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INVENTION OF BEST TECHNOLOGY IN AGRICULTURE USING INTUITIONSTIC FUZZY SOFT GRAPHS

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ABSTRACT

An intuitionistic fuzzy soft graph is a generalization of the notion of a fuzzy soft graph. Intuitionistic fuzzy models give more precision, flexibility and compatibility to the system as compared to the fuzzy models. In this paper, we define IFSG and different types of IFSG with example. Finally we extend our approach in application of these graphs in (agriculture) decision making problems.

Key Words: *Union of IFSG Complement of IFSG, Fuzzy soft set, soft graph, fuzzy soft graph, intuitionistic fuzzy soft graph.*

I. INTRODUCTION

Molodtsov [13] introduced the concept of soft set that can be seen as a new mathematical theory for dealing with uncertainties. Molodtsov applied this theory to several directions [13, 14, 15] and then formulated the notions of soft number, soft derivative, soft integral etc., in [16]. The soft set theory has been applied to many different fields with greatness maji [11] worked on theoretical study of soft sets in detail, the algebraic structure of soft set theory dealing with uncertainties has also been studied in more detail. Aktas and cagman [2] introduced definition of soft groups and derived their basic properties. The most appreciate theory to deal with of fuzzu sets, developed by zadeh [23] in 1965. But it has an inherent difficulty to set the membership function in each particular cases. The generalization at Zadeh's fuzzy set called intuitionsitic fuzzy set was inrouduced by Abanassov [4] which is characterized by a membership function and a non-membership functions. In Zadeh's fuzzy set, the sum of membership degree and non-membership degree is equal to one. In Abanassov's intuitionistic fuzzy set the sum of membership degree and non-membership degree does not exced one.

Maji *et al.* [9] presented the concept of fuzzy soft sets by embedding ideas of fuzzy set in [23]. In fact the notion of fuzzy soft set is more generalized than that of fuzzy set and soft set. There after many papers devoted to fuzzify the concept of soft set theory which leads to a series of mathematical models such as fuzzy soft set [1, 9, 17], generalized fuzzy soft set [13, 22], possibility fuzzy soft set [3] and so on. There after maji and his coauthor [10] introduced the notion of intuitionistic fuzzy soft set which is based on a combination of intuitionistic fuzzy sets and soft set models and they studied the properties of intuitionistic fuzzy soft set.

In 1736, Euler first introduced the concept of graph theory, the theory of graph is extremely useful tool for solving combinational problems in different areas such as geometry, algebra, number theory, topology, operation research, optimization and computer science, etc., The first definition of fuzzy graphs was proposed by kaffman [8] in 1973, form Zadeh's fuzzy relations [23]. But Rosenfeld [20] introduced another elaborated definition including fuzzy vertex and fuzzy edges and several fuzzy analogs at graph theoretic concepts. The first definition of intuitionistic fuzzy graph was introduced by Aztanasov [5] in 1999, Karunambigai and Parvathy [7] introduced intuitionistic fuzzy graph as a special case of Atanassov's intuitionistic fuzzy graph. Soft graph was introduced by Thumbakara and george [19]. In 2015 Mohinta and Samanta [21] introduced the concept of fuzzy soft graph. In this paper, we investigate some definition of intuitionistic fuzzy soft graphs, we have used standard definitions and terminologies in this paper.

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Research Paper

Neural network controller based sequential switch cascaded H-bridge multilevel inverter

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Abstract

This paper presents a novel cascaded multilevel inverter structure with reduced devices. This structure is termed as sequential switch cascaded multilevel inverter. The basic asymmetrical hybrid circuit is described and is capable of generating 17 voltage levels. The various modes of deriving 17 levels are explained and the proposed topology is compared with existing topologies in various aspects. Neural network controller can be used to generate the gating pulses. The algorithm can be trained online by using back propagation algorithm and also an algorithm to determine the number of levels, maximum voltage ratings and power loss is explained. The simulation can be done by MATLAB Simulink.

1. Introduction

The scope of multilevel inverters has received more attention because of their high power handling capacity and they can be successfully implemented in medium and high power applications. Recently multilevel inverters are popular in most of power electronic applications due to its high power handling ability, modularity, and superior harmonic characteristics. An array of power semiconductor devices and dc voltage sources are used to generate stepped voltages. Also they are capable of producing output with high quality, reduced harmonics and switching losses. Among three basic types of multilevel inverter namely diode clamped, flying capacitor (FC), cascaded H-Bridge (CHB), the CHB topology uses reduced number of power switches. And to produce high voltage levels two switching configuration are used. They are termed as symmetrical and asymmetrical configuration. In asymmetrical switching by properly introducing the dc voltage proportions successfully the number of components can be reduced with increase in output voltage level.Asymmetrical cascaded MLI with trinary dc sources produce high number of levels than binary switching. Currently researchers concentrating on developing new structures of cascaded multilevel inverter to reduce number of power components [1]-[3]. The basic symmetrical topology presented in [4] requires (2X+1) output levels for X number of H-Bridges.

The major drawback of this symmetrical structure is its increased number of components for higher levels as it uses same dc voltages for all H-Bridges. A new symmetrical multilevel inverter has been presented in [5] that use single and double source sub multilevel units. The series and parallel combinations of switches reduce the total conducting switches in each level.

An asymmetrical configuration with series/parallel conversion of sources presented in [6].This topology is implemented with multi output boost converter. The drawback is when number of level increases the variety of dc sources increases. In article [7] asymmetrical cascaded H-Bridge with different switching frequency for different H-Bridges has been presented. The capacitor voltage balancing technique is also discussed but increases the voltage stress on each conducting switch. Modular Multilevel Converter (MMC) configuration presented in [8],[9] can be easily extended to higher levels but it requires large number of switches. And also neutral point clamped (NPC) technique introduced in1981 uses series connected capacitors at the input side. The main problem is capacitor voltage balancing [10],[11].

Various algorithms in determining values of sources have been presented in [12]. A trinary based algorithm is presented in [13] that needs minimum components and also many structures were developed to reduce number of switches , driver units, dc sources , maximum voltage rating. In [14]-[16] fundamental structure have been developed but number of switches and voltage rating of switches are high. A new topology is presented in [17] and three algorithms have been explained that reduces the number of components used. But here the variety of dc sources increases. A fundamental topology based on developed H- Bridges presented in literature [18] use unidirectional switches and also an algorithm to determine voltage rating, number of sources to analyze cost of the inverter is presented. An asymmetric topology with less number of main switches has been presented with concentration on THD reduction [19],[20]. In asymmetric switching with binary hybrid multilevel inverter produces higher number of levels than symmetric type [21].

In this paper a fundamental topology of multilevel inverter structure which uses reduced number of switches, dc sources. The basic unit is capable of generating seventeen voltage levels and this structure can be extended to higher number of levels.

The Insulated Gate Bipolar junction Transistor (IGBT) with antiparallel diode combination is used as switch. This sequential switch cascaded multilevel topology is compared with existing topologies presented in literature [10]-[18] in various aspects such as maximum blocking voltage, number of dc sources and number of IGBTs. The performance of the inverter is checked with

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DETERMINATION OF OPTIMIZED GAIN VALUE FOR A TWO AREA INTERCONNECTED SYSTEMS WITH ENERGY SOURCES IN DEREGULATED ENVIRONMENT

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ABSTRACT

This manuscript deals with a new methodology of attaining the results of various energy sources in an integrated market systems treated in a deregulated environment. Using integral square error criterion, optimal controller gains KP, KI are determined through a conventional PI controller based on the performance index curves in Thermal – Thermal, Hydro – Thermal, Thermal-Diesel, Thermal-Gas and Thermal-Gas systems. An allowable disturbance of 0.1% is also introduced for the above systems using Matlab simulink under regulated environment with bilateral contracts. The simulated results shows the improved dynamic response for two area Thermal – Thermal systems gives satisfactory operation and remains stable.

Keywords: *Load- Frequency Control (LFC), PI controller, Energy sources, Integral square area criterion, Automatic Generation Control (AGC).*

I. INTRODUCTION

The wide-spread use of electric clocks, the need for satisfactory operation of power stations running in parallel and the relation between system frequency and the speed of the motors has led to the requirement of close regulation of power system frequency. Since the control of system frequency and load depends upon the governors of the prime movers we must understand governor operation.

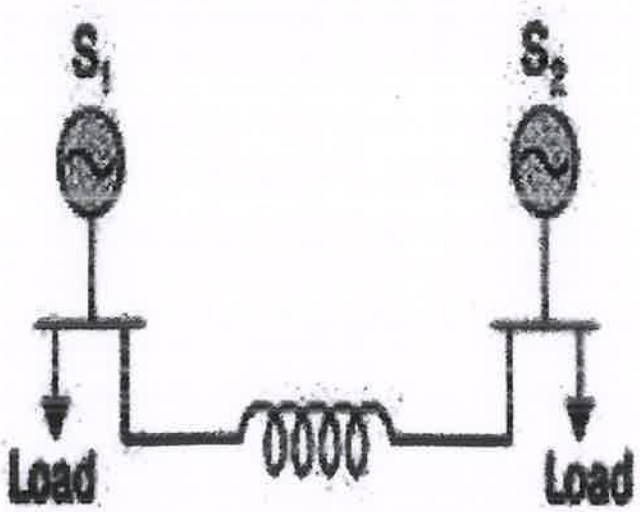

Fig-1: Two plants connected through tie-line

If the system consists of a single machine connected to a group of loads the speed and frequency change in accordance with the governor characteristics as the load changes. If it is not important to keep frequency constant no regulation control is required. The frequency normally would vary by about 5% between light load and full load conditions. On the other hand if constant frequency is required the operator can adjust the speed of the turbine by changing the governor characteristic as and when desired. If a change in load is taken care of by two machines running in parallel as shown in Fig. 20.2, the complexity of the system is increased. The possibility of sharing the load by the two machines is as follows: Say, there are two stations S1 and S2 interconnected through a tie-line. If the change in load is either at S1 or S2 and if the generation of S1 alone is regulated to adjust this change so as to have constant frequency, the method of regulation is known as Flat Frequency Regulation. Under such situation station S2 is said to be operating on base load.The major drawback of flat frequency regulation is that S1 must absorb all load changes for the entire system thereby the tie-line between the two stations would have to absorb all load changes at station S2 since the generator at S2 would maintain its output constant. The operation of generator S2 on base load has the advantages when S2 is much more efficient than the other station and it is desirable to obtain maximum output of S2.

