

Number of research papers per teacher in the Journals notified on UGC website during the last five years

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISBN/ISSN number	Link of the recognition in UGC enlistment of the Journal
Discrete Wavelet Transform Based on Coextensive Distributive Computation on FPGA	Jose Alex Mathew, Sowmya K B	Electrical and Electronics Engineering	Materials Today: Proceedings 5 (2018) 10860-10866	2018	2214-7853	https://www.ugc.ac.in/journallist/subjectwisejurnallist.aspx?tid=TWf0ZXJpYWxzIFRvZGF5OibQcm9jZWVkaW5ncw==&did=Q3VycmVudCBUaXRsZXM=
Cycle by cycle variations of LPG-gasoline dual fuel on a multi-cylinder MPFI gasoline engine	Nayak Vighnesha K. S. Shankar P. Dinesha & P. Mohanan	Mechanical Engineering	Biofuels	2017	1759-7269	https://www.ugc.ac.in/journallist/subjectwisejurnallist.aspx?tid=MTc1OTcyNjk=&did=U2VhcmNoIGJ5IElTU04=
Comparative study on tensile behaviour of E-glass fibre reinforced with epoxy composites	Lokesh K S, Thomas Pinto, Arjun Kumar, Chetan G, Pranav S, Prathibha	Mechanical Engineering	International Journal of Engineering Sciences and research technology	2017	2277-9655	https://www.ugc.ac.in/journallist/4305_Journals.pdf
Production and characterisation of As cast and heat treated Al 2024/SiC/Gr hybrid metal matrix composites	Naveen C R Dr. Thomas Pinto, Ranganath Y H	Mechanical Engineering	International Journal of Engineering Sciences and research technology	2017	2277-9655	https://www.ugc.ac.in/journallist/4305_Journals.pdf
EDS Analysis and mechanical testing of Alumina and graphitet particulate aluminium metal matrix composite	Naveen C R, Thomas Pinto, Kiran Holla	Mechanical Engineering	Global Journal of Engineering Science and Researches	2017	2348 – 8034	https://www.ugc.ac.in/journallist/4305_Journals.pdf


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Synthesis and characterization of silver nanoparticles from Penicillium sps	Mr. Shareefraju J. Ukkund	Nano Technology	Elsevier Materials Today Proceedings	2017	ISSN 2214 - 7853	https://www.ugc.ac.in/journallist/subjectwisejurnallist.aspx?tid=MjlxNDc4NTM=&did=U2VhcmNoIGJ5IEITU04=
Preparation and characterization of Electroless Ni-P-W coated Nano Cenosphere/ABS composite for EMI shielding application	Mr. Naveen Kumar J. R.	Nano Technology	Elsevier Materials Today Proceedings	2017	ISSN 2214 - 7853	https://www.ugc.ac.in/journallist/subjectwisejurnallist.aspx?tid=MjlxNDc4NTM=&did=U2VhcmNoIGJ5IEITU04=
Structural Design of Wing for Aerobatic light sport aircraft	Pavana k	Aeronatical Engineering	International Journal of Emerging Technology and Advanced Engineering	2017	2250-2459	https://www.ugc.ac.in/journallist/4305_Journals.pdf
Inactive Method of Noncausal 2D Image Splice Recognition Model using Markov Model	Manjesh R	Computer Science and Engineering	International Journal of Computer Sciences and Engineering (IJCSE), Vol No.4, Special Issue No.3	2016	ISSN:2347-2693	https://www.ugc.ac.in/journallist/subjectwisejurnallist.aspx?tid=MjM0NzI2OTM=&did=U2VhcmNoIGJ5IEITU04=
An experimental investigation on performance and emission parameters of a multicylinder SI engine with gasoline-LPG dual fuel mode of operation	Vighnesha Nayak K. S. Shankar P. Dinesha P. Mohanana	Mechanical Engineering	Biofuels	2016	1759-7269	https://www.ugc.ac.in/journallist/subjectwisejurnallist.aspx?tid=MTc1OTcyNjk=&did=U2VhcmNoIGJ5IEITU04=


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Influence of injector nozzle hole number and size on the performance of a supercharged direct injection diesel engine	Ravinarayana Bhat N.	Mechanical Engineering	NMAMIT annual research journal	2016	2249-0426	https://www.ugc.ac.in/journallist/4305_Journals.pdf
Spectrophotometric determination of Chromium by using Sulphanilic acid and N,N-dimethylaniline	Dr.Gopalakrishna Bhat .N, Dr.Chandrashekhara K.G.	CHEMISTRY	INDIAN JOURNAL OF CHEMICAL TECHNOLOGY	2015	0971457X,E-ISSN-09750991	https://www.ugc.ac.in/journallist/subjectwisejurnallist.aspx?tid=SU5ESUFOIEpPVVJOQUwgT0YgQ0hFTUIDQUwgVEVDSE5PTE9HWQ==&did=Q3VycmVudCBUaXRzZXM=
Selective complexometric determination of Palladium by using L-Cystine as releasing agent,	Dr.Chandrashekhara K.G., Dr.Gopalakrishna Bhat .N	CHEMISTRY	ASIAN JOURNAL OF CHEMISTRY	2015	9707077	https://www.ugc.ac.in/journallist/subjectwisejurnallist.aspx?tid=QVNJQU4gSk9vUk5BTCBPriBDSEVNSVNUUIk=&did=Q3VycmVudCBUaXRzZXM=
Emerging dimensions of sustainability in institutes of higher education in India, A case study	DR.SHAILA BANTANUR	ARCHITECTURE	International Journal of Sustainable Built Environment. Elsevier Publication	2015	2212-6090	https://www.ugc.ac.in/journallist/subjectwisejurnallist.aspx?tid=MjlxMjYwOTA=&did=U2VhcmNoIGJ5IElTU04=
Sustainability; Perceptions in a Technological Institution of Higher Education in India	DR.SHAILA BANTANUR	ARCHITECTURE	Journal of Current Science	2015	011-3891	https://www.ugc.ac.in/journallist/subjectwisejurnallist.aspx?tid=Sm91cm5hbCBvZiBDdXJyZW50IFNjaWVuY2U=&did=Q3VycmVudCBUaXRzZXM=



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Experimental Investigation on Elastic Properties of Concrete Incorporating GGBFS	SANDYA D.S.	CIVIL	International Journal for Research in Applied Science and Engineering Technology	2015	2321-9653	https://www.ugc.ac.in/journallist/4305_Journals.pdf
The Effect of Sonication Time on Alumina Nanofluids with Paradoxical Behavior	Yashwantha K M , Ramis M K, Jawaz Pasha	Marine Engg	A Journal of Nanotechnology and Its Applications	2015	ISSN: 0973-418X	https://www.ugc.ac.in/journallist/4305_Journals.pdf
Changing Landscape of E-Commerce-An Effective Sales strategy In Marketing	Veena Santhosh Rai, Mallika	MBA	International Journals of Management, IT & Engineering	2015	ISSN No-22490558	https://www.ugc.ac.in/journallist/subjectwisejournallist.aspx?tid=Mjl00TA1NTg=&did=U2VhcmNoIGJ5IEITU04=
Sparse Representation In Active Learning Methods For Remote Sensing Image Classification –A Survey	Shivakumar G.S	Computer Science and Engineering	International Journal of Applied Engineering Research (IJAER), Vol 10,No:3	2015	ISSN:0973-4562.	https://www.ugc.ac.in/journallist/subjectwisejournallist.aspx?tid=MDk3MzQ1Njl=&did=U2VhcmNoIGJ5IEITU04=
Indirect complexometric determination of Manganese(II) using tartaric acid as a masking agent	Dr.Gopalakrishna Bhat N, Dr.Chandrashekhara K.G.	CHEMISTRY	JOURNAL OF THE INDIAN CHEMICAL SOCIETY	2014	194522	https://www.ugc.ac.in/journallist/subjectwisejournallist.aspx?tid=Sk9VUk5BTCBPRiBUSEUgSU5ESUFOIENIRU1JQ0FMIFNPQ0IFVfK=&did=Q3VycmVudCBUaXRzZXM=
The Marginalized Voices: Towards Creating Counter Images	Mallya, Ambika G and Shashikantha K	MBA	Asian Quarterly-An International Journal of Contemporary Issues,	2014	ISSN 2229-581X	https://www.ugc.ac.in/journallist/subjectwisejournallist.aspx?tid=MjlyOTU4MVG=&did=U2VhcmNoIGJ5IEITU04=

