटि है। परीक्षण आंकड़े-समूह में 520 नमूने थे जिनमें सामान्य झटके (यानी परिवेशी कम्पन सहित मूलभूत गति-संकेत), स्थानीय खनन विस्फोट, और भूकंप संकेत शामिल हैं। इन संकेतों का हार (Haar), डोबेचिस (Daubechies), सिमलेट (Symlet), कोफलेट (Coiflet), और द्विलान्घिक (Biorthogonal) तरंगिका वर्णों के द्वारा एकल स्तर अपघटन कराया गया था। वर्णनात्मक सांख्यिकी उपायों (औसत, मानक विचलन, तिरछापन या विषमता और कर्तुवता या कुर्त्तुरता) का प्रयोग शक्तिघटन (विघ्न मार्ग)-छन्ने के माध्यम से गुजारे हुए संकेतों व विस्तृत (उच्च मार्ग)-छन्ने के माध्यम से गुजारे हुए संकेतों गुणाकों के मूल्यांकन करने के लिए किया गया है। सांख्यिकीय परिणाम भूकंपीय संकेतों के चरित्रांकन और भूतल प्रतिक्रिया को समझने में वर्णनात्मक सांख्यिकी की उपयोगिता प्रकट करते हैं। तरंगिकाओं की दोषहीन पुनर्निर्माण त्रुटि का विश्लेषण, जो तरंगिका छन्ने की ताकत के बारे में बताता है, आकृतियों का अतिरिक्त कम करने से सम्बंधित है। इन विश्लेषणों के आधार पर हमने पाया कि भूकंपीय संकेतों का विश्लेषण करने के लिए डोबेचिस (db3 और db4), सिमलेट (sym3), कोफलेट (Coif1) और द्विलान्घिक (BIOR3.5 और BIOR5.5) सबसे अच्छे तरंगिका छन्ने हैं।

संबंधित शब्द: असतत तरंगिका ट्रांसफॉर्म (DWT), भूकंपीय संकेत, वर्णनात्मक सांख्यिकी, संकेत अपघटन और Matlab

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Contents lists available at ScienceDirect

Journal of Asian Earth Sciences

journal homepage: www.elsevier.com/locate/jseas

Great earthquake surface ruptures along backthrust of the Janauri anticline, NW Himalaya



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ARTICLE INFO

Article history:

Received 31 October 2015

Received in revised form 5 May 2016

Accepted 5 May 2016

Available online 11 May 2016

Keywords:

Emergent backthrust

Forethrust

Long-term vertical uplift rate

Surface faulting

Earthquake event

ABSTRACT

Results of a paleoseismic trenching investigation on a backthrust in the northern margin of Janauri hill, at Mehandpur (31°18'11.37"N, 76°18'31.47"E). Sub-Himalayan range of the Himachal Himalaya are presented. The active backthrust revealed the last event took place after 0.8 ± 0.03 ka ago (i.e. post CE 1200). The age of the last earthquake with a minimum fault slip ~1 m along F1 fault and presence of single colluvium on the back thrust nearly matches with an earthquake event previously documented on the Bhatpur forethrust of the Himalayan frontal thrust system. Uplifted and truncated fluvial terraces due to displacement on the backthrust are preserved along several north flowing river valley sections in the northern limb of Janauri anticline. The long-term vertical uplift rate calculated through dividing difference between current elevation and elevation of current river grade is 1.08 ± 0.08 mm/yr. Field evidence shows fore and backthrusts are active and they form simultaneously, but displacements are episodic suggesting the backthrust develops either due to locking of forethrust or to accommodate a large amount of fault slip due to magnitude of earthquake event along the forethrust. Further, the backthrust may be used as an indirect method of inferring the age of the last event that took place along the forethrust.