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Price Based Automatic Generation Control in A Two Area Thermal -Thermal Interconnected Restructured Power Systems

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ABSTRACT - This paper focuses on the Availability Based Tariff (ABT) technique which has been acquainted in Indian framework predominantly to ensure the grid security, grid efficiency and grid indiscipline prevailing in the system. Unscheduled Interchange (UI) charge - one of the parts of ABT, acts a mechanism for controlling the frequency of the grid. In the meantime, this system offers chance to participants to trade or to exchange as and when accessible surplus vitality at a cost dictated by prevailing frequency conditions. Despite the fact that the hidden rule on which UI system of ABT works is very not the same from the conventional load frequency control mechanism, it can still be viewed as a price based secondary generation control mechanism. Presently, the generators are responding to price signals manually. In this paper, a model for price based automatic generation control is presented. A modified control scheme is proposed which will prevent unintentional unscheduled interchanges among the participants. The proposed scheme is verified by simulating it on a model of two area thermal-thermal system. It has been shown here that such control mechanism, if adopted by all generating stations, can improve the control of frequency and bring down the UI obligation of participants.

Keywords – ABT, Unscheduled Interchange, Load frequency.

I. INTRODUCTION TO AVAILABILITY BASED TARIFF

Availability Based Tariff (ABT) is a frequency based pricing scheme adopted in Indian Power Sector to maintain Grid discipline by implementing incentive / disincentive during unscheduled power interchange (UI). This scheme was introduced in the year of 2002. It is imperative here to understand the need for ABT, for better understanding the concept.

1.1 Need of Availability Based Tariff (ABT):

Indian Power System is characterized by low frequency system due to continuous power deficit for most of the time. There is always supply and demand mismatch. The power demand is always more than the power supply. Due to this the frequency of Grid remains on lower side. Before the introduction of Availability Based Tariff, Generating Stations used to deliver the same amount of MW in spite of need for lower MW demand during the period of lower power demand. This causes the Grid frequency to be at higher side. Similarly during the period of higher power demand, Generating Stations used to supply same MW. Subsequently, the Grid frequency reduces. This type of Grid operation did not have any provision to maintain a discipline.

Under normal condition, the Grid_frequency is expected to be constant at 50 Hz. But during peak load period the frequency goes down to 48-48.5 Hz for many hours a day. Similarly during off-peak hours, the frequency goes up to 50.5-51 Hz for many hours a day. Sometimes there is wide frequency variation like up to 1 Hz in 10 to 15 minutes for many hours. All theses contribute to the Grid disturbance leading to tripping of connected Generators and tripping of lines. Tripping of lines leads to interruption of power supply to large block of consumers.

ABT is a three-part tariff scheme. First part being a fixed component is linked to the availability of generating stations, second part is a variable component linked to the energy charges for scheduled interchange and third part is a frequency dependent component linked with the unscheduled interchange. In the given generation shortage scenario of Indian power system, the third component of ABT – the UI charge acts as a mechanism for regulating the grid frequency. At the same time, this mechanism offers opportunity to participants to exchange as and when available surplus energy at a price determined by prevailing

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ANALYSIS OF LOCATIONAL MARGINAL PRICING BASED ON DCOPF IN POWER MARKET

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Abstract

In restructured electricity markets, one of the significant dispute is the perception of real-time nodal pricing. In this work, the concept of locational marginal pricing (LMP) mechanism is implemented with the Direct Current Optimal Power Flow (DCOPF) and IEEE 39 bus system to develop the simulation test bed of this approach. The nominated LMP employs DCOPF to compute the corresponding nodal prices. Here, two different LMP approaches such as concentrated and distributed model are applied, which has the same objective function with different constraints. It is included in the composition of the two models and is consistent with the dissimilar characteristics of the DC transmission system. The LMP composed of Marginal Energy Cost (MEC), Marginal Congestion Cost (MCC) and Marginal Loss Cost (MLC), can be used to compute LMP nodal pricing for both of the two models. The efficacy and viability of the proposed system using LMP technique is validated with the help of IEEE 39 bus test system.

Keywords: Locational Marginal Pricing (LMP), Marginal Energy Cost (MEC), Marginal Congestion Cost (MCC), Marginal Loss Cost (MLC), Direct Current Optimal Power Flow (DCOPF), concentrated loss model, Distributed loss model.

1. Introduction

In the transmission of the electricity, if there is no transmission losses or less transmission losses, then the low priced power producer will be chosen to function the load at all places and so there is equivalent electricity price across the grid, called as market clearing price (MCP).The proposed scheme increased the transportation capability and reduced the loss by connecting the grid is connected with the loads and the generators in a single line.

If there is any congestion, some of the transmission lines in the system are not proficient to transmit the additional power since it reaches their thermal limit. So that the high priced generation unit is used to assist the load meanwhile the low priced generation could not the meet the load due to congestion. Due to such high priced generation, there is an increase in the cost of electricity.

Furthermore with transmission congestion, there is a significant impact of power transmission losses in the electricity prices at various sites. In case of the transmission line having high resistance, in which the load is connected to the grid subjected to higher price due to more losses of electricity in transmission, meanwhile it is opposite in case of the transmission line having low resistance. Consequently, there is a change of electricity price with the change of locations and these features lead to the principle of LMP.

F.C. Schweppe initiated the concept of LMP in 1998 [2], where it is stated that the incremental cost of LMP at particular bus can assist a tiny variation of

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STATISTICAL ANALYSIS ON CLIENT RETENTION FOR LIC OF INDIA

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***Abstract*— In India, Life Insurance Corporation (LIC) is a dominating player in the insurance industry for such a long period. The insurance industry compensates not only human losses and also protects industrial and economic growth. At the same time, India is a country where the average selling of life insurance policies is still lower than many Western and Asian countries. In this view, the researcher has set an objective to do statistical analysis on client retention by measuring their attitude towards the services of LIC of India. To accomplish the objective, the primary and secondary data has been collected from the policy holders of LIC of India in Nagapattinam region of Tamilnadu state. The collected data is analyzed using SPSS and the researcher has found the factors influencing the client's attitude and other relevant issues. Suitable suggestions and the conclusion were given based on the findings in detail.**

***Keywords*— LIC, survey, reliability, ANOVA, factor analysis, KMO Bartlett's test, Rank correlation**

I. INTRODUCTION

In a fast-globalizing economy, governments are facing with challenges relating to the regulatory norms, emerging global trends, technological innovations and liberalization of the insurance sector. Strength of the India is the second largest populated country in world with abundant of resources which makes the insurance happens to be a very big scope in India. Almost 80 percent of Indian populations are being without life insurance coverage. This will be a sign for the insurance players to occupy a greater share in the insurance sector in India. Since the introduction of new economic policy (LPG) in the year 1991, the shape of the Indian life insurance industry has been changing and it has geared up. Soon after then, many private players have entered into this industry, who poses challenges and threat to its competitors and these new challenges forced the industry to establish colourful strategies and plan for its survival and steady growth (Rajendran. R and Natarajan.B, 2010).

Customers are investing their small part of income as savings in life insurance companies which will protect themselves as well as their family members in future. These long-term savings generated by life insurance companies can also be made available to government to allow funding improvements in the infrastructure, since this infrastructure investment is important, especially in emerging economies. The emphasis lies on insuring oneself and one's close family members for self-reliance more-so because nuclear families are the emerging trend in the country today. Insurance companies have various products to fulfil the needs of the customers. As well the companies have lot of flexibility in choosing the products by blending different choices. So, the products will be customized according to the expectation of the customers.

II. SCOPE OF THE STUDY

The research move in the direction of the customers attitude towards the services of LIC of India at Nagapattinam district identified as follows (i) information availability regarding the LIC policies (ii) risk coverage and safety (iii) services of agents and response of employees (iv) affordable premium (v) loan facilities (vi) lapse and revival of policies (vii) claim settlement (viii) adaptation of modern technology (ix) physical facilities available in the branch offices. These areas are analyzed to identify the services provided by the insurance company and to examine the factors that influences the customers' attitude towards the services offered by LIC of India in Nagapattinam District of Tamilnadu.

III. STATEMENT OF THE PROBLEM

The aim of the study is to assess the attitude of the clients of LIC regarding the policy, services of LIC, risk coverage and safety, loan facilities, lapse and revival of policy, bonus, sum assured and the behavior of the customers towards future bustle.

REGULAR INTERVAL-VALUED INTUITIONISTIC FUZZY SOFT GRAPH

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ABSTRACT

In this paper, we introduce regular interval-valued intuitionistic fuzzy soft graphs and investigate some of their attributes. We talk about f-morphism on an interval-valued intuitionistic fuzzy soft graph and regular interval-valued intuitionistic fuzzy soft graphs. (2, u)-regular and totally (2, u) regular interval-valued intuitionistic fuzzy soft graphs.

KEYWORDS : Intutionistic fuzzy soft graph, f-morphism,(2,u) regular soft graph

1. INTRODUCTION

In 1965, zadeh [9] introduced the concept of fuzzy set as a method of finding uncertainty. In 1975, Rosenfeld [7] introduced the concept of fuzzy graphs. Yeh and Bang [8] also introduced fuzzy graphs independently. Fuzzy graphs are useful to represent relationships which deal with uncertainty and it differs greatly from classical graphs. It has numerous applications to problems in computer science, electrical engineering, system analysis, operation research, economics, networking routing, transportation, etc. interval-valued Fuzzy Graphs are defined by Akram and Dudec in 2011. Atanassov [5] introduced the concept of intuitionistic fuzzy relations and intuitionistic Fuzzy Graph. In fact interval-valued intuitionistic fuzzy graphs and interval-valued intuitionistic fuzzy graphs are two different models that extend theory of fuzzy graph S.N.Mishra and A.Pal [6] introduces the product of interval values intuitionistic fuzzy graph.

2. PRILIMINARIES

We start this section by reviewing some fundamental concepts related to FSG.

Definition 2.1: A fuzzy set of a non-empty base set $X = \{x_1, x_2, \ldots . x_n\}$ is defined by its degree of membership function U; where $U: X \longrightarrow [0,1]$ assigning to all $x_1 \in X$, the degree to which $X \in U$.