"A Comparative study of active learning techniques for classification of remote sensing images "	Mr. Janardhana Bhat k, Mr. Venugopala P S	ISE	International journal of Emerging technology and Advanced Engineering	2014	ISSN 2250-2459, ISO 9001:2008	https://www.ugc.ac.in/journallist/4305_Journals.pdf
"Smart Message communication for warrior"	Mr . Atmaranjan K	ISE	International Journal of Computational Engineering Research	2013	ISSN 2250-3005	https://www.ugc.ac.in/journallist/subjectwisejournallist.aspx?tid=Mjl1MDMwMDU=&did=U2VhcmNoIGJ5IEITU04=
An efficient genetic algorithm based system for network intrusion detection	Shivakumar G.S	Computer Science and Engineering	International Journal of Advances in Managemnt, Technology & Engineering Sciences	2013	ISSN:2249-7455	https://www.ugc.ac.in/journallist/subjectwisejournallist.aspx?tid=Mjl0OTc0NTU=&did=U2VhcmNoIGJ5IEITU04=


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ILAFM2016

Discrete Wavelet Transform Based on Coextensive Distributive Computation on FPGA

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Abstract

Subband coding has recently emerged as the leading standardization candidate in audio/video/image compression, echo cancellation, radar, image analysis, communications, medical imaging etc. Due to this, Discrete Wavelet Transform has gained much attention in memory efficient technique for handling large amounts of data. The implicit overlapping and variable-length basis functions from wavelets produce smoother and more pleasant reconstructions. Data compression, bit rate reduction is done by implementing memory efficient Discrete Wavelet Transform based on Coextensive Distributive Computation on FPGA. In this work Low complexity DWT Architecture which utilizes the Look-Up Table, using Shift register FPGA structure is developed to develop a filter bank without multiplier which is the important components in a DWT structure. This results in better space usage and reduction in the area size. Filter bank construction is done using DB-4 Daubechies 9/7 wavelets. This paper presents a consistent performance, good operating speed and area efficient DWT processor along with best utilization of resources available on target FPGA. The proposed Discrete Wavelet Transform System is implemented on Xilinx xc2vp30-7-ff896 Field Programmable Gate Array with highest operating frequency of 141.055MHz.

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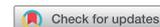
Keywords: Discrete Wavelet Transform(DWT); Look Up Table(LUT);Field Programmable Gate Arrays(FPGA);

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Cycle by cycle variations of LPG-gasoline dual fuel on a multi-cylinder MPFI gasoline engine

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ABSTRACT

Combustion stability of a multipoint port fuel injection spark ignition engine working on liquefied petroleum gas (LPG)-gasoline dual fuel mode of operation was analysed. LPG-gasoline ratio was varied from 0 to 100% by controlling the injector signals at wide open throttle condition and 3000 RPM. Increasing LPG ratio will give higher peak pressure and higher indicated mean effective pressure (IMEP) because of the higher flame propagation speed of LPG. The experiment showed that maximum pressure will occur nearer to top dead centre when compared to gasoline. Fluctuation in maximum pressure is higher for LPG and is minimum for 50% LPG. Time return map showed that combustion instability will be more for 100% LPG and is less for 50% LPG. Coefficient of variation of IMEP and maximum pressure for gasoline is higher than LPG. With 100% LPG, NO_x emission is almost three times that of gasoline. Hence it can be concluded that 50% LPG will give the better combustion characteristics when compared to other fuel blends.

ARTICLE HISTORY

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KEYWORDS

LPG; gasoline; NO_x; combustion; coefficient of variation

Abbreviations

MPFI	Multipoint Port Fuel Injection
SI	Spark Ignition
LPG	Liquefied Petroleum Gas
IMEP	Indicated Mean Effective Pressure
TDC	Top Dead Centre
COV	Coefficient of Variation
CA	Crank Angle
NO _x	Oxides of Nitrogen
ECU	Electronic control unit
NI	National instrument
AFR	Air-fuel ratio
CFD	Computational fluid dynamics
EGR	Exhaust gas recirculation

Introduction

The increasing cost of liquid hydrocarbons accompanied by the stringent rules and regulations regarding exhaust emissions has stimulated interest in alternative fuels for automotive engines. However, the selection of an alternative fuel is not the end of the task. The selected fuel has to be exploited to its best capacity to serve the task for which it was chosen. Fuel consumption and heat loss are related; by reducing the amount of heat lost to the surroundings the fuel consumption can be improved [1]. The introduction of alternative fuels is beneficial to help alleviate fuel shortage and reduce engine exhaust emissions. Liquefied petroleum

gas (LPG), as a relatively clean fuel, is considered one of the most promising alternative automotive fuels worldwide because of its emission reduction potential and lower fuel price compared to gasoline [2].

Since the invention of the engine there has been a fundamental problem: the cycle to cycle variation. This limits engine performance and gives rise to increased emissions. The combustion process in a spark ignition engine is not repetitive from engine cycle to engine cycle. This can easily be noted if the pressure trace in the cylinder is measured. The peak pressure obtained can change 30% from cycle to cycle in a well-functioning engine [3]. In general, combustion in a spark ignition engine can be expected to fluctuate during the entire flame propagation process. The fuel and residual gases are generally not well mixed with air and hence the laminar flame speed will differ depending on location and time. The same argument can be used for the flow situation. The level of turbulence cannot be expected to be homogeneous and the mean flow situation will also change from cycle to cycle and from location to location. Even though fluctuations are expected for large flames, these flames will have the benefit of integrating out in homogeneity in the fuel, residual and flow fields. The very small flame in the early part of combustion does not have this possibility to average out the flame speed setting parameters. Thus, this part of combustion is expected to have the greatest problem with cycle to cycle variation [4].

**INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH
TECHNOLOGY****COMPARATIVE STUDY ON TENSILE BEHAVIOUR OF E-GLASS (WOVEN &
CHOPPED) FIBRE REINFORCED WITH EPOXY COMPOSITES****Lokesh K.S^{*1}, Dr.Thomas Pinto², Arjun Kumar³, Chetan.G⁴, Pranav.S⁵ & Prathibha⁶**^{*1}Assistant Professor, Department of Mechanical Engineering, Srinivas Institute of Technology,
Valachil, Mangaluru, Karnataka, India-574143²Professor, Department of Mechanical Engineering, Srinivas Institute of Technology, Valachil,
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Mangaluru, Karnataka, India-574143**ABSTRACT**

Composite materials play a vital role in many industrial applications. Researchers are working on fabrication of new composite materials worldwide to enhance the applicability of these materials. In view of this, the objective of the present work is to analyse the effect of varying thickness on the mechanical behaviour of chopped strand mat E-glass fiber, woven E-glass fiber reinforced in epoxy matrix. Three different thicknesses (3mm, 6mm, and 9mm) of composites are fabricated using fiber, epoxy resin and hardener. The epoxy resin and hardener are mixed in 10:1 weight ratio. The results of the study show that the varying of thickness has decrease tensile strength and also decrease the effect on the mechanical behaviour of composites.

Keywords: GFRP, woven fibre, chopped fibre, tensile behavior.

INTRODUCTION

A composite material is made by combining two or more dissimilar materials. They are combined in such a way that the resulting composite materials possess superior properties, which are not obtainable with a single constituent material [1]. The most common synthetic composite material is glass fibre reinforced plastics (GFRP) which is made out of plastics and glass fibre [1, 2]. Since then, there has been tremendous development in terms of new reinforcement materials, matrix materials and production methods. Fibre reinforced plastics (FRP), particular glass fibre reinforced Plastics are meeting the demanding techno-economic requirements of various industries as can be seen [1].The individual components have altogether different properties to that of the composite material, GFRP. Plastics are light, durable, have excellent corrosion resistance and can be easily moulded to any complex shape. But they are not fit for load-bearing applications because of lack of strength, stiffness and dimensional stability. Glass fibre, on the other hand, possesses very high strength and is sufficiently stiff and durable. Like plastics, it also cannot be used for loadbearing applications because of its brittleness and fibrous structure. But when both of these are combined in the correct proportions and a particular glass fibre arrangement, we obtain GFRP which has the improved mechanical and other properties suitable for loadbearing applications [1, 2-4].