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1. Introduction

Backthrusts are developed in the hinterland during foreland propagation of the deformation front and are less common than the forethrust. They have displacement in the opposite direction to that of the main thrust transport direction (Burchfiel and Davis, 1975; Mitchell, 1984; Silver and Reed, 1988). Janauri anticline, trending NW–SE, is a large structure of ~150 km lateral extent between the rivers Satluj and Beas in northwest Himalaya. It is the frontal antiform of the Sub-Himalaya, with the Himalayan Frontal Thrust (HFT) on its southern margin and Soan Dun intermontane basin to its north. The HFT defines the (plate) tectonic boundary between the Himalaya and the Indo-Gangetic alluvial plains. The Janauri anticline is bounded by fore- and backthrusts on the forelimb and backlimb, respectively (Powers et al., 1998). To date earthquake events on the foreland-verging thrust (i.e., HFT) in NW Himalaya directly, attempts to develop earthquake chronologies

have focused on earthquake ruptures associated with backthrust of the HFT system. We reported a great earthquake surface rupture on the forelimb at Bhatpur trench site on the forethrust (Kumahara and Jayangondaperumal, 2013). The present study deals with the relationship between forethrust and backthrust located on the forelimb and backlimbs of the SE segment of Janauri anticline with respect to great earthquake occurrence (Fig. 1).

In Nepal, south of Dang dun, active backthrust with displacement on the Main Frontal Thrust (or HFT) has been reported (Nakata, 1989; Mugnier et al., 1999). The Pinjore dun, near Chandigarh, is characterized by non-emergent backthrust; whereas Janauri anticline in NW Sub Himalaya is characterized by well developed fore and back thrusts on its fore and back limbs, respectively. Recently, combining data provided by the historical archives of Kathmandu, trenches through surface ruptures, isoseismic damage mapping, seismites, and the instrumental record, Mugnier et al. (2013) inferred that the epicenter of the 1344 CE event lies in the Kumaun Himalaya, and the 1255 CE (Fig. 1a) Nepal event reached up to Ramnagar in the Kumaun Himalaya. The dissimilarity in structural setting between Nepal and NW Himalaya along the Sub Himalayan mountain front may give a clue for understanding

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A Note on $agrw$ -Closed Sets

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Abstract. In this paper, some properties of $agrw$ -closed sets are discussed and also some characterizations of $agrw$ -closed sets are studied in topological spaces.

2010 Mathematics Subject Classifications: 54A05

Key Words and Phrases: $agrw$ -Closed Sets, $rsker(A)$, s -Normal Space

1. Introduction

In 2013, $agrw$ -closed sets are introduced and studied by Selvanayaki and Gnanambal Ilango [14] and some basic properties of $agrw$ -closed sets are investigated. The class of $agrw$ -closed sets properly lies between the class of rw -closed sets and the class of $gprw$ -closed sets. In 2007, Benchalli and Wali [1] have introduced a new type of Kernel known as regular semi kernel. The aim of this paper is to study some properties of $agrw$ -closed sets and some characterizations of it.

Throughout this paper, space (X, τ) (or simply X) always means a topological space on which no separation axioms are assumed unless explicitly stated. For a subset A of a space X , $cl(A)$, $int(A)$ and $X - A$ (or A^c) denote the closure of A , the interior of A and the complement of A in X , respectively.

2. Preliminaries

Definition 1. A subset A of a topological space (X, τ) is called

- (i) *regular open* [15] if $A = int(cl(A))$ and *regular closed* if $A = cl(int(A))$.

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 Faculty of Sciences
 Scientific Studies and Research
 Series Mathematics and Informatics
 Vol. 26(2016), No. 1, 81-88

PROPERTIES OF α -GENERALIZED REGULAR WEAKLY CONTINUOUS FUNCTIONS AND PASTING LEMMA

N.SELVANAYAKI AND GNANAMBAL ILANGO

Abstract: In this paper, some properties of αgrw -continuous functions are discussed and the notion of αgrw -closed graph is introduced. Also, the pasting lemma for αgrw -continuous functions is proved.