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Structural, optical, mechanical and dielectric property studies of adduct single crystal 2,4,6-trinitrobenzene-1,3-diol-2-methylimidazole: A spectroscopic and theoretical approach

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ABSTRACT

A novel single crystals of 2,4,6-trinitrobenzene-1,3-diol-2-methylimidazole were synthesized by slow solvent evaporation method. Single crystal X–ray diffraction technique has been utilized to elucidate the crystal structure of the grown crystal. The vibrational modes of various functional groups were identified by the FT-IR spectral analysis. UV–Visible study was performed to analyze the optical transparency by identifying the cut–off wavelength and it is found to be 210 nm of the crystal. Second harmonic generation efficiency of the crystal was evaluated by using Kurtz–Perry powder technique. Thermal behavior of the crystal has been studied using TG/DTA analysis. Vicker's microhardness test was carried out to examine the mechanical strength of the crystal. The value of work hardening coefficient is 1.17 asserting that the grown crystal belongs to soft material category. Optimized structural geometry, vibrational wavenumbers, frontier molecular orbitals energy, chemical reactivity indices and density of states were also computed using DFT method. The Fukui function was also carried out to investigate the reactive nature of the TNDMI molecule. Nonlinear optical property of the molecule was explored by the first–order hyperpolarizability calculation. These experimental and theoretical studies reveal that the molecule can be suitable to use in optoelectronic devices.

1. Introduction

The delocalized electronic structure of π-conjugated system having much potential, exclusively for their adoption in high nonlinearities, optical storage mechanism, optical communication, optical signal processing, frequency amplification and electro optic modulation [1–8]. The magnitude of the optical property in crystal depends on strength of the donor–π–acceptor system. 2,4,6-trinitrobenzene-1,3-diol is an analog of the picric acid and it is also known as styphnic acid or trinitroresorcinol. Styphnic acid consists of three nitro (electron-withdrawing) and two hydroxyl (electron-donating) groups is an exceptional option to act as a Lewis acid. It has been reported that the intramolecular hydrogen bonding interactions are absent in most of the picrate salts [9] and picric acid derivatives are interesting candidates, due to their existence of phenolic –OH and nitro groups enhances the formation of salts with various organic compounds such as *N,N*-dimethylanilinium picrate [10], 3-methyl anilinium picrate [11], 2-chloroanilinium picrate [12], anilinium picrate [13], *p*-toluidinium picrate [14] and 8-hydroxyquinolinium picrate [15]. In the synthesis process of some organic compounds and their utilization in the fields such as agrochemicals, pharmaceuticals, dyes, photographic emulsions, adhesives *etc.*, the imidazole and its derivatives are extensively used as intermediates [16,17]. The imidazole moiety (electron–donor) favors the formation of charge transfer complexes among themselves due to its durable interaction with diverse of electron–acceptors group. The inter- and intra-molecular interactions lead to the inflation of the molecular dipole and dielectric anisotropy [18]. Recently, Ahmed F. Al-Hossainy and co-workers have studied the optical, semiconducting and

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High-temperature erosion behaviour of plasma-sprayed NiCrBSi–graphite coatings

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High-temperature erosion behaviour of plasma-sprayed NiCrBSi–graphite coatings

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ABSTRACT

Plasma-sprayed NiCrBSi–graphite coatings have been subjected to solid particle erosion at elevated temperatures. The work reports the erosion resistance of NiCrBSi coatings with 4, 6 and 8 wt-% addition of graphite and optimum graphite content for erosion resistance. The coatings were analyzed using optical microscopy, XRD and scanning electron microscopy. Testing was carried out using air-jet erosion test rig, at an impact velocity of 70 m s−1 and at 45° and 90° angles with sand flow rate of 1 g min−1 at RT, 500°C and 650°C. Morphology of [illegible] lip, groove formation and chipping as visible mechanism of material removal. Coating with 4wt% distribution of graphite exhibits higher erosion resistance as compared to the coating without graphite addition and improved microhardness. Microstructure images reveal that increase in graphite content above 4% results in the segregation of graphite and leading to soft islands in the coatings thereby decreasing the erosion resistance.

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Plasma spray coatings; solid particle erosion; XRD; SEM

Introduction

Solid particle erosion (SPE) is one of the major material degradation mechanisms encountered in many industries such as thermal power plants, gas turbine engines, Internal Combustion (IC) engines, heavy transport vehicles, coal mining and slurry carrying pipelines. Nevertheless, at the same time, the erosion process has been advantageous in situations like sandblasting of castings, shot peening of rotating components, cutting of hard and brittle materials by abrasive jets and rock drilling [1,2].

The plasma-sprayed coating generally consists of overlapping splats which is more or less similar to the morphology of the substrate or to that of previous splats. Plasma-sprayed coatings are usually anisotropic and their erosion rates tend to depend on impact angle [3–6]. Kingswell et al. [7] and Zhang et al. [8] have reported that the erosion mechanism in plasma-sprayed alumina coating is different from those in bulk materials. Erosion in bulk ceramics generally occurs by a number of fracture mechanisms [9,10]. Particle impact upon a ceramic surface develops median and radial cracks at the impact site [11]. During rebounding of the particles from the impact site, lateral cracks develop parallel to the surface and follow a curved path before propagating towards the surface, leading to chipping and loss of material. Erosion in plasma-sprayed ceramics has been attributed to the failure of the individual splat boundaries.

It is well established that the erosion rates are affected by various factors [12–15]. These factors can be broadly classified into three types: (i) impingement variables describing the particle flow, (ii) particle variables and (iii) material variables. The impingement variables are particle velocity, angle of incidence, particle concentration and target temperature. Particle variables include particle shape, size, hardness and friability (ease of fracture). Material variables include properties, like hardness, work hardening behaviour and microstructure. Hardness is one of the most important factors in predicting the erosion behaviour besides influencing the modelling of the erosion processes. The best correlation of hardness with erosion is observed when the hardness is measured on bulk materials [16].

In erosion, several forces of different origins may act on a particle in contact with a solid surface. Neighbouring particles may exert contact forces and a flowing fluid, if present, will cause the drag. In some situations, gravity may also be important. However, the dominant force on an erosive particle, which is mainly responsible for decelerating it from its initial impact velocity, is usually the contact force exerted by the surface. Erosion of ductile metals

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Research arti[cle] Special Issues

An approa[ch] to study the inter-relationship between mechanical and durability properties of ternary bl[ended] cement concrete using linear regression analysis

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Abstra[ct] Full Text(HTML) Download PDF (/aimspress-data/mbe/2019/5/PDF/.pdf)

Abstract

This paper [de]scribes the experiments conducted to study the effect of copper slag, GGBFS (Ground Granulated Blast Furnace Slag), meta[kaolin] on the properties of concrete. While GGBFS and metakaolin are used as partial substitutes for cement, copper slag is used [as] partial substitute for fine aggregate. This study investigates the mechanical strength of the concrete in terms of compressive [strength], flexural strength, split tensile strength, bond strength and durability performance such as water absorption, porosity and sorptivity. In addition the effect of cement and fine aggregate substitution on the microstructure of concrete is also discussed. The [results] indicated improved strength properties with decreased cost consumption leading to greater efficiency and reduced river sand consumption as an additional benefit.

1. Introduct[ion]

The quest [for] developing high quality and durable concrete by using industrial by-products and waste materials thereby reducing the disposal [problem] is the foremost aim of the present construction industry. Several new materials that have a promising future when used [as] admixtures in concrete are being introduced day-by-day. Copper slag is one such material which is now holding a peer important [role] in present research works on construction materials [1]. Apart from the positive results reported by several researches [on] the potentials of using copper slag as partial substitute for cement and agammaegates the growing concern of preventing [the] depletion of natural resources makes copper slag an indispensable construction material [2]. Multiple research works have [also] classified copper slag as an efficient fine agammaegate replacement material through a number of experiments [3]. The beneficial use of copper slag as cement or fine agammaegate substitute have now been wide spread due to their [physical] and chemical characteristics coupled with the benefits of reduced cost consumption and environmental protection. [Though] several studies insisting the qualifying nature of copper slag as fine agammaegate only very few studies have attempted to investigate the ternary effects of substitution of supplementary cementitious material and copper slag on concrete [properties]. Blast furnace slag is an excellent supplementary cementitious material that possess high amount of silica and alumina [10], while metakaolin has also received enormous attention when used as a supplementary cementitious material [11]. The utilization of GGBFS and metakaolin has been attaining much attraction as a supplementary cementing material in recent decades [12]. Various studies have shown the efficiency of copper slag, fly ash, GGBFS and metakaolin as a possible substitution material for [natural] fine agammaegate [13]. However the potentiality of adding copper slag as fine agammaegate to the ternary blended concrete containing GGBFS and metakaolin through experimental validation still lag behind.

The workability [of] the mechanical properties of concrete is raised by copper slag addition [14]. The free lime content in ordinary [cement] is more than copper slag cement which enhances the compressive strength of concrete [15]. The pozzolanic action of [the] cement of metakaolin lowers CH content which produces better workability of concrete [16]. Up to the particular [level] of metakaolin, the compressive strength is raised by the pozzolanic action and its filling action. After that particular [level] the strength is lowered by the dilution effect [17]. The similar behavior is obtained for the flexural strength and split tensile [strength] according to metakaolin addition [18,19]. The pozzolanic action of metakaolin consumes portlandite content which improves [the] durability of concrete [20]. The durable properties such as porosity and sorptivity are improved by the filling capacity and pozzolanic [action] of metakaolin [21]. The micro structural property of concrete is upgraded with the addition of metakaolin [22]. Similarly [metakaolin] concrete has better micro structure than ordinary concrete [23]. The GGBFS produces better concrete than ordinary [concrete] in the aspects of mechanical, durable and microstructural properties [24,25,26]. The concrete with the pozzolanic [materials] such as GGBFS and metakaolin produce better bond strength than ordinary concrete [27]. The discharge of greenhouse [gases] which are the major reason for global warming) throughout the course of hydration and production of cement is very large [in] the cement, the metakaolin and GGBFS are utilized for replacing the cement. The two main characteristics of copper are their angular [shape] edges and low water absorption which modifies the concrete properties in many ways especially in mechanical [properties]. The special characteristic of metakaolin is the large surface area and pozzolanic action that modifies the durable and [mechanical] properties in positive ways. Similarly the durable and micro structural properties are altered by the pozzolanic [activity] of GGBFS.