MATERIALS AND METHOD**A. Fabrication of E-glass epoxy composites**

The main materials used are, Epoxy resin (araldite GY250), Glass fiber (360 gsm woven & 200 gsm chopped). Epoxy is the cured end product of epoxy resins, as well as a colloquial name for the epoxide functional group. Epoxy resins, also known as polyepoxides are a class of reactive prepolymers and polymers which contain epoxide groups. Epoxy resins may be reacted either with themselves through catalytic homopolymerisation, or with a wide range of co-reactants including polyfunctional amines, acids. These co reactants are often referred to as hardeners or curatives, and the cross-linking reaction is commonly referred to as curing .Glass fiber is a material consisting of numerous extremely fine fibers of glass. It is most commonly used as reinforcement material because of its exceptional properties. Although not as strong or as rigid as carbon fiber, it is much

**INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH
TECHNOLOGY****PRODUCTION & CHARACTERIZATION OF AS CAST AND HEAT TREATED
AL2024/SIC/GR HYBRID METAL MATRIX COMPOSITES****Naveen C R^{*1}, Dr. Thomas Pinto² & Ranganath Y H³**^{*1}Asstant Professor, Mechanical Engineering, Srinivas Institute of Technology, Mangaluru, India²Professor, Mechanical Engineering, Srinivas Institute of Technology, Mangaluru, India³Assistant Professor, Mechanical Engineering, Srinivas Institute of Technology, Mangaluru, India**ABSTRACT**

Aluminium alloys are widely used in automobile industries and aerospace applications due to their good mechanical properties as compared with conventional metals and alloys. The low production price and better mechanical properties of the composites make them very useful for various applications in many fields. The present investigation has been focused on the development of hybrid composite involving Aluminum metal matrix reinforced with particulates of silicon carbide and graphite. The composites are fabricated using liquid metallurgy routing. The Al 2024 Hybrid composites were cast by stir casting liquid metallurgy route with a percentage of Silicon Carbide varying from 0%,5%, 10% and 15% weight whereas the percentage of Graphite is kept constant at 2.5%wt. The cast composites were tested for hardness, wear, tensile characteristics with and without heat treatment (T6). The result indicates that there is a nominal improvement in the hardness values, wear and Tensile properties of both with and without Heat treated specimens.

Keywords: Abrasion, hardness number, Hybrid metal matrix composite, Pin on disk apparatus, quenching, Stir casting, tribology, wettability, tensile strength.

INTRODUCTION

With the increasing demand for high performance materials with versatile properties new composite materials are being formulated and tested to satisfy the product needs. Composites are a mixture of materials consisting of a matrix with micron-level and Sub-micron level dispersion of similar kinds of materials. Usually the reinforcing component (primary material) is distributed in the continuous or matrix component (Secondary material). In hybrid materials the constituents combine at molecular level, therefore there is a situation of orbital interaction which creates new properties by new electron orbits formed between each material, this leads to new material that can exhibit new properties not necessarily found in the individual components. In this paper the wear, hardness and tensile properties of the composites are investigated. Aluminium 2024 is a ductile and corrosion resistant to atmospheric conditions. Silicon carbide is added to the formulation to investigate the hardness properties and graphite to investigate the tribological properties.

LITERATURE REVIEW

S.O.Adeosun et al[1]. Aluminum hybrid reinforcement technology is a response to the dynamic ever increasing service requirements of such industries as transportation, aerospace, automobile, marine, etc. It is unique in that it offers a platform of almost unending combinations of materials to produce various hybrid composites. This article reviews the studies carried out on various combinations of aluminum hybrid composite and the effects on mechanical, physical and chemical properties. It is observed that the extent of enhancement of these properties of hybrid composites is strongly dependent on the nature of the reinforcement, its hardness, particle size and volume fraction, uniformity of dispersion within the matrix and the method of hybrid production.

Mahammed Naveed et al[2]. Newer techniques of improving the hardness and wear resistance of Al6061 by dispersing an appropriate mixture of hard ceramic powder and whiskers in the aluminium alloy are gaining popularity The conventional aluminium based composites possess only one type of reinforcements. Addition of hard reinforcements such as silicon carbide, alumina, titanium carbide, improves hardness, strength and wear resistance of the composites. heat treatment has a profound influence on mechanical properties of heat treatable

GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES

EDS ANALYSIS AND MECHANICAL TESTING OF ALUMINA AND GRAPHITE PARTICULATE ALUMINIUM METAL MATRIX COMPOSITE

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ABSTRACT

Development of hybrid metal matrix composites has become an important area of research interest in Materials Science. Hybrid Metal Matrix Composites (HMMCs) are highly attractive for large range of hi-tech engineering applications because of their useful properties. Stir casting is the most commonly used method for production of particulate reinforced cast HMMCs. A recently developed modification of stir casting has been used in the present investigation to produce aluminium matrix composites reinforced with alumina and graphite. Here Aluminium 2024 is used as a base metal and Al₂O₃ & Gr is a reinforced material. The preferred fabrication process is stir casting. Al 2024 material is fabricated with Al₂O₃ & Gr on various wt% of 0%, 5%, 10%, 15% of alumina oxide and 2.5% constant Graphite compositions. The fabricated materials were then subjected to mechanical properties such as hardness test, tensile test, SEM analysis and EDS Spectrum were evaluated. The mechanical property hardness and tensile is improved with the increase in weight percentage of Al₂O₃ particulates with various weight percentages in the aluminum matrix.

Keywords- Composite, HMMCs, SEM, EDX, hardness, tensile strength.

I. INTRODUCTION

Aluminium alloys are used in advanced applications because their combination of high strength, low density, durability, machinability, availability and cost is very attractive compared to competing materials. However, the scope of these properties can be extended by using aluminium matrix composite materials. Metal matrix composites consist of at least two chemically and physically distinct phases suitably distributed to provide properties not attainable with either of the individual phases. Metal matrix composites (MMCs) have been developed to respond the demand for lighter materials with high specific strength, stiffness and wear resistance. Aluminium is favoured as matrix material in MMCs because of its low density, easy fabrication and good engineering properties Metal-matrix composites (MMCs) have been developed to combine the good ductility and toughness of the metal matrix and the superior strength and stiffness of the ceramic reinforcement, and they have been used in some important engineering applications including automotive and aerospace. The reinforcement of metals can have many different objectives. The reinforcement of light metals opens up the possibility of application of these materials in areas where weight reduction has first priority. The precondition here is the improvement of the component properties Aluminium-based alloys are widely used as aerospace and automotive components, because of their high specific strength, stiffness and formability. However, both pure Al and Al alloys possess poor wear resistance. On the other hand, Al alloy matrix composites are known to offer better wear resistance and bulk mechanical properties.

II. LITERATURE REVIEW

Mohd Abdul Qudirkhan et al[1],The present work focuses on the fabrication of reinforced with 12 wt. % of B₄C particulates through ball milling. Ethanol (5 wt. %) has been used as a process control agent (PCA). In this work, mechanical alloying was used to synthesize aluminium matrix composite powder in a conventional ball mill under argon atmosphere with different milling time of 5, 10 and 15 hours. The ball to powder weight ratio was maintained at 10:1. Scanning electron microscopy (SEM) of the ball milled powder shows that addition of boron carbide particles accelerates the milling process. The Hardness of the composites was increased with increase in the milling time.



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Synthesis and characterization of silver nanoparticles from *Penicillium sps.*

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Abstract

Among the different methods employed for synthesis of nanoparticles, the biological method is most favourable and well established. Fungi provide many advantages in this context. In this study, extracellular synthesis of silver nanoparticles from *Penicillium sps.* was carried out. Nanoparticles were produced due to reduction of silver ions from silver nitrate, the formation of which was monitored by UV-visible spectrophotometry. The optimization of the biosynthesis procedure with respect to substrate concentration, pH, and salinity were carried out. The size distribution was determined using zetasizer Nano S90 and the dimensions were observed to be around 75nm by AFM and morphology was characterized by SEM. Then the synthesized silver nanoparticles are subjected to XRD analysis. The efficiency of activity of antibiotics is increased by several folds by conjugating the AgNPs with the different types of antibiotics by using zone of inhibition method.

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Keywords: Silver nanoparticles, *Penicillium sp*, Spectrophotometry, zetasizer Nano S90, AFM, SEM, XRD.