1. INTRODUCTION

The classical pasting lemma shows that the notion of a function restricted to a set being continuous without specifying the topologies with respect to which this continuity holds. This result is important by its applications in algebraic topology and in other applications involving topological concepts and methods. The pasting lemma for α -continuous maps have been introduced and investigated by Maki and Noiri[9]. Anitha et al. [2] established pasting lemmas for g -continuous functions. Vidhya and Parimelazhagan[17] introduced the concepts of g^*b -continuous maps and pasting lemma in topological spaces. Caldas et al. [4] studied the characterizations of functions with strongly α -closed graphs. In this paper pasting lemma for αgrw -continuous functions is proved and also αgrw -closed graph functions are introduced.

Keywords and phrases: αgrw -closed sets, αgrw -continuous functions, αgrw -closed graph.

(2010) Mathematics Subject Classification: 54A05.

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International Journal of Mathematical Analysis
 Vol. 10, 2016, no. 16, 775 - 794
 HIKARI Ltd, www.m-hikari.com
<http://dx.doi.org/10.12988/ijma.2016.6352>

Soft $\tilde{\gamma}$ Semi Open Sets in Soft Topological Spaces

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Abstract

In this paper, the concept of soft $\tilde{\gamma}$ semi open sets, soft $\tilde{\gamma}$ semi closed sets and soft $\tilde{\gamma}$ sg closed sets in soft topological space are introduced. Also the concept of soft $\tilde{\gamma}$ semi closure and soft $\tilde{\gamma}$ semi interior of a soft set is introduced. Moreover the notion of soft $\tilde{\gamma}$ semi T_i ($i = 0, \frac{1}{2}, 1, 2$) spaces are introduced and study some of its soft topological properties. Also the concept of soft $(\tilde{\gamma}, \tilde{\beta})$ semi continuous mapping is introduced and investigated some of their properties. Finally the concept of soft $\tilde{\gamma} T_b$ and soft $\tilde{\gamma} T_d$ spaces are introduced using soft $\tilde{\gamma}$ sg closed sets in a soft topological spaces and investigate the relationship between them.

Mathematics Subject Classification: 54A05, 54A40, 54C05, 54C10, 54D10

Keywords: soft $\tilde{\gamma}$ semi open set, soft $\tilde{\gamma}$ semi closed set, soft $\tilde{\gamma}$ sg closed set, soft $\tilde{\gamma}$ semi closure, soft $\tilde{\gamma}$ semi interior, soft $\tilde{\gamma}$ semi T_i ($i = 0, \frac{1}{2}, 1, 2$) spaces, soft $\tilde{\gamma}$ sg closed set, soft $\tilde{\gamma} T_b$ space, soft $\tilde{\gamma} T_d$ space, soft $(\tilde{\gamma}, \tilde{\beta})$ semi continuous mapping, soft $(\tilde{\gamma}, \tilde{\beta})$ semi closed mapping

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Journal of Interdisciplinary Mathematics
Vol. 19 (2016), No. 1, pp. 65–82
DOI: 10.1080/09720502.2015.1103110



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Soft g^* closed and soft g^* open sets in soft topological spaces

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Abstract

In this paper, we introduce the concept of soft g^* closed sets and soft g^* open sets in soft topological space which are defined over an initial universe set with a fixed set of parameters together with its corresponding soft g^* closure and soft g^* interior operators. Also, we introduce the concept of soft g^*Ti $\left(i = 0, \frac{1}{2}, 1, 2\right)$ and regular spaces and investigate the relationship between them.

Keywords: Soft g^* open set, Soft g^* closed set, Soft g^* interior, Soft g^* closure, Soft g^*Ti $\left(i = 0, \frac{1}{2}, 1, 2\right)$ and regular spaces.

2010 Mathematics Subject Classification: 54 A 05, 54 A 10, 54 D 10

1. Introduction

In 1999, Molodtsov[10] a Russian mathematician initiated the concept of soft set theory. Maji, Biswas and Roy[6] made a theoretical study of soft set theory in more detail. After that many authors studied the properties and applications of soft set theory. In 2010, Murugusundaramoorthy et al. [11] introduced the concept of soft g^* closed sets and soft g^* open sets in soft topological space.

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