This research is [proposed] to examine the potentiality of using copper slag as sand replacement in ternary blended cement concrete containing GGBFS and metakaolin. The ultimate aim of the research work can be as follows:

1. To minimize the [river] sand usage as agammaegate thereby reducing the scarcity of natural resources.

2. To maximize the [utilization] of industrial wastes as alternative to natural agammaegate.

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Waste shell powders as valuable bio- filler in gypsum plaster - Efficient waste management technique by effective utilization

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ABSTRACT

The present day construction industry mainly focuses on the reduction of waste accumulation by effective utilization of wastes and by-products in the production of high value building units. This present study encompasses the comprehensive research work conducted on the potentials of using biological shell powders from aviculture and aquaculture wastes as valuable bio - based filler in the production of gypsum plaster. The four different powders obtained from grinding the egg shell, conch shell, scallop shell and cuttle bone were used as replacements for gypsum binder at different proportions (2.5%, 5%, 7.5%, 10%, 12.5% and 15%) by weight. Initially the shell powders were subjected to particular treatment namely distilled water, heat, NaOCl (bleach) and H_2O_2 to remove their organic matter. The best treatment method was chosen from the obtained elemental analysis conducted on the shell powders after subjecting to various treatments. The elemental analysis results were further complemented by FTIR analysis to validate the removal of the organic matter. Mechanical, thermal and durability studies were conducted on the shell powders substituted gypsum binder to determine the efficiency of bio based shell powder as filling agent. The results showed that the gypsum plaster with enhanced mechanical properties, improved thermal performance and remarkable resistance to water absorption was obtained due to the shell powder substitution. A considerable improvement in the pore structure with well refined and compact microstructure was also evident from the SEM images. The manufactured eco-friendly bio based gypsum binder proves to be an eco-sustainable and economical solution for shell waste management.

1. Introduction

Aviculture and aquaculture industries have attained a sudden growth in recent years throughout the world (Yao et al., 2013). The tremendous growth of these industries has created a pressure among the ecologists to dispose the million tons of shell wastes and other skeletal disposals being generated every year from these industries (Jinsha et al., 2018b). These wastes are either dumped in landfills or deposited along the coastal regions that create environmental nuisance and serious health hazards by generating obnoxious odour and serves as a breeding place for harmful micro-organisms (Gil- Lim et al., 2003). To ease the burden of disposing these waste shells and to bridge the balance between the ecological and economical concern it is essential to convert these waste shells into valuable and reusable products. The shell powders are a rich source of calcium carbonate which is one of the most abundantly available materials on the earth's crust (Nurul et al., 2011). Shell powders have been characterised to contain calcium carbonate as its major phase with minimal amounts of organic matter (Jinsha et al., 2015a). To satisfy the demand for paying attention to the environmental protection several attempts to convert the waste shells into valuable products using various methods have already been described (Barros et al., 2009). The chemical analysis of the carbonates from the endoskeleton of cuttle bones (Marek and Andrzej, 2009) and crushed oyster shells (Gil- Lim et al., 2003) demonstrated that these calcareous materials can be used as promising building materials. Sulfated chitosan was isolated from cuttle bone for use as a potential therapeutic agent in bio medical purpose (Ramachandran and Chandrika, 2016). The nano size

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Synergistic effect of mineral admixture and bio-carbonate fillers on the physical and mechanical properties of gypsum plaster

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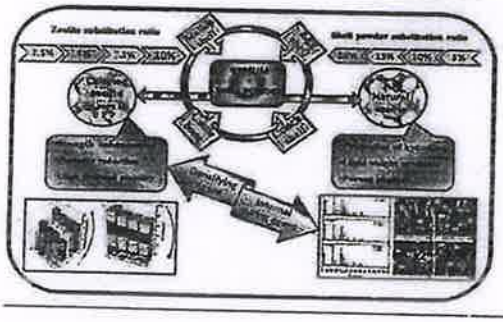
HIGHLIGHTS

- Novel gypsum composites with enhanced properties were developed.
- Natural zeolite substitution deteriorated the strength of plaster.
- Calcined zeolite showed remarkable shrinkage and reinforcing properties.
- Bio-fillers with calcined zeolite caused a synergistic effect on the plaster properties.

GRAPHICAL ABSTRACT



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ABSTRACT

The present study proposes a new strategy to develop a composite gypsum binder with enhanced strength and stability using mineral admixture (zeolite) and bio-carbonate fillers (waste shell powders). The produced gypsum composites were experimentally investigated to study the synergistic effect of zeolite (natural and calcined) and shell powders (egg, conch, cuttlebone and scallop) on the physical and mechanical properties of gypsum composites. The mechanical strength evaluation showed desirable results due to the filling ability as well as reinforcing property of the shell powders when used in combination with zeolite. In addition the natural zeolite acted as internal curing agent and enhanced the gypsum hydration due to their water imbibing quality thus providing high water of crystallization for gypsum formation. The calcined zeolite acted as densifying agent and improved the water stability and reduced the total porosity of the gypsum matrix. The X-ray diffraction studies and IR spectroscopy results showed well hydrated crystalline gypsum dihydrate phases and the SEM images showed significant improvement in the morphology of the plaster leading to enhanced water and thermal stability. Thus the proposed design strategy proves to be a technical solution for the production of high performance gypsum composites utilising the binding capacity of zeolite and filling ability of waste shell powders.

1. Introduction

Ever growing need for infrastructure development makes modern civil engineering an indispensable tool for any countries progress. The serviceability of civil engineering structures depends solely on the efficiency of construction materials. The increasing demand for cementitious materials and the associated environmental impact due to global warming led to the research into alternative construction materials with low cost and special properties.

Gypsum plasters have been widely used as a construction material since ancient times [1] however they are not considered perfect substitutes for cement due to their brittleness and inferior

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Article

Experimental Investigations on the Properties of Epoxy-Resin-Bonded Cement Concrete Containing Sea Sand for Use in Unreinforced Concrete Applications

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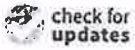

Abstract: This paper deals with the experimental studies conducted on the effects of using sea sand on the properties of polymer concrete modified using epoxy resin. The physical properties including workability, mechanical properties, and durability properties were evaluated as a function of sea-sand substitution. The results obtained behave as strong evidence for the feasibility of using sea sand as fine aggregate to solve the problem associated with the exhaustion of natural aggregates when used in combination with epoxy polymer. A clear understanding of the behavior of polymer concrete with sea sand as aggregate was obtained through some preliminary investigations. The test results showed a significant improvement in the compressive and flexural strength due to the sea-sand substitution in polymer concrete. Resistance to the water intrusion was also improved for the concrete mixes due to the inclusion of epoxy resin. The quality and the integrity of the concrete were also improved, as evident from the SEM analysis and infrared (IR) spectroscopy, and the results function as a solid basis for the use of sea-sand polymer-modified concrete for practical applications. Results also show that 15% replacement of fine aggregate by sea sand in air-cured polymer concrete exhibited enhanced strength and durability properties; thus, the produced concrete can be an effective material for unreinforced concrete applications.

Keywords: sea sand; polymer concrete; mechanical strength; durability; microstructure studies

1. Introduction

Polymer concrete is in no way new to civil engineering, and several attractive properties were achieved due to its superior performance [1]. Several polymer additives such as latex, natural rubbers, epoxy resins, and thermo-plastic polymers are added to normal concrete to produce chemically resistant, impermeable, and durable concrete [2]. Generally, polymer concrete is produced by using polymer as a partial substitute for cement [3,4]. Polymer concretes are mainly used in areas where durability is a major concern [5–7]. Recent years saw more attention paid to the use of sea sand as fine aggregate in concrete due to the problem of shortage of river sand [8]. Several countries almost banned the mining of river sands to protect their ecology and environment. Recent scientific technologies are aimed to utilize sea sand as a partial or complete substitute for fine aggregate, and efforts are being done to implement the process for practical applications [9]. The unstoppable grabbing of sand from the river beds can only be stopped when a perfect and feasible substitute for fine aggregate is obtained [10]. Several studies proposed to use sea-sand concrete for particular applications to enable

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Article

Synergistic Effect of Marble Powder and Green Sand on the Mechanical Properties of Metakaolin-Cement Concrete

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Abstract: The aim of this paper is to study experimentally the effect of marble powder and green sand as partial substitute for fine aggregate on the strength and durability of M40 grade concrete. The use of metakaolin as a pozzolanic admixture by using as binder replacement is also studied to assess the properties with respect to fresh and hardened state. Several formulations were prepared with constant water-binder ratio 0.4 and varying percentages of marble powder and green sand. The results indicated that the properties of concrete were much enhanced by extent incorporation of marble powder and green sand as fine aggregate and metakaolin for cement when compared to normal concrete. The microscopic studies also confirmed the viability of using green sand and marble powder as fine aggregates.

Keywords: metakaolin; marble powder; green sand; mechanical properties; microstructure study

1. Introduction

Recent decades have witnessed the rapid demand for river sand as fine aggregate which is one of the most essential ingredients in the production of concrete [1]. Modern construction industry tries to eliminate this large demand by probing the usage of secondary materials as fine aggregate [2]. Sustainable construction requires the use of supplementary cementitious materials in the concrete as well as minimize the demand of river sand in concrete [3,4]. The high priority materials are predominantly silicate based with minimal cost majority of which are from industrial wastes [5,6]. Supplementary cementitious materials are now an integral part of the concrete system to produce high strength concrete with improved durability [7,8]. Even minute substitution of cement with supplementary cementitious materials can contribute significantly towards the reduction of emission of greenhouse gases thereby making the concrete an eco-friendly material [9–12]. The waste generation from the mining process have yielded plenty of marble powder which is causing a greater environmental problem due to the high cost associated with their disposal [13]. Apart from the economic benefits the technical importance lies in the performance improvement of concrete when these by-products and wastes are used as concrete ingredients [14]. Marble powder as fine aggregate replacement provided several benefits in terms of strength enhancement as well as positive cost efficiency ratio [15]. Several studies have been done to reuse the waste marble powder so that they can be converted into an economical construction material [16]. Green sand used for metal castings. The high quality silica content present in the green sand foundries minimizes the exploitation of river sand at the same time meeting the environmental and design standards. Introducing foundry sand for river sand in concrete industry reduces the volume of dumping waste. These are here referred to as

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Article

Performance of Nano-Silica Modified Self-Compacting Glass Mortar at Normal and Elevated Temperatures

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Abstract: This research aims to combine the effects of nanosilica and glass powder on the properties of self-compacting mortar at normal and at higher temperatures. The fine aggregate was replaced by waste glass powder at various percentage levels of 10%, 20%, 30%, 40% and 50%. The mechanical properties of self-compacting glass mortar (SGCM) were studied at elevated temperatures of 200, 400, 600 and 800 °C. Furthermore the effect of sudden and gradual cooling technique on the residual strength of glass mortar was also investigated In order to enhance the behavior of SCGM the nanosilica at 1% by weight of cement was added. From the results it was obtained that the glass powder replacement effectively contributed towards the thermal performance while the addition of nanosilica enhanced the mechanical performance. The enhanced physical properties were obtained mainly at the glass transition temperature thus showing the active participation of glass powders during high temperatures. Moreover the gradually cooled specimens exhibited improved strength characteristics than the suddenly cooled specimens.