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Preparation and Characterization of Electroless Ni-P-W Coated NanoCenosphere /ABS composite for EMI shielding Application

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Abstract

Due to consistent development of various types of communication technologies and the unfavourable impacts of electromagnetic radiations on the human body and electronic gadgets, it is necessary to decrease the Electromagnetic Interference (EMI) and its effect on therapeutic instrumental assembly and electronic equipment. In the present study, Electroless Ni-P-W Coated Nano Cenosphere (CNC)/Acrylonitrile butadiene styrene (ABS) polymer Composites have been proposed for their EMI shielding Effectiveness. The Process involves making the polymer composite conductive by uniformly dispersing Ni-P-W CNC in the polymer matrix and to increase wave absorption by incorporating sheet of the polymer-based composite in the device thereby increasing EMI shielding effectiveness. In the present study the EDX (Energy dispersive X-Ray) examination confirmed the presence of Ni-P-W on the coated NanoCenosphere. This was further, proved through Phase investigation by XRD (X-Ray Diffractometer).

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Keywords: NanoCenosphere, Electromagnetic Interference, Shielding Effectiveness, Electroless coating.

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Structural Design of wing for Aerobatic Light Sport Aircraft

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Abstract— Current work is on structural design of light sports aircraft (LSA) single seater with the given constraints. Structural design is done for the conceptual designed aircraft LSA. Structural design of wing is carried out in this present work. Structural design is done such that it should have the enough strength even when the aircraft is performing high angle of attack i.e. at 6g and at negative angle of attack i.e. at -5g performance. Literature survey is done for the aircraft parts structural designing. Material was selected for each part of wing. Each part varies with the loads acting on it and based on it material selection was done. Design procedure was followed by each parts structural designing.

Wing detail structural design is done for our LSA. Aerodynamics loads acting on the wing is obtained by using lifting line theory. Aerodynamic and structural loads together form resultant load acting on the wing. Maximum bending moment and shear force are calculated. Considering the maximum bending moment acting on wing section 2 wing spars, 14 stringers, 7 Ribs are designed at that section. Designed spars, ribs and webs are calculated for the margin of safety so that they withstand the maximum load acting on those parts.

Keywords—Wing: spar, ribs, stringers, materials, margin of safety.

I. INTRODUCTION

An aircraft is able to fly by gaining support from the air. The first controllable human flight heavier than air machine was made by wright brothers in 1903. There was a tremendous progress in the aviation industry. Different classes of aircrafts have gone into many evolutions. Light sport aircraft is one of the classes of the aircraft which has FAA regulation restriction on weight and performance. LSA is a simple-to-operate, easy-to-fly aircraft. This work is based on the structural design of the Light Sport Aircraft carried out based on the Conceptual and Aerodynamic design of single seater.

II. LITERATURE SURVEY

Sadraey (2012) has published a lifting-line theory program to generate CL and lift along the semi span length. The same program was taken to obtain aerodynamic loads. Performance parameters like Range, Endurance, Maximum and stall velocities, Landing and take-off lengths, Climb rate was coded with the help of quoted worked examples.

Bruhn (1990) has published a detailed procedure regarding structural design of wing, and fuselage. The same procedure was followed for structural design of wing for this current design. The flange thickness was chosen for the two angle sections. The procedure to calculate the number of stringers and the procedure to calculate margin of safety in bending was followed.

Raymer (1992) has published the rib location and its spacing for the different type of aircrafts. These published values were taken in consideration to locate the rib in the wing of the present work.

Peery (2011) has published the detailed procedure to consider the loads acting on fuselage which was followed.

Megson (2007) has published the detail procedure to calculate the shear flow analysis of skin the same procedure was followed and also the same procedure was followed to calculate critical stress.

III. STRUCTURAL DESIGN OF WING

A. Background theory and Introduction

Inactive Method of Noncausal 2D Image Splice Recognition Model using Markov Model

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Abstract— Noncausal Markov model for a 2D signal is one of the inactive methods for spliced image. Image splicing is an image copies or merge a portion of image to same images or different images. The way Noncausal Markov model differs from traditional Markov model is the proposed methodology models a image as a 2-D noncausal signal and captures and analyzes the underlying dependencies between the current node and its neighbors in all directions. These dependencies are obtained through Discrete Cosine Transform and Discrete Wavelet Transform. These parameters give features to differentiate the natural ones with the features of spliced images. The noncausal Markov Model considers the input of block discrete cosine transformation domain, the discrete wavelet transform domain, and the cross-domain features for classification. The Expectation Maximization which is the classifier which classifies based on maximum likelihood of images. The dataset used is UCID dataset where we have uncompressed color images.

Keywords—Noncausal Markov Model, Discrete Cosine Transformation (DCT), Discrete Wavelet Transform(DWT), inactive image splicing recognition, Expectation Maximization(EM).

I. INTRODUCTION

The digital image play technology is important topics in daily life. While the use of digital cameras there were also sophisticated image processing software developed for altering and for manipulation of image. There are many image processing tools that were also developed which manipulate the images and also hiding some useful or important data to make forged images. The goal for image forensics will always be addressed to image integrity and authenticity. The integrity of image loses when they are attacked by image slicing and cloning. This type of forged image is not recognized easily by bare human eye resulting in its authenticity. So there must be method for regaining the trust for integrity and authenticity verification in image processing field. The Freehand and Photoshop are some of the famous tools used to modify and maliciously manipulate digital images. So developing method to verify and recognize affected digital images became very essential when images are used for any law proceedings in judgment in court, for example, for medical purposes and financial document, transportation sector etc. The different types of tampering images are taken care by different digital forgery detection techniques that have been proposed which regains trust for the image authenticity and integrity. One of such methods deals with image splicing recognition.

The digital image forgery detection methodology consists of

two type mainly active methods and inactive methods. The active methods checks the image integrity using prior embedded knowledge like watermark or digital signature has marked as forged. Applying this type of method can detect image tampering and find the controlled areas accordingly. Embedding the signatures or watermarks into the digital image in the imaging process causes infeasibility in cameras and because of this prior knowledge given to active method to help the validation of digital images. Conversely with no prior knowledge there developed a method called the passive or inactive methods. They detects image frauds on the Internet which is been forged. This method distinguishes image forgery under the condition that altered image would change the fundamental attributes of the first pictures. The inconsistency characteristic found on the statistical is the proof for discovery of altered image. Among various types of image tampering operations, splicing is the most common and useful operation in creating image forgeries.

The three major steps of Digital Image Forensics are detection, source identification of digital image and image forgery detection. The recognition of computer generated image is very hard for the viewers because of its high quality and high realism realistic that makes them confused. From cameras and scanner the image source is being identified. Every device has its way of footprint of image. This type of forensics has two approaches for image source identification, the first method attempt to resolve the source image class properties and second method identifies the

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An experimental investigation on performance and emission parameters of a multi-cylinder SI engine with gasoline–LPG dual fuel mode of operation

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ABSTRACT

The present study deals with the performance and emission characteristics of a multi-point fuel injection (MPFI) spark ignition (SI) engine in gasoline–liquefied petroleum gas (LPG) dual fuel mode of operation. The LPG–gasoline ratio varied from 0 to 100% by controlling the injector signals at various speed and load conditions. Experiments show that the power output decreases with increase in speed and LPG content at lower load marginally due to lower volumetric efficiency. At higher load and lower speed conditions as the percentage of LPG increases there is not much difference in the power output. Results also reveal that 50% LPG flow gives maximum efficiency at full load condition and 4000 rpm due to lower fuel consumption. With 50% usage of LPG, the average increase in brake thermal efficiency (BTE) is 2% till the engine speed of 4000 rpm at full load (100%) and half load (50%) conditions. As the LPG ratio increases the engine will work in the lean region for all speed and load conditions. For all load and speed conditions, results reveal that 100% LPG will give minimum hydrocarbon (HC) and carbon monoxide (CO) emissions. Oxide of nitrogen (NO_x) emissions are higher for 100% LPG. However 50% LPG flow gives good agreement of NO_x, HC and CO emissions when compared with gasoline operation.

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KEYWORDS

Gasoline; LPG; emission; performance

Introduction

Hydrocarbon fuels are currently meeting more than 90% of total energy demand. Consumption is expected to increase at a much faster rate with the needs to enhance human comfort and meet day-to-day developments. An important issue with energy usage is the associated undesirable emissions. Conventional fuels are attractive because of their availability, competitive price and high energy density. But these conventional fuels have a great impact on environmental and human health.[1,2] The rapid depletion of fossil fuel and stringent emission rules from the government has focused research on clean and renewable energy systems. Researchers are now focused on an alternative fuel which will meet the emission norms without compromising performance parameters.[3] These environmental and economical aspects have forced government and research institutes to find out which alternative fuels can be used in a CI engine instead of conventional fuels.[4–6]

The introduction of alternative fuels is beneficial to help alleviate the fuel shortage and reduce engine exhaust emissions. Liquefied petroleum gas (LPG), as a relatively clean fuel, is considered one of the most promising alternative automotive fuels worldwide because of its emission reduction potential and lower fuel price compared to gasoline.[7] During the last decade,

gaseous fuels such as liquefied natural gas (LNG) and LPG have been widely used in commercial vehicles, and promising results have been obtained from the fuel economy. Among the alternatives suggested were hydrogen, methane and LPG (mainly propane). Many technologies and strategies are being proposed to improve engine performance and to reduce emissions. Among them, only those measures which can meet stringent emission regulations with comparable engine power and economy can be adopted.[8]

LPG is a mixture of commercial butane and commercial propane having both saturated and unsaturated hydrocarbons (HC). LPG marketed in India is governed by Indian Standards and the properties of LPG are described in Table 1.[9]

Due to availability and price, LPG is used in automobiles as an alternative to gasoline. Compared to most liquid fuels, LPG has a positive impact on the environment.[10,11] An LPG-fueled engine produces practically zero emissions of particulate matter, very little carbon monoxide (CO), and moderate HC emissions. A major disadvantage of LPG is the NO_x emission which is greater than that for liquid fuels. NO_x emissions are almost three times that of gasoline-fueled vehicles.[12,13]

LPG has a higher octane rating, typically 112 for pure propane, which prevents the occurrence of

Influence of injector nozzle hole number and size on the performance of a supercharged direct injection diesel engine

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Abstract—Diesel engine as a prime mover has witnessed tremendous growth in its application during the last century. Researchers across the globe have put lot of effort to increase the performance and improve the emission characteristics of it. It is well known that increasing the boost pressure of intake air or supercharging increases the power output of the internal combustion engines. In this paper, the performance of a direct injection diesel engine is discussed with different fuel injector nozzles having different number of holes of different nozzle orifice diameters under natural aspiration and supercharged conditions. It has been observed that the performance of the engine decreased with increased number of holes and larger nozzle holes under natural aspiration. However the performance of the engine has been found to be significantly improved under supercharged condition for all the injector nozzles. For 3 hole injectors at 80% load, the BTE has increased from 29.98% to 31.86% on supercharging, whereas for 4 hole and 5 hole injectors it increased from 11.48% to 19.24% and 20.49% to 27.16% respectively at the same load.

Keywords—Diesel engine, fuel injector, nozzle hole, supercharging, performance

I. INTRODUCTION

The rapid growth of automotive vehicle population and pressing need for increased mechanization of agricultural equipment due to the requirement of cost competitiveness along with ever-increasing shortage of labour force have resulted in exponential growth in the usage of Internal Combustion(IC) engines. The function of IC engine is to transform the chemical energy released by the combustion of fuel inside the engine cylinder into mechanical work. The German engineer Rudolf Diesel invented the diesel engine in which the combustion of the fuel is initiated by injecting the fuel into compressed air. These days diesel engines are the major source of energy in transport, stationary power plants and agricultural equipment [1, 2]. Diesel engines have proved to be superior to gasoline engines in terms of thermal efficiency, fuel consumption and throttling losses[3], that made the market share of diesel engines to exceeded 50% in some countries [2]. Furthermore, in terms of emissions also diesel engines are not inferior to the gasoline engines as far as

carbon monoxide (CO) is concerned [3]. Today's engines require high power output, economy of operation with least pollutant emissions. Such specific demands have compelled the researchers to focus on improving the diesel engines in various aspects. Intake air pressure boosting or supercharging is a common way to improve the engine output power which is widely used in high performance Spark Ignition and Compression Ignition (CI) engine applications [4]. It is well known that supercharging improves the combustion process of Diesel engines [5]. Though the increase in intake air temperature due to supercharging reduces the unit air charge and also reduces the thermal efficiency moderately, the increase in the density due to the supercharging pressure compensates for the loss, and intercooling is not necessary except for highly supercharged engines[6]. Supercharging the reciprocating piston internal combustion engine is as old as the engine itself. Early on, it was used to improve the high-altitude performance of aircraft engines and later to increase the short term peak performance in sporty or very expensive automobiles. Later on it reached economic importance in the form of the efficiency improving exhaust gas turbocharging of slow and medium speed diesel engines. Today many demands are placed on automobile engines: on the one hand, consumers insist on extreme efficiency, and on the other hand laws establish strict standards for, e.g., noise and exhaust gas emissions. It would be extremely difficult for an internal combustion engine to meet these demands without the advantages afforded by supercharging [7].

The fuel injection system in a diesel engine, being responsible for supplying the metered quantity of fuel to the combustion chamber, is one of the most important systems. It meters the fuel delivery according to engine requirements, it generates the high injection pressure required for fuel atomization, for air-fuel mixing and for combustion and it contributes to the fuel distribution in the combustion system, hence it significantly affects engine performance emissions and noise [8]. The performance and emissions of diesel engine are greatly affected by the fuel atomization and spray processes, which in turn are strongly influenced by injector nozzle geometry [9, 10]. The number of holes in the fuel injector nozzle directly influences the spray parameters like

Spectrophotometric determination of chromium by using sulphanilic acid and N, N-dimethylaniline

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A sensitive and selective spectrophotometric method for the determination of trace amounts of chromium(VI) directly and chromium(III) after oxidation to chromium(VI) with bromine water has been developed. Chromium(VI) oxidises hydroxylamine using acetate buffer of pH 4 to nitrite, which then diazotises sulphanilic acid to form diazonium salt. These diazonium salts are then coupled with N, N-dimethylaniline in alkaline medium resulting azo dye methyl orange, which induces orange colour in acidic medium shows an absorption maximum at 507 nm. The method is free from the interferences of several metal ions and obeys Beer's law in the range of 0.1 to 1.8 µg/mL in acidic medium. Molar absorptivity and Sandell's sensitivity of the system with sulphanilic acid diazoniumchloride and N,N-dimethylaniline couple(methyl orange) in acidic medium are found to be $1.74 \times 10^4 \text{ Lmol}^{-1} \text{ cm}^{-1}$ and $3.84 \times 10^{-3} \text{ µg/cm}^2$ respectively. The optimum reaction condition evaluation and interference of other ions on the determination have been described. The method is useful for the analysis of chromium in soil and pharmaceutical samples.

Keywords: Chromium, Methylorange, N,N-dimethylaniline, Spectrophotometry, Sulphanilic acid

Chromium is normally found in two stable states i.e., Cr(III) and Cr(VI). The deficiency of Cr(III) results in several physiological disorders. Most of the biological tissues contain nontoxic Cr(III) an essential nutrient for maintaining normal physiological functions¹ like promoting the action of insulin in body tissues so that sugar, protein and fat can be used by the body, accordingly one of the most popular food beverage produced by coca bean is one of the nutritive product enriched with chromium(III)². Chromium in the soil has some favourable effects due to activation of some biochemical processes³, however Cr(VI) is toxic to organisms⁴ and increase its concentration in the soil makes it infertile. The spectrophotometric determination of chromium based

on oxidation of organic compounds⁵⁻⁷ and on formation of ion associates⁸ has the disadvantages of a high blank value. The other reagents to determine chromium by diazo-coupling reaction are *p*-aminophenol, Isonipicotamide and Isatin⁹. Reduction of Cr(VI) by an electrophilic coupling reagent 3-methyl-2-benzothiozoline and subsequent coupling with Iminostilbene¹⁰ has been reported. In recent years studies reported to determine chromium by quantitative release of iodine from reaction of chromium ions with iodides which either changes or bleaches the colour of some chromogenic compounds like AzzureB¹¹, Variamine blue¹², Toluidine blue¹³ and safranin-O¹³. This infers the need of identifying such a type of simple, sensitive and reliable method for the determination of chromium. The present work is intended to provide a simple and selective method for indirect determination of chromium(VI) based on the oxidation of hydroxylamine to sodium nitrite which diazotises sulphanilic acid. These diazonium salts are coupled with N,N-dimethylaniline to form an azo dye methyl orange in alkaline medium induces yellow colour and in acidic medium orange colour. Chromium(III) is determined after it is oxidised to chromium(VI) by bromine water. The proposed method is useful for the determination of chromium in soil samples and pharmaceutical products.