Keywords: Self compacting mortar; sand replacement; waste glass powder nanosilica; elevated temperature

1. Introduction

Today's world is moving towards the phase of sustainable construction. The attempts to utilize the waste materials in construction are being extensively carried out not only from the economic point of view but also from the social and ecological view [1]. Waste glass is being generated in millions of tons every year thereby causing a serious environmental threat due to their bio-degradable nature [2]. The chemical composition of the glass powder offers several advantages by improving the properties of the concrete when used as a supplementary cementitious material [3]. Waste glass powder is not an unconventional material to concrete construction. Several studies have also shown that the partial replacement of fine aggregate by glass powder proves to be an economical and feasible solution for the production of concrete and mortars due to the high environmental impacts associated the aggregate extraction [4–6]. Glass powders as replacements for binder has also revealed that glass powders can effectively function as a pozzolanic material and can be used in combination with nanomaterials to provide enhanced properties [7]. However the strength of the mortar and concrete was found to decrease due to the incorporation of glass powder [8,9]. Studies also showed improved workability

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Impact of Check Dam in Groundwater level and Water Quality of Vaigai River Madurai District, Tamil Nadu, India

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Abstract The main objective of this research work is to analyse the impact of check dams constructed athwart the Vaigai river in Madurai. The contrivance of check dam resolves the issues of water scarcity and advances both the quality and quantity of groundwater. According to the world health organisation standards the quality of water and groundwater level is analysed and concluded that the check dam is measured as the preeminent practice to fulfil the requirement.

Keywords Check dam, Groundwater recharge, Groundwater Quality, Mechanism, Recharge structure

The precipitation is the main source for groundwater, because infiltration capacity and the porosity of the soil the surface converts into groundwater (Mailhot et al 2018). This water flows downwards into the soil and supply water to the spring and aquifer. Most of the groundwater contaminated by seepage through pores of soil surface. Bore holes was used to that tap the water in the fractured aquifer (Ali Reza et al 2017). The major problem every year is groundwater depletion (HuaizhiSu et al 2018). The exploitation of the groundwater is major problem for reduction in groundwater level (Guillaume Piton et al 2018). The climate change, industrialization and urbanization are the main reason for unauthorized exploitation (Nnokwu et al 2017). This is the main reason for drastic reduction groundwater (Senthil Kumar et al 2017). Usually groundwater level in river bed area was higher when compared to land region (Gonzalez et al 2018). To improve the groundwater for the different types of recharging method followed. Low area check dam is one of the efficient method for recharging groundwater (Maciej et al 2017). The increase in groundwater table level depends upon the characteristics and pore ranges of the soil region (Mohamed et al 2018).The present study was carried out to assess the improvements over quantity and quality of sub surface water and the impacts comparing the quantity and quality aspects of sub surface water before and after the construction of Check dam across Vaigai River at Kochadai, Madurai District, Tamil Nadu.

MATERIAL AND METHODS

Study area The study was carried out in Vaigai river basin in Madurai District, Tamil Nadu which lies between 9°30' to 10°00' latitude and 78°00' to 78°30'longitude (Pratibha et al 2018). The Vaigai river up stream bed level Melakal to Manalur comprises of normal slope facing towards west to east direction with an average slope of 1 in 870 from with mean sea level 101.50 to 152.810 meter. In this region the water spread area was 157,608 square meters due to extended back up water holding. The crest level of Kochadai check dam is 132.40 mean sea level (Bouregaya et al 2018). The depth of aquifer varies from 7.00 to 22.00 meters and fluctuation varies from 2.00 to 15.00 meters (Pradeep et al 2018). The study area is characterized by fissile hornblende biotite gneiss, charnockite, granite, quartzite and flood plain alluvium along the patches of the river alluvial deposits such as sand, silt, stiff clay, gravel are transported sediments by the river on either side of Vaigai in Madurai (Huaizhi et al 2018). The pore space enlarged in the weathered mantle acts as shallow granular aquifers and forms the impending water deportment and acquiescent zones (Suneet et al 2018). In major parts of the study area shallow fractures yield good groundwater prospective. In shallow aquifers, the permeability rate is >1–70 m/day with 1–2 % of specific yield (Tomas et al 2018). The water table level depth varies from 3.13 to 7.66 m below ground level. The yield of open wells varies from 10 to 256 m^3 /day and the yield of bore wells vary from13 to 363 m^3/day (Xuanmei et al 2018). The study area is covered by hard rock aquifer except along the flood plain of the Vaigai River.

Climate: The climate is dry and hot, with the relative humidity varies from 45 to 85% and is high during north east monsoon. The study area is mainly dependent on agriculture with an

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Assessment of Ground Water Quality Based on Socio Economical Activities in Cauvery River Bed of Tamil Nadu

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Abstract: The present research work is to evaluate the correlation between socio economical activities and water quality of Cauvery river bed, Tamil Nadu. Water samples were collected from different locations of Cauvery river bed based on industrial development and social activities. The groundwater quality was analysed in the study area. This study indicated that the characteristics of water quality deteriorate in Erode and Karur region compared with other sampling points and exceeds the WHO limit. Mainly fluoride exceeds the permissible limits of 0.2 mg/lit. This study proves that the impact of social and economical activities (industrial development) plays a key role in deterioration of groundwater.

Key words: Water quality index, Pollution, Urbanization and industrialization, Self purification capacity, Assimilation ground water, Surface water

Water is important for the development of civilization. Water play a most imperative role in incorporate or bringing industrial and municipal wastewater, manure discharge run off from agricultural fields, community and urban areas which are accountable for river pollution. Discharge of pollution load from various sources in all climatic conditions Due to increasing growth of population and industrialization the pollution load increases day to day life. The water quality of the river reflects the groundwater quality of the river bed. The Cauvery river act as a main source of drinking water, fishing and domestic uses for the inhabitants. It is an upper course of winding, with a rocky bed and high banks with abundant vegetation (Vidhya et al 2015). After passing through a slender ravine and dipping about 60 to 80 feet in a fall of Chunchankatte. In Tamilnadu the Kaveri continues through a series of twisted wild gorges until it reaches Hogenakal Falls and flows through a straight, narrow gorge near Salem (Maria et al 2017). In Mettur Dam, 5,300 feet long and 176 feet high, impounds a lake of 60 square miles and then it flows into Erode and Karur, the industrial part of Tamilnadu. In tiruchchirappalli, the Kaveri breaks into Srirangam (Salam et al 2018) in eastern Tamil Nadu and extensively irrigated deltaic region of about 4,000 square miles and Kabani, Amaravati, Noyil, and Bhavani are the main branch of Cauvery (Sehnaz et al 2017). In the stretch of Cauvery River the industrial and urbanization changes the water quality of the entire stretch of river. The main objective of this research work is to determine the water quality for pre monsoon, monsoon and post monsoon of the Cauvery stretch to investigate the inter relationship between socio economical activities and water quality of the locality and suggest the remediation process available for the pollution problem.

MATERIAL AND METHODS

Study area: The study carried out in the river basin of Cauvery in Tamil Nadu, These regions receive an average rainfall of 865 mm rainfall in the monsoon period. The temperature of these study area raises in the month of April and after it drops gradually. The mean monthly maximum and minimum temperature ranges from 27.3 to 34 and 12 to 24°c respectively. This geological condition of this region consists of crystalline limestone (Abul et al 2018). The study regions of Mettur and Salem contain magnesite and in Erode, Karur region having red sandy soil, the industrial activities are high when compare to other region of our study (Daiki et al 2016). The trichy region having black cotton soil and the agriculture activities are high in the river bed of trichy and thanjavur region consist of red sandy soil and black cotton soil (Alexandra et al 2017). The agricultural activities are the major work in this region. The samples were collected from Mettur (R1) (Latitude: 11°47' 16°66"N, Longitude: 77°48'E), Erode (R2) (Latitude: 11°14'60°00"N, Longitude: 77°18'60"E), Karur (R3) (Latitude: 10°56'60"N, Longitude: 78°04'48"E), Trichy(R4) (Latitude: 10°48'55"N, Longitude: 77°48'28"E) and Thanjavur (R5) (Latitude: 10°48'00"N, Longitude: 79°09'00"E) region (Fig.1).

Artykuł - szczegóły

Modelling of electronic and optical properties of Cu2SnS3 quantum dots for optoelectronics applications

Autorzy:
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Abstrakty:

EN Copper tin sulfide (Cu_2SnS_3) is a unique semiconductor, whose nanocrystals have attracted researchers' attention for its tunable energy bandgap and wavelength in visible and near infrared range. Quantum dots which are fabricated from this material are highly suitable for optoelectronics and solar cell applications. This paper discusses the tunable energy bandgap, exciton Bohr radius and wavelength range of wurtzite structure of Cu_2SnS_3quantum dots to assess the opportunity to use them in optoelectronics applications. The considerations show that the mole fraction of copper increases as energy bandgap decreases and tunable energy bandgap of this quantum dot material is inversely proportional to the wavelength.

Słowa kluczowe:
EN Cu2SnS3 quantum dots tunable wavelength bandgap optoelectronic

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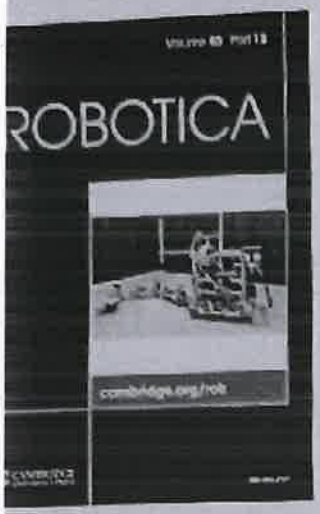

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Evolutionary Algorithms-Based Multi-Objective Optimal Mobile Robot Trajectory Planning

Published online by Cambridge University Press: 07 March 2019

V. Sathiya and M. Chinnadurai

Article Metrics

Get access

Summary

In this research study, trajectory planning of mobile robot is accomplished using two techniques, namely, a new variant of multi-objective differential evolution (heterogeneous multi-objective differential evolution) and popular elitist non-dominated sorting genetic algorithm (NSGA-II). For this research problem, a wheeled mobile robot with differential drive is considered. A practical, feasible and optimal trajectory between two locations in the presence of obstacles is determined through the proposed algorithms. A safer path is obtained by optimizing certain objectives (travel time and actuators effort) taking into account the limitations of mobile robot's geometric, kinematic and dynamic parameters. Robo motion is represented by a cubic NURBS trajectory curve. Th capability of the proposed optimization techniques is

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Optimization of the geometry of a charge plasma double-gate junctionless transistor for improved RF stability

Adhithan Pon, Aikaprava Bhattacharyya, B. Padmanaban & R. Ramesh

Journal of Computational Electronics 18, 906–917 (2019)

Abstract

The radiofrequency (RF) stability of a charge plasma double-gate junctionless transistor (DG-CPJLT) is reported based on the stability factor (K) obtained from the Y-parameters of the device. The impact of variation of geometrical parameters, voltage biases, temperature, and interface traps on the stability of the DG-CPJLT is studied. Based on the results, an optimized DG-CPJLT device is designed and its RF figures of merit obtained. S-parameter values are also computed to study the high-frequency behavior of the device. Moreover, parameters for evaluation of the linearity, such as the third-order transconductance coefficient (g_{m3}) and third-order voltage intercept point (VIP3), are

. It is found

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Optimised Domestic Load Scheduling for Power Management in Smart Grid

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***Abstract*—In the future era, revolution of smart grid in electric power sector plays a predominant role .The combination of new technologies and communication infrastructure in the electric power system makes the grid smarter. The vision of smarter markets, a key feature of smart grid is effectively achieved by Demand Side Response. Customer participation by actively reducing or shifting the loads from peak hours to non-peak hours with respect to the available power is done by DR schemes. Thus to obtain automatic scheduling of appliances artificial intelligence technique namely Genetic Algorithm is proposed in order to reduce the excessive wastage of power thus by using it efficiently in a smarter way in residential consumers.**

***Keywords*—Demand Response, genetic algorithm, Smart grid, Optimization**

I. INTODUCTION

Smart Grid is a new revolution in electrical power systems. It represents a technical challenge beyond the up gradation of information science. In the future era, these intelligent technologies will be inbuilt in the entire power system with the target of improving the reliability, security and efficiency [1]. Building intelligence in the present day electric grid invokes the need of various drivers with the combination of different infrastructure. The important aspect of the new grid system is to bring more electricity to meet the global demand. DSM forms the important beneficiary driver for smart grid systems [2]. The key goal is to allow the utility market provider to handle or manage the consumer loads. Deregulation in the electricity market has moved to the distribution of the integrated power system which combine generation, transmission and distribution. Electricity is the most extensively used energy among all forms and the demand is increasing universally day by day. Demand response (DR) plays a vital role in the HEMS. DR has great potential to help customers to reduce their economic costs by reduce their electricity usage during peak periods [3].For a sustainable world, smart grid provides better reliable and efficient power systems. Smart grid is an emerging grid system built with the combination of advanced communication infrastructure and information technology. For the prospective electrical scenario, the smart grid paves an excellent platform fulfilling the dominant electricity needs of the society like sustainability, efficiency and reliability.. With the demand of electricity growing every day, increasing the capacity to meet the demand over the next 30 years is a challenging task. This role by the utility is done by several ways by developing bill saving schemes or incentives for the user .In the case of residential customers , this is done by reducing peak to average ratio on the grid system. Moreover, DR is rather not a concept, but a tremendous solution for building interaction between the consumers and utility providers. There are various demand response schemes such as load shifting, valley filling techniques etc.. The design of an efficient DR method is a crucial component for HEMS development. The study of the DR method is an important issue and research on the DR method has received great interest. A review of optimization methods in DR programs has been presented [4]. DR optimization approaches can be classified by the nature of the objective and the system constraints. A traditional algorithm can provide efficient solutions when the optimization problems are linear or convex. An Integer Linear Programming method [5] and a Mixed Integer Programming method [6] have been used to minimize electricity use when it was formulated as a linear programming problem. Lagrangian algorithms [7], Lagrange-Newton, the interior point method and Lyapunov techniques can achieve good results when the optimization problems are formulated for convex optimization circumstances. However, the fore mentioned optimization methods may not be found to be feasible or the computational times may be too high when the problems entail non-convex programming, mixed integer linear programming.

Different approaches of DR like price based, incentive based are incorporated depending on the need of the consumers. DR exhibits the resilience in the usage of electricity to drift from a benchmark where the generators pursue the consumption to a model where the consumption follows the generation. DR benefits vary depending upon the outlook. The users gain from the bill savings and the knowledge of energy usage. For the future perspective of smart grid system, DR schemes play an integral part of smart grid system. Many challenging issues like customer participation model, developing decision making tools, moving from flat pricing to time varying dynamic pricing make demand response an efficient component in smart grid road map and not just a fad. In the growing electricity scenario, peak demand has been an important problem in both generation and transmission. Demand Side Management (DSM) exhibits a solution for matching demand and supply by different programs. Particularly, Demand Response schemes target to achieve peak load reduction by adapting different consumption habits with the users [8]. The main aspect of developing this energy efficient

OPTIMIZATION OF CUTTING PARAMETERS ON TURNING MULTIPHASE MEDIUM CARBON MICROALLOYED STEEL

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Abstract
This paper discusses the optimization of process parameters such as speed, feed and depth of cut while machining multiphase ferrite-bainite-martensite (F-B-M) Vanadium-microalloyed steel using Taguchi orthogonal array. The effect of process parameters on cutting force and surface roughness were studied and the analysis of variance (ANOVA) was also employed to identify the most significant parameter that influence cutting conditions. A regression model was also developed for prediction of cutting force and surface roughness. Confirmation tests were also conducted to validate the model.

Keywords: Multiphase microalloyed steel, optimization, taguchi, ANOVA

1 INTRODUCTION

Medium carbon microalloyed (MA) steels are cost effective in terms of processing as compared to quenched and tempered (Q&T) steels. MA steels are widely used in automotive components such as engine, crankshaft, connecting rods, etc. (Naylor, 1998).Two step cooling (TSC) procedure after forging followed by annealing was adopted to produce multiphase (ferrite-bainite-martensite) microstructures and the mechanical properties were analogous to those of Q&T steels (Sankaran, Sangal and Padmanabhan, 2005). However the machinability of such a high strength multiphase microalloyed steel has not been reported elsewhere, which motivated to study machinability aspects and to optimize the machining parameters.

Turned components are extensively used in critical automotive and aerospace applications and hence the turning process was selected to assess the effect of machining parameters on cutting forces. (Hasçal k and Çayda 2008) optimized the machining parameters on surface roughness and tool life for Ti-6Al-4V alloy and concluded that feed rate and cutting speed are most influential factors. The investigations on S45C steel bars showed that tool life and surface roughness are improved by applying taguchi technique (Yang and Tarng, 1998).The studies on the influence of cutting conditions on turning metal matrix composites shows that cutting velocity influenced more on tool wear than cutting time and feed rate (Davim,2003; Muthukrishnan et al,2008). It is also observed that feed rate influences more on surface roughness than cutting velocity and cutting time. Applying taguchi method to find optimum parameter for end milling of AISI D2 steels shows that cutting speed is the most influencing parameter than feed, depth of cut and width of cut (Gopalsamy et al., 2009).

Shetty et al., (2009) optimized the cutting parameters in turning of age hardened Al6061-15 vol. % SiC25 µm particle size with steam as coolant and it was found that steam pressure influenced more on surface roughness than tool wear, cutting force, feed force and thrust force. Pawade et al. (2007) studied the surface damage during

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Taguchi Optimization of Cutting Parameters for Surface Roughness and Material Removal Rate in Turning Operation

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ABSTRACT:- Every manufacturing industry aims at producing a large number of products within relatively lesser time. These days one of the most important machining processes in industries is turning. Turning is affected by many factors such as the cutting speed, feed rate, depth of cut and geometry of cutting tool etc., which are input parameters in this project work. The desired product of dimensional accuracy and less surface roughness is influenced by cutting force and tool vibration which are the responses and the functions of these input parameters. Experiment have been carried out based on L9 standard orthogonal array design with three process parameters namely Cutting Speed, Feed, Depth of Cut for surface roughness and Material removal rate (MRR). The signal to noise ratio and analysis of variance were employed to study the performance characteristics in turning operation. The data was compiled into MINITAB ® 17 for analysis. The relationship between the machining parameters and the response variables (surface roughness and MRR) were modeled and analyzed using the Taguchi method. Analysis of Variance (ANOVA) was used to investigate the significance of these parameters on the response variables, and to determine a regression equation for the response variables with the machining parameters as the independent variables, with the help of a quadratic model. Main effects and interaction plots from the ANOVA were obtained.

keywords: ANOVA, Taguchi Method, MRR.

INTRODUCTION

In the modern industry technology is advancing. For that engineers should be ready to achieve product of good surface finish, economic production, less wear of cutting tool with optimizing the use of resources. One of the most important manufacturing processes in mechanical engineering is metal cutting which is defined as metal removal of chips from job to achieve the desired product of appropriate shape, size and surface roughness [2]. In metal cutting most regularly used method is turning in which a single point cutting tool does metal removal by giving feed in a parallel direction to the axis of rotation. Turning can be done in an automated lathe machine which does not require more labor or frequent supervision by operator. The turning operation is a basic metal machining operation that is used widely in industries dealing with metal cutting. The selection of machining parameters for a turning operation is a very important task in order to accomplish high performance. By high performance, we mean good machinability, better surface finish, lesser rate of tool wear, higher material removal rate, faster rate of production etc.[1] The surface finish of a product is usually measured in terms of a parameter known as surface roughness. It is considered as an index of product quality. Better surface finish can bring about improved strength properties such as resistance to corrosion, resistance to temperature, and higher fatigue life of the machined surface. In addition to strength properties, surface finish can affect the functional behavior of machined parts too, as in friction, light reflective properties, heat transmission, ability of distributing and holding a lubricant etc.