Experimental Section

Apparatus

Jasco model V-630, UV-Visible spectrophotometer with 1 cm quartz cell and Equip-tronics, digital pH meter model EQ-610

Reagents

All chemicals are of analytical grade (Merck) were prepared in distilled water. Standard chromium(VI) stock solution (1000 µg/L) was prepared by dissolving 0.2830 g of K₂Cr₂O₇ in 100 mL of water and standardised. The standard chromium(III) stock solution (1000 µg/L) was prepared by dissolving 0.28230 g of K₂Cr₂O₇ in 50 mL water, added 1 mL saturated sodium sulphite solution and acidified with 1 mL of 2.5M H₂SO₄ then boiled for 5 min to remove excess of SO₂ and diluted with water to 100 mL, further diluted as per the need of working standard. Sulphanilic acid (0.05%) is prepared in acidic



Selective Complexometric Determination of Palladium by Using L-Cystine as Releasing Agent

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A complexometric method for the determination of palladium in the presence of other metal ions based on the selective masking ability of L-Cystine towards palladium is described. Palladium(II) is complexed with excess of EDTA and the surplus EDTA is back titrated with standard lead nitrate solution at 5 to 6 pH by using hexamine and xylenol orange as an indicator. L-Cystine (0.02 M) solution is then added to release EDTA quantitatively from Pd-EDTA complex. The EDTA released is back titrated with standard lead nitrate solution as before. The method works well in the concentration range 2 to 34 mg of Pd with relative error $\leq 0.94\%$ and relative standard deviation $\leq 1.21\%$. The method has been successfully applied to the determination of Pd in alloy composition and complexes.

Keywords: Palladium determination, Complexometry, L-Cystine, Releasing agent.

INTRODUCTION

The importance of speedy and reliable, accurate method for determining the palladium content in the samples is due to its wide spectrum of application. The high melting point of palladium and its alloys provides high resistance to corrosion and hence it is widely used in electrical contacts. Palladium and its alloys are also employed as dental restorative materials. The alloys of palladium with rare earths are used as magnetic materials and palladium complexes like $\text{Pd}[(\text{O}_2\text{Me})_2]_3$ are claimed to have antitumor properties¹. Palladium is an element of increasing importance in today's industries. The annual production of palladium is estimated to be 195 tonnes; the majority of this is used in auto catalysts (55 %), with other uses including electronics (16 %), jewellery (11 %), dental (8 %), investment (5 %) and chemical (4 %)². The most commonly used complexometric determination methods in the presence of diverse metal ions, using selective releasing agents to decompose Pd-EDTA complex are dimethyl glyoxime³ and 1,2,3-benzotriazole⁴, pyridine⁵. However these methods are found to be not rapid in spite of heating and extraction with chloroform are required.

4-Amino-5-mercapto-3-*n*-propyl-1,2,4-triazole⁶, 4-amino-3-mercapto-1,2,4-triazine(4H)-5-one⁷, 1,3,4,6-tetrahydropyrimidine-2-thione⁸ are time consuming in spite of requiring synthesis and also which are water insoluble. Thiosemicarbazide⁹, 2-Imidazolidine¹⁰, sodiumsulphite¹¹, sodium nitrite¹² and sodiummetabisulphite¹³ were suffered by interference by

various metal ions. Thiourea¹⁴ and 1,10-phenanthroline¹⁵ having the demerits like severe interference by Cu(II) and poor selectivity, respectively. This paper describes the method and advantages of L-cystine as a selective releasing agent.

EXPERIMENTAL

All chemicals used were analytical grade and their solutions being prepared by using double distilled water. Palladium(II) chloride solution was prepared by dissolving 0.1773 g of PdCl_2 in minimum volume of dilute KCl solution followed by dilution to known volume and standardised gravimetrically as palladium dimethyl glyoximate¹⁶. Lead nitrate solution (0.02 M) was standardized by chromate method¹⁷. 0.02 M solution of EDTA was prepared by dissolving disodium salt of EDTA in distilled water. Xylenol orange indicator was well mixed with KNO_3 in the ratio of 1:100. Solid hexamine was also used directly for maintaining desired pH. Solutions of various ions were also prepared by dissolving calculated amount of salt in distilled water or in diluted acids up to known volume.

To a solution containing 2-34 mg of palladium, an excess of 0.02 M EDTA solution was added and diluted to about 80-100 mL. To this solution hexamethylene tetramine (nearly up to 10 g) is added to bring the pH to 5-6, the surplus EDTA left behind is titrated with lead nitrate solution to the sharp colour change from yellow to red by using xylenol orange indicator. To this solution an excess of 0.02 M L-cystine is added and shaken well and EDTA released is titrated with standard lead

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Original Article/Research

Emerging dimensions of sustainability in institutes of higher education in India

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Abstract

The institutions of higher education provide role models for excellence in education. But also have the added responsibility of providing guidance to the community for social upliftment and environmental sustainability. It becomes imperative, therefore to assess the extent to which sustainable practices have been adopted in these institutions and their adequacy. It is anticipated that a holistic assessment will indicate strengths and weaknesses in sustainability practices so that effective measures can be taken to initiate the creation of a more sustainable environment. To achieve the foregoing objective parameters like Land use and Energy have been identified. An analysis of the basic sustainability parameters with regard to the various institutional surveys indicates the changing trends over the years. The trend reflects institutional growth, improvement in the economy and growing of awareness of sustaining the ecological environment. However, the extent to which each parameter is addressed varies from institution to institution, as well as the geographical location and climatic variations due to the diverse nature of these two factors in the Indian context. Increasing awareness issues pertaining to sustainability in institutions of higher education is reflected by relevant practices adopted, however it is expected that initial momentum generated in this direction will lead to further adoption of sustainable practices consistent with the cultural geographical and socio economic scenario prevailing.

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Keywords: Land use; Energy consumption; Campus sustainability; Higher education

1. Introduction

Educational campuses are a part of the urban ecosystem. It is important to gauge various activities within a higher educational campuses with regard to sustainability, within the immediate environ-the campus, so that they may

be groomed to shoulder the responsibility towards achieving a sustainable environment. A clearer understanding of the need for sustainability and how it can be achieved will to some extent enable to contribute towards a sustainable planet-to which the need is increasing with the passage of time. Sustainability as applicable to Higher Educational Campus is a process of developing and managing campuses through efficient use of renewable resources and other green practices. Sustainability practices differ from campus to campus and the perception about the sustainability differs from person to person. Some believe that they have

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Sustainability perceptions in a technological institution of higher education in India

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Institutions of higher education serve as models for excellence in education. They also have an added responsibility in providing guidance to the community for social upliftment and environmental sustainability. The present study conducted in the Indian Institute of Technology Roorkee examines the perception of the students on the importance of sustainability to the campus. One hundred sixty-five students participated in the survey. The survey focuses on three broad categories, namely environmental, educational and research, and management factors. Environmental factors are more significant compared to management factors. Education and research is given less importance compared to environmental and management factors. The findings provide a useful extension to both the management and administrative strategies in decision-making process to improve the sustainability of the campus.

Keywords: Education and research, environmental parameters, green guidelines, management strategies.

SUSTAINABILITY as applicable to higher educational campuses is a process of developing and managing such campuses, through efficient use of renewable resources along with green practices¹. It is important to gauge the students' perception with regard to sustainability, within the immediate environment of a campus, so that they may be groomed to shoulder the responsibility towards achieving a sustainable environment. A clearer understanding of the need for sustainability and to some extent individual contribution towards a sustainable planet is increasing with the passing of time.

The present study analyses the students' perception on campus sustainability. To elicit this information, an on-line survey was conducted based on three broad categories, namely environmental, educational and research, and management factors.

Literature review

An adequate understanding of the concept of sustainability is important towards initiating, participating and advocating for appropriate sustainability behaviour. Sustainability perception differs from person to person^{2,3}. Young people have a strong affinity towards the environment and its problems⁴. They build up a social movement, which is known to operate outside the decision-making systems to both examine the status quo and

evolve their own solutions⁵. According to Wright⁶, the most restricting component in moving towards sustainability is lack of apprehension and awareness of sustainability issues amongst the university population. Universities are no more assessed solely based on their potential to provide quality instruction; rather, other factors and criteria, including their commitment to the advancement of society play a role in reflecting the true picture of a university⁷. Universities should involve a great number of stakeholders in sustainability activities and strategic preparation⁸. Campus community consists of potential leaders in the field of research, learning, teaching and sustainability and community engagement^{9,10}.