Surface finish also affects production costs. For the aforesaid reasons, the minimization of the surface roughness is essential which in turn can be achieved by optimizing some of the cutting parameters. Tool wear is an inherent phenomenon in every traditional cutting operation. Researchers strive towards elimination or minimization of tool wear as tool wear affects product quality as well as production costs. In order to improve tool life, extensive studies on the tool wear characteristics have to be conducted. Some of the factors that affect tool wear and surface roughness are machining parameters like cutting speed, feed, depth of cut etc., tool material and its properties, work material and its properties and tool geometry. Minimal changes in the above mentioned factors may bring about significant changes in the product quality and tool life .In order to achieve desired results, optimization is needed. Optimization is the science of getting most excellent results subjected to several resource constraints. In the present world scenario, optimization is of utmost importance for organizations and researchers to meet the growing demand for improved product quality along with lesser production costs and faster rates of production. Statistical design of experiments

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Experimental study on aluminium based sandwich composite with polypropylene foam sheet

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Abstract

Sandwich structures have been widely employed to build lightweight components having good mechanical properties and energy absorbing capacity. Aluminum-foam sandwich structures have been increasingly used in a wide range of applications. This work aims in improving the strength and mechanical properties of aluminum materials by the inclusion of polypropylene foam sheets. This paper studies the various characteristics of the Aluminum/PP/Aluminum sandwich composite which is made by compressive moulding. Tensile test, bending test and microhardness tests were carried out to investigate the characteristics of the sandwich composite. Thermal analysis of sandwich composite is carried out and is compared with aluminium panel.

Selection and peer-review under responsibility of the scientific committee of the International Conference on Advances in Materials and Manufacturing Applications, IConAMMA 2018.

Keywords:Sandwich structures;Polypropylene foam sheets; Compressive Moulding; Tensile test; Bending test; Thermal Analysis.

1. Introduction

Composite materials are formed by the combination of two or more materials which have different properties. Composite materials have enhanced properties when compared to other conventional materials. Due to their enhanced properties, they are preferred for a wide range of applications. Sandwich composites primarily have two components namely, skin and core. Vamja, Dipak et al., [1] have carried out finite element analysis and

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INTELLIGENT AND DEEP LEARNING APPROCH OT MEASURE E-LEARNING CONTENT IN ONLINE DISTANCE EDUCATION

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ABSTRACT
The development of IT and ITeS today the world moves to access resource anywhere and anyplace with the power of Internet. The usage of online resource and self learning is to enable the learners' community to access intelligent based system. The support of internet and mobile learning platforms the technological teaching aids like digital learning, videos, playback lectures, animations, asynchronous discussion and social media are playing vital role in self learning. This paper provides the intelligent and deep learning processes are involved to analysis the usage of Open Source Learning, Mobile learning and Distance Learning. This research involves the use of face-to-face online lectures and online discussion boards problems. Accessing video or learning contents by using smart phones or any other agents, this analysis report provide clear idea about learning perceptive and usage perceptive. Each lecture task includes knowledge, skill, competency and expertise. This paper describes the model of intelligent and deep learns process is involved in Self learning systems.
Keywords: Self Learning, Mobile Learning, Online Resources, Deep Learning, Intelligent systems, Distance Learning

INTRODUCTION

The Open and Online Education system was introduced and developed University of Colorado in 1980. Now the involvement of technological growth and improvement of mobile computing more number of self learning and E-learning system are developed. Nowadays in India AICTE and UGC are designed new model curriculums with the importance of self learning systems. IITs are developed NPTEL, Spoken Tutorials and Online Certification courses for teachers and students. eDx and Solo learners are played important in distance based learning. The importance of online resource accessing and strength of interactive learning approaches are taking shift from formal, classroom teaching to informal and interactive distance based learning.

The growth and advancement of technology in wireless and mobile communication like 4G, Wi-Fi, ZigBee, Smart Phones and Android comes to the picture. Open cast recorded lectures are developed to the learners' community but the problem is external noise, conversion problem and platform dependent failures. Free and Open source software came to picture and we can access from any platforms, redistribution, without any restrictions access and free of cost. The Linux based OS are used in online resource access and learning systems. The intelligent systems are developed by the use of open source platforms.

The social media and web services are important for accessing database, perception, comments, attitude and expression. There is no separate platform or tool for monitoring perception and actuating systems. Because as per the survey of self learning and online learning portals most of users are ideally sitting and playing videos. So we have intelligent and deep learn mechanism to monitor the process. The open task systems are developed for finding usages, top stories, trend analysis, etc. The main problem faced by learners they are interested to use open source software but the commercial software and UI based platforms are user friendly. So we are depending with that the basic level of understanding and usage also need to monitor. This form of interactive access is more benefits for users, learners and educators. They can easily use, access, comments and monitor the whole process. This paper describes following sections, Section-II enables various related works about distance

EASE AND SECURE LEAVE MANAGEMENT SYSTEM IN CLOUD COMPUTING ENVIRONMENT

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ABSTRACT

Provisions on availing different categories of leaves are important in any type of organization in this world of information technology. Providing a system on the internet intended to solve the leave problems of the employees in an organization is inevitable now a days. This system assumes that the level of authority in organizations follows a tree structure. An employee is viewed as internal node of a tree in an organization and involves in two roles, one as a supervisor and another as a supervisee. The supervisee is viewed as leaf node of a tree. Some employees only are able to act as supervisee. Through this system the employee can apply leave to his respective supervisor i.e. to the parent node of an supervisee node. The supervisor is able to check and approve the leave of his supervisees. The major features include this system is independent of any operating syetem so that any computer system with a browser and internet connection is sufficient for the operation of this system, ease to use and afterall, enhanced security features. An employee is propely authenticated before allowed to enter into this system. There is an admin other than is responsible for adding and removing employees from an organization i.e. adding and removing nodes from a tree. This system is planned to be implemented in a cloud environment. The results show that this system is implemented and used in ease manner and enhanced authentication and approval of leave process is achieved.

Keywords: easy-leaves, leave system, MVC pattern, supervisor, supervisee

1. INTRODUCTION

Easy-leaves is a user-friendly online system. The main motto of Easy-leaves is to help employees to manage the leaves easily. The easy-leaves includes admin login and employee login. Once the employee is logged in, he can apply leave, view the leave status, cancel the leave, view leave history, view and manage the leaves of his supervisees, check the leave history of his supervisees. Once the admin of the organisation is logged in, he can add the new employee to the organisation. He can manage the employees in the organisation. The login system is same for both employee and admin. Only the users that are logged in can make changes to the data in the database. The interface is more user-friendly. The project has been developed from node.JS as server language and mongo DB as database.

2. LITERATURE SURVEY

In this work the authors use the idea of brainstorming to come up with an idea of managing leaves easily. The main aim of this idea is to develop an eazy leave management portal that is of important to an organization (Vikrant Kumar Kaushik et al., 2017). NoSQL stands for Not only SQL. These are the set of database management systems that are emerged to overcome the limitations of traditional relational database management systems. these Database systems are Schema-less. Which makes them much faster in doing the CRUD

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STANDARD FACE RECOGNITION TECHNIQUES

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ABSTRACT

Face recognition is one the most trending technologies which is used everywhere in the present world. It involves the scanned part of our body parts which are unique to everyone and are stored in a database which makes hackers impossible to steal passwords or any personal information.It has a lot many advantages and helps a lot to scientists, political parties to protect their private party matters from stealing by the other parties or the hackers. Face recognition involves a lot of coding and it even requires mathematical knowledge to retrieve one's information. Mathematics topics like eigen vectors and integration is used to retrieve data, since these eigen values and integration take the lengths of the body parts computer interaction. Now that face recognition makes hackers impossible to steal someone's passwords and hack their belongings that have to be safe guarded. Face recognition is useful for people like- journalists, political parties to ensure their data is safe and to protect their data from stealing by other political parties or by the stealers. Our topic is face recognition which one of the most used technology in our daily lives. It involves scanning of face and get the points on the face which is unique for everyone and it get the points using mathematics topics like eigen vectors and integration. It also involves python language and matlab language. Matlab is used to get the mathematical values and python is general coding language which is used in biometrics and it is also used in artificial intelligence and machine learning. Python has inbuilt libraries which we make use of them and get the face values. All these faces are stored in databases and whenever we keep a live face it recognizes the face of the person which is already present in the database. Even face recognition is used in the data security and high security labs where only limited people have access to control over the labs. So face recognition is even used there to ensure high security to the companies. Almost all the software companies, educational institutions have these face recognition technology to ensure the fraud or make their more comfortable.And now in our project we look this complex process will happen in simpler terms.

Keywords: face recognition, face detection, python, matlab, database

1. INTRODUCTION

Now a days face recognition is growing rapidly. So many people are researching on it. We need to have some extra knowledge to know about it. We should know about the face highlights and geometric invariants. It depends on the face revolution and distortion. We even have some advantages too and disadvantages but one of the most peculiar disadvantage is there is less solid invariants.

Face detection involves the 2 step procedure: 1 containing the faces. It is hard to find the faces so the first step involved in face recognition technology is to get or capture the face. There are different problems while capturing the face such as light, background, quality and many more. So we need to have an ideal face detector which detect any face at any point of time. After getting the input using face detector we can get the output in 2 ways one way is keeping all the images in the folder as an input and when we scan the face then it will say if the given image is present or not, if the given image is present

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GROUP KEY MANAGEMENT SCHEMES IN DISTRIBUTED COMMUNICATION ENVIRONNMENT

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Abstract: Distributed group communication is the most optimistic approach to provide a secure group communication in many emerging network applications such as peer to peer communication, Skype, Facebook, Whatsapp, PAY-TV, Video conferencing, E-mail, Twitter and online network games. Because, in distributed group communication the data are sent from any one of the group members to the remaining group members and also there is no centralized coordinator in the distributed group communication and hence it would take more computational complexity. Moreover, in distributed group communication, the users themselves generate and distribute the necessary keys to maintain the secrecy and group membership. Hence, providing security with less computation complexity is a challenging task in distributed group communication. In this paper, a detailed survey has been done towards various distributed group communication and also comparative performance analysis has been done for all the approaches. In order to do that, we have considered various parameters such as computation complexity, communication complexity and storage complexity of both the user and the server during key generation, key distribution and key updation process. Moreover, in this paper we have also included various security challenges that need to be solved to make the distributed group communication more secure. Finally, we have also given a solution to improve the various parameters in order to increase the security and performance of the distributed communication performed in various applications.