Studies have been conducted to understand the students' perception of sustainability, knowledge, attitudes and curricula^{11,12}. The University of Plymouth, UK conducted a survey on students ($n = 1889$) and the results showed that only one-third were either 'very familiar', or 'quite familiar', or 'quite unfamiliar/not at all familiar' with the term sustainable development¹³. Surveys were conducted at Universities in Alabama and Hawaii with the following objectives: (1) Are students concerned about the present/future? (2) What do students know about the sustainability? (3) Who is responsible for sustainability? Results of the study demonstrated that maximum number of students strongly agreed that they were responsible for the wasteful consumption of natural resources, but less than one-fourth of the respondents indicated that they know a great deal about sustainability and one-third indicated that they do not have experience about sustainability. Students strongly agreed that universities should focus on sustainability in campus planning, development and day-to day operations¹⁴. Yuan and

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Experimental Investigation on Elastic Properties of Concrete Incorporating GGBFS

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Abstract - Concrete is the most widely used man made construction material in the construction field all over the world. Concrete is made up of fine aggregates, coarse aggregate, cement and water for hydration of cement. Fine aggregates and coarse aggregates acts as filler material and cement acts as binding agent in concrete. In concrete cement plays a very important role in gaining strength but the major problem by the production of cement is liberation of large amount of CO₂ (green-house gasses) which is very dangerous to the environment. According to many researchers, the best way to overcome this problem is to use optimum amount of cement and its maximum replacement by pozzolana or cementitious materials such as fly ash, GGBFS (Ground granulated blast furnace slag), metakaolin etc. In the present work GGBFS is used as replacement material. The optimum replacement of GGBFS with cement is characterized by high compressive strength, low heat of hydration, resistance to chemical attack, better workability, good durability and cost-effectiveness. Also, an attempt has been made in predicting the elastic properties of GGBFS concrete as per various design standards and new relationships has been proposed.

Keywords: Ground granulated Blast furnace slag (GGBFS), modulus of elasticity, modulus of rupture, super-plasticizer and sustainability.

I. INTRODUCTION

Concrete is the most widely used man made construction material in the construction world. Concrete is made up of fine aggregates, coarse aggregates, cement and water for hydration of cement. Fine aggregates and coarse aggregates acts as filler material and cement acts as a binding agent in concrete. In concrete cement plays a very important role in gaining the strength, but the major problem by the production of cement is the liberation of large amount of CO₂ (green-house gasses) which is very dangerous to the environment. According to many researchers, the best way to overcome this problem is to use optimum amount of cement and its maximum replacement by pozzolana or cementitious materials such as fly ash, GGBFS, metakaolin etc. In the present work GGBFS is used as a replacement material. The optimum replacement of GGBFS with cement is characterized by high compressive strength, low heat of hydration, resistance to chemical attack, better workability, good durability and cost-effectiveness [5]. The continuous hydration of unhydrated cement components to form more hydration products in addition to the reaction of GGBS with the liberated lime to form more C-S-H leading to increasing compressive strength[6,7]. The modulus of elasticity, modulus of rupture and compressive strength are very crucial properties of concrete, these are the basic parameters essential for estimating deflection in reinforced concrete structures. Design codes of various countries have derived empirical relations between elastic modulus, modulus of rupture and compressive strength of concrete at 28 days [9, 10, 11, 12, and 13]. In the present case an attempt has been made to study the design codes of various countries and establishing new relations. The Indian code of practice (IS: 456) recommends the empirical relation between the modulus of elasticity and cube compressive strength of concrete as follows:

$$E_c = 5000 \sqrt{f_c}$$

The American code defines the relationship between modulus of elasticity and cylinder compressive strength for calculating deflection as follows:

$$E_c = 4734 \sqrt{f_c}$$

The New Zealand code defines the relationship between modulus of elasticity and cylinder compressive strength for calculating deflection as follows:

$$E_c = 4734 (\sqrt{f_c} + 6900)$$

The euro code recommends the empirical relation between the modulus of elasticity and cylinder compressive strength of concrete as follows:

$$E_c = 9500 (\sqrt{f_c} + 8)^{0.33}$$

The british code of practice (BS-8110) recommends the empirical relation between the modulus of elasticity and cube compressive strength of concrete as follows:

The Effect of Sonication Time on Alumina Nanofluids with Paradoxical Behavior

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Abstract

Nanofluids can be considered to be the next-generation heat transfer fluids as they offer exciting new possibilities to enhance heat transfer performance compared to pure liquids. Heat transfer enhancement using nanofluids have been reported in literature pertinent to thermal conductivity under the static conditions, convective heat transfer and phase change heat transfer. Except for the studies from the first category where the nanofluids exhibited much higher thermal conductivities than those of base liquids, the investigations on Nanofluids behavior under convective heat transfer studies and phase change heat transfer studies have reported conflicting results. The present study aims at a critical analysis of this apparently paradoxical behavior of heat transfer with a special focus on the effect of sonication time on the heat transfer behavior of nanofluids. To this end Alumina Nanofluids of different concentrations (0.05, 0.1, 0.15, 0.2%) are prepared at various sonication times (2, 3 and 4 h) and their effects on the heat transfer characteristics are investigated. Subsequently an unsteady state heat transfer analysis of a heated vertical cylinder cooled in the foresaid alumina Nanofluids is carried out. It can be concluded from these investigations that the sonication time greatly influences the heat transfer performance of the Nanofluids and this influence is affected by the nanoparticles concentration. However a solid conclusive remark as an increasing or decreasing trend could not be observed during these studies. A comparative study of the heat transfer coefficient of different concentration Nanofluids at various sonication time indicates that the best performance characteristics is spreading over the spectrum of the nanofluids of all mass concentration under consideration. Thus it can be concluded that the sonication time determines the role of particle-fluid slip and sedimentation which seems to be important in the heat transfer process and requires to be investigated more closely in the future.

Keywords: Alumina, heat transfer coefficient, nanofluids, sonication time.

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INTRODUCTION

Over the past few decades, the fields of science and engineering have been seeking to develop new and improved types of energy technologies that have the capability of improving life all over the world. In order to make the next leap forward from the current generation of technology, scientists and engineers have been developing energy applications of nanotechnology. Nanotechnology, a new field in science, is any technology that contains components smaller than 50 nm. Energy enhancement by augmenting heat transfer is one of the most important technical challenges facing many

diverse industries, including transportation, power generation, micro-manufacturing, chemical and metallurgical industries, as well as heating, cooling, ventilation and air conditioning industry. There is, therefore, an urgent need for new and innovative coolants with improved performance. The novel concept of “nanofluids” has been proposed as a route to surpassing the performance of heat transfer fluids currently available. A very small amount of nanoparticles, when dispersed uniformly and suspended stably in base fluids, can provide impressive improvements in the thermal properties of base fluids. Nanofluids, which are a colloidal mixture of nanoparticles

Changing Landscape of E-Commerce an Effective sales strategy in Marketing

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ABSTRACT

Commerce is a division of trade or production which deals with the exchange of goods and services from producer to final consumer; it comprises the trading of something of economic value such as goods, services, information, or money between two or more entities. In order to avoid the costs associated with the commerce such as, Entry Cost, Transaction Costs, difficulty in getting Access to the global market, hurdles to secure market share, E-Commerce has been evolved. Electronic Commerce which is also referred as Electronic Marketing which consist of buying and selling goods and services over an electronic systems Such as the internet and other computer networks. Electronic commerce draws on technologies such as commerce, electronic, supply chain management, Internet marketing, online transaction processing, electronic data interchange(EDI), inventory management systems, and automated data collection systems. Economists have theorized that e-commerce ought to lead to intensified price competition, as it increases consumers' ability to gather information about products and prices. Research by four economists at the University of Chicago has found that the growth of online shopping has also affected industry structure in two areas that have seen significant growth in E-Commerce, bookshops and travel agencies. Generally, larger firms are able to use economies of scale and offer lower prices.

Keywords: Commerce, E-Commerce, Transaction costs, electronic data, Economists.

Sparse Representation in Active Learning Methods for Remote Sensing Image Classification –A Survey

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ABSTRACT

This paper is an endeavour to investigate the latest active learning methods with the Sparse Representation in the feature extraction phase of active learning method. Active learning has been realized in classification algorithms for over a decade. This paper examines the remote sensing image classification with the sparse representation perspective. The review of literatures involving the sparse representation, Kernel Sparse representation (KSR) and Multikernel Sparse representation is carried out. Active learning with sparse representation as the feature extraction method has been dealt in detail. Kernel trick has the quality of extracting the similarity between nonlinear features, which would assist in finding the sparse representation of the non-linear features, thus motivating to go forward with Kernel Sparse representation. MultiKernel Sparse representation also known as Multikernel Fusion is an improvement in KSR that would take into account many sophisticated object features for representation. The variants of the Support Vector Machine for different application and the Multiclass SVM based literatures are reviewed. The future suggestions and perspective for the remote sensing image classification methods have been highlighted along with the review.