Keywords: Distributed Group Communication, Authentication, Availability, Integrity, Non-repudiation.

1. INTRODUCTION

Today many people are participating in distributed group communication performed in variety of applications. The growth of the number of many real time network group applications results in increasing security issues and minimizing the computation complexity of the distributed group key management for a dynamic secure group communication is a challenging task. This is because, in a distributed network, each user in the network can act as a client or server of the same network to provide shared and common access to the various resources without using a key server. Moreover, in distributed network, all the tasks will be divided among the users involved in the network. Hence, it will provide effective communication and more coordination among the users efficiently.

Figure 1 shows the centralized group key management scheme where only one user act as a sponsor user/key server which maintains the information about the participating users and also manages the entire system and the remaining users acts as participating users. In this scheme, a key server alone is responsible for generate, distribute and update the keys to the participation group users. The major challenges of a centralized group

Prevention of SQL Injection and Penetrating Attacks

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ABSTRACT *- In recent times hacking attacks is a very common and huge issue all over the world. Many large MNC's like Google, Apple, Microsoft etc. are investing millions of dollars to stop these types of Hacking and penetration attacks. Among these attacks SQL injection attack is considered as a very serious problem. It results in a very serious security related issues in web applications which handle information like personal bank details, account details, passwords to various accounts and other important data. In order to hack, the hackers are coming up with various new approaches.Researchers and web or cyber security analysts have proposed many methods to prevent these attacks by SQL injection. However, these attacks are on move and leads to vulnerabilities. Only a few techniques those take the advantage of these SQL vulnerabilities are known by the researchers. Hence, the solutions available so far solve only a few SQL related injections. This paper uncoversthis problem to the research community by means of a chronological review of various SQL injection attacks. We analyse the best ways to protect ourselves from these attacks. We have used an intentionally vulnerable site to demonstrate and understand the various types of SQL injections. We have also analysedand presented the various existing detection and prevention techniques against the SQL injection attacks.*

Keywords: *Injection, Attacker, Vulnerability, SQL Query, Prevention.*

I. Introduction

An SQL injection attack typically means inoculation of a malicious SQL query as input by an attacker to the application. Then,aneffective SQL injection can lead to vulnerable attack and makes the attacker to read and modify the sensitive data in the database. It also executes the administrative operations on the database. In some cases, attackers inject different commands to operating system to gain access. SQL attacks are type of the injection attacks where the malicious SQL commands are inserted into the input data to result the implementation of the predefined SQL commands.

A. Types of sql injection attacks

- First order attack: Here the attacker through inputting a string of harmful data can modify the code which is to be executed.
- Second order attack: In this attack the attacker injects or penetrates into the storage data in the form of a trusted Source.
- Third order attack: In this attack the attacker is able to alter the implied function to char() by varying the data corresponds to the environment variables, NLS_Date_Format or NLS_Numeric_Characters.

B. Threat modelling

Tampering of the data, spoofing the identity of the person, changing the account balances, changing the passwords related to various web pages etc. can be done with the help of sql injection attack. The total disclosure of all the sensitive information on the database to the open public is allowed by these attacks. It leads to destruction of the important information and it elevates the privileges to become the administrator of the database server. The SQL injection attacks are very severe problematic based on the attacker's knowledge and techniques on the basic syntax, defence in depth counter measures like the low priority connections to the database server etc. In reality, considering SQL injection leads to severe problem.

C. Blind SQL injection

Here, the attacker instructs the database on several questions which have true or false as the answer. After each input is sent, there will be a response saying what exactly is processing inside the system. This attack is used whenever the web application is allowed to show a default error messages like there is no database available, user id not matched,password typed is wrong and also have not updated their databases and software in very long timewith these patches are vulnerable to SQL injection. When a hacker penetrates or attacks SQL injection, then by default the web server screens an incorrect message from the database saying the typed syntax for the SQL queries is invalid. The blind SQL injection is very same as that of the normal SQL injection attack but the only difference here is that how the data is fetched

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Research Article

CRITICALITY-AWARE PARTITIONED TASK SCHEDULING WITH LIMITED MIGRATORY ON MULTICORE PLATFORMS

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Key words: Mixed-criticality, Multicore processor, Task scheduling, Schedulability, Sporadic task

ABSTRACT

Mixed-critical (MC) systems, in which different functionalities of varying criticality levels may consolidate on a shared embedded platform, are an active area of research in safety-related environments. With the proliferation of MC system, the multicore processor is becoming the obvious design choice in current and future safety-critical domains. The real-time scheduling of certifiable MC systems on a multicore platform has been recognized as a great challenging issue, where using conventional scheduling algorithms may cause significant under-utilization of the platform's resources. In this work, we address this important dispute by proposing an effective optimal partitioning approach, the Criticality-aware Partitioned Algorithm (CaPA), that enables a limited number of migration of low-criticality workloads to improve the effectiveness of the schedulability by integrating the potential benefits of partitioned scheduling approaches. The results from extensive simulation under different situations demonstrate that CaPA always significantly outperforms existing MC partitioning heuristics in terms of acceptance ratios.

INTRODUCTION

The recent advances in CMOS scaling down technology enable processor manufacturers to fabricate more computational elements (cores) on a single-chip to realize high performance and reliability at low-cost. The implementation of multicore processors for an MC system will be pressurized by the ever-increasing demand for processing power, development cost, and by SWaP (Size, Weight, and Power) requirements. This has resulted in the integration of multiple tasks with varying criticalities onto a common platform. Regrettably, such consolidation may cause asymmetric inter-task interference effects (i.e., schedule disruptions) between various criticality levels that in turn results in poor processor utilization. In order to authenticate the timing correctness of system components on the different levels of rigorousness, MC systems are subject to certifications.

A criticality level is defined as a degree of guarantee required against failure. A higher criticality level assigned to a task reveals that the higher degree of guarantee is required about the correctness of the task (workload). For validating the correctness of safety domain on each criticality level, their workloads are subject to certification requirements by different Certification Authorities (CAs). To validate the correctness of system behavior, such authorities often mandate conservative assumptions about the worst-case execution of the applications; these assumptions are usually far more pessimistic than the assumptions that the system manufacturer would use during all the phases of designing, implementing, and testing. Nevertheless, while CA is only involved in validating the safety-related applications of the system the system architect is responsible for guaranteeing that the whole system is correct, including the non-critical parts.

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Web Enabled Data Warehouse Answer With Application

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Abstract: This project proposes a method to evaluate data reliability from meta information. Several criteria are used, each one providing a piece of information about data reliability. These pieces are then aggregated into a global assessment that is sent back, after proper post-treatment, to the end user. We propose a generic method to assess data reliability from a set of criteria using the theory of belief functions. Customizable criteria and insightful decisions are provided. The chosen illustrative example comes from real-world data issued from the data warehouse.

Introduction

Estimating data reliability is a major issue for many scientists, as these data are used in further inferences. During collection, data reliability is mostly ensured by measurement device calibration, by adapted experimental design and by statistical repetition. However, full traceability is no longer ensured when data are reused at a later time by other scientists. If a validated physical model exists and data values fall within the range of the model validated domain, then data reliability can be assessed by comparing data to the model predictions. However, such models are not always available and data reliability must then be estimated by other means. This estimation is especially important in areas where data are scarce and difficult to obtain (e.g., for economical or technical reasons), as it is the case, for example, in Life Sciences. The growth of the web and the emergence of dedicated data warehouses offer great opportunities to collect additional data, be it to build models or to make decisions. The reliability of these data depends on many different aspects and meta information: data source, experimental protocol. Developing generic tools to evaluate this reliability represents a true challenge for the proper use of distributed data.

Existing System

In classical statistical procedures, a preprocessing step is generally done to remove outliers. In procedures using web facilities and data warehouses, this step is often omitted, implicit or simplistic. There are also very few works that propose asolution to evaluate data reliability. It is nevertheless close to other notions that have received more attention. In evidence theory, methods to evaluate reliability consist in choosing reliability scores that minimize an error function. In spirit, the approach is similar to the comparison of source assessments with reference values (as done to evaluate experts in probabilistic or possibility methods). Other approaches rely on the analysis of conflict between source information, assuming that a source is more reliable when it agrees with the others.

Disadvantages

Poorly reliable when partitioning is done.
No influence on the reliability.

Proposed System

The method to evaluate data reliability from meta information. Several criteria are used, each one providing a piece of information about data reliability. These pieces are then aggregated into a global assessment that is sent back, after proper post-treatment, to the end user. A model information by the means of evidence theory, for its capacity to model uncertainty and for its richness in fusion operators. Each criterion value is related to a reliability assessment by the means of fuzzy sets later transformed in basic belief assignments, for the use of fuzzy sets facilitates expert elicitation. Finally, interval-valued evaluations based on lower and upper expectation notions are used to numerically summarize the results, for their capacity to reflect the imprecision (through interval width) in the final knowledge.

Advantage

Easier to integrate in a data warehouse.
Reliable expert opinions and fuzzy.

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Recent Trends in Information Technology and its Application

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Secure Hashing Algorithm for Third Party Auditing in Cloud Environment

K. Raju, M. Chinnadurai

Abstract

Cloud computing is the platform of next generation can efficiently provide services to service providers and provide massive storage capabilities. Virtual machine also play a vital role by providing environment to application developers security is one of the constraints for companies to use cloud computing fully. TPA (Third Party Auditing) become very important in cloud .Auditor work with the issues such that trust and processing overhead a) Archive good auditing without requiring the data storage area b) Avoid injecting new malicious code during the auditing work. In this paper we provide a security algorithm to protect the data so introduce the new scheme which involves cloud server. TPA and Owner integrity of data verify by TPA. Auditing scheme involves cryptographic algorithm is SHA. Sensitive data may get exposed to unauthorized parties. If security isn't robust and consistent, benefits that cloud computing have to provide will have little believeability.SHA algorithm for the security purpose on the cloud environment.