Keywords: Active Learning, Sparse Representation, Remote Sensing and Classification.

INTRODUCTION

The remote sensing image classification algorithms are categorized into Unsupervised,

Indirect complexometric determination of manganese(II) using tartaric acid as a masking agent

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Abstract : A complexometric method for the determination of manganese in the presence of other metal ions based on the selective masking ability of tartaric acid towards manganese is described. Manganese(II) present in a given sample solution is complexed with a known excess of EDTA and surplus EDTA is titrated against lead nitrate solution at pH 5-6 using xylenol orange as the indicator. A known excess of 10% solution of tartaric acid is then added. The mixture is then shaken well and the EDTA released from Mn-EDTA complex is titrated against the standard lead nitrate solution. Reproducible and accurate results are obtained for 1.10 to 33.0 mg of manganese(II) with relative error $\leq 0.51\%$ and standard deviations ≤ 0.12 mg. The interference of various ions are studied. This method was applied to the determination of manganese(II) in its alloy composition.

Keywords : Complexometric, manganese(II) determination, masking, tartaric acid.

Introduction

Manganese forms numerous alloys, many of which are extremely important in the manufacture of steel^{1,2}. Today the major use of manganese is as an alloying and cleansing agent for steels, iron and non ferrous metals. In non ferrous metals it improves their strength, ductility and hot-rolling properties. It is used as an alloying agent and cleanser in aluminium alloys, aluminium bronzes constantan, manganese bronze, monel, nickel-silver and nickel-chromium resistance alloys. Hardfield manganese steel which contains about 13% manganese and 1.25% carbon has remarkable properties. It is used for parts of excavators, rail crossings and other parts which are subjected to severe mechanical conditions of service. One of the most important non-metallurgical uses of manganese is in electrical batteries in which manganese dioxide acts as a depolarizer in the leclanche type of electrical cell.

Some of the simple methods reported for the rapid determination of manganese in solution are oxidation of metal to permanganate followed by determination of the permanganate either spectrophotometrically or by titration with a suitable reductant³. In the photometric method,

oxidation to permanganate is conveniently achieved by treating the sample with an excess of potassium periodate in nitric acid medium. The titrimetric, bismuthate and pyrophosphate⁴ methods are now most generally used for manganese in high grade manganese ores, ferromanganese and manganese metal. Manganese is determined gravimetrically as ammonium manganese phosphate, NH_4MnPO_4 and then ignited to pyrophosphate, $\text{Mn}_2\text{P}_2\text{O}_7$ ⁵. Manganese is also determined in steels and cast iron by the persulphate-arsenite method⁶. Many of the known methods for determination of Mn^{II} by spectrophotometric methods by using 2-hydroxy-4-methoxy acetophenone oxime (HMAO)⁷ involves multistep synthesis. Complexometric determination of manganese was reported in presence of lanthanum and strontium as stepwise determination using mixed metallochromic indicator⁸, potassium cyanide⁹ as masking agent in relation to stepwise determination of calcium and magnesium are found be applicable for specific situation. Citric acid¹⁰, thioglycolic acid¹¹ and 1,10-phenanthroline¹² were reported as releasing agent for complexometric determination of manganese, however it

THE MARGINALIZED VOICES: TOWARDS CREATING COUNTER IMAGES

Ambika G.Mallya ¹

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Writing is seen as a form of resistance, providing women with a voice to contest the forces of coercion within gender relations. Women writers subvert the dominant ideology of patriarchy by bringing to the fore detrimental social practices along the axes of gender, race, class, color and sexuality. Though gender is a socially constructed concept, gender relations are encoded in linguistic and symbolic representations and it becomes a primary site for articulating power. Representation concerns about depicting a 'natural' image and involves in 'the construction of reality'. What we experience as natural is 'mediated' by perceptual codes, foregrounding semiotics in the process. Women writers – the marginalized voices – question the gender politics of stereotyping women in images, offering new, identifiable, counter images of womanhood. The focal point of this paper is to explore the writings of two exceptionally gifted writers; Indira Goswami and Sarah Aboobakar, who write in the indigenous languages of Assamese and Kannada respectively. Their insightful portrayal of multiple versions of inequity faced by women in the oppressive gender practices of the patriarchal tradition - the counter images thus created -add an extra dimension towards understanding the myriad aspects of social, cultural and historical contexts.

Key words: *Writing, women, image, voice, gender, power relations, patriarchy.*

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A Comparative Study of Active-Learning Techniques for Classification of Remote Sensing Images

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Abstract— The success of remote sensing image classification techniques is based on defining an efficient training set. Active learning aims at building efficient training sets by iteratively improving the model performance through sampling.

Active learning is an active research area within the machine learning community, and is now being extensively used for remote sensing applications. To make remote sensing image classification effective the training set should be as small as possible and must include highly informative pixels. Active learning heuristics provide capability to select “most informative” unlabeled data and to obtain the respective labels, fulfilling both goals. The investigated techniques exploit different query functions, which are based on the evaluation of two criteria: uncertainty and diversity. The combination of the two criteria results in the selection of the potentially most informative set of samples at each iteration of the AL process. This paper investigates different active learning (AL) techniques for the classification of remote sensing (RS) images with support vector machines.

Index Terms—Active Learning, Classification, Support Vector Machines (SVM), Margin Sampling (MS), Entropy Query by Bagging (EQB), Multiclass Level Uncertainty (MCLU), Angle Based Diversity (ABD)

I. INTRODUCTION

For the classification of Remote Sensing Images several supervised methods have been proposed in different Remote sensing literature. In all these methods to train the classifier labeled samples are necessary, and the classification results rely on the quality of the labeled samples used for learning. However, the collection of labeled samples is time consuming and costly, and the available training samples are often not enough for an adequate learning of the classifier. Moreover, inclusion of redundant samples in the training set slows down the training step of the classifier without adding information. In order to reduce the cost of labeling, the training set should be kept as small as possible, avoiding redundant samples and including patterns which contain the largest amount of information and thus can optimize the performance of the model.

Semisupervised learning and active learning are the two popular machine learning approaches for dealing with drawbacks of supervised methods. Semisupervised algorithms incorporate the unlabeled data into the

classifier training phase to obtain more precise decision boundaries.

In active learning, the learning process repeatedly queries unlabeled samples to select the most informative samples and updates the training set on the basis of a supervisor who attributes the labels to the selected unlabeled samples. In this way, unnecessary and redundant samples are not included in the training set, thus greatly reducing both the labeling and computational costs. This is particularly important for remote sensing images that may have highly redundant pixels.

II. ACTIVE LEARNING

Defining an efficient training set is one of the most delicate phases for the success of remote sensing image classification routines. The goal of Active learning [1], is to build efficient training sets by iteratively improving the model performance through sampling. A user-defined heuristic ranks the unlabeled pixels according to a function of the uncertainty of their class membership and then the user is asked to provide labels for the most uncertain pixels.

A general active learner can be modeled as a quintuple $(G, Q, S, L, \text{and } U)$. G is a classifier, which is trained on the labeled samples in the training set L . Q is a query function used to select the most informative samples from an unlabeled sample pool U . S is a supervisor who can assign the true class label to the selected samples from U . Initially, the training set L has few labeled samples to train the classifier G . After that, the query function Q is used to select a set of samples from the unlabeled pool U , and the supervisor S assigns a class label to each of them. Then, these new labeled samples are included into L , and the classifier G is retrained using the updated training set. The closed loop of querying and retraining continues for some predefined iterations or until a stop criterion is satisfied. *Algorithm 1* gives a description of a general active-learning process.

Algorithm 1: Active-learning process

Step 1: Train the classifier G with the training set L (which initially has few labeled samples).

Smart Message Communication for Warrior

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Abstract:

Message Service is getting more popular now-a-days. Message (SMS) was first used in December 1992, when Neil Pap worth, a 22-year-old test engineer used a personal computer to send the text message "Merry Christmas" via the Vodafone GSM network to the phone of Richard Jarvis in the UK. It will play a very important role in the future business areas of mobile commerce (M-Commerce). SMS's security has become a major concern for business organizations and customers.

Many people send delicate information and conduct private conversations via text with little protection from third parties who might intercept the message (SMS) or the storage of their information in phone company records but this is not case for soldiers .The message (SMS) communication between soldiers in order to fill this void and offer soldiers a more securely private means of textual communication, Smart Message Communication for Warrior Using Android is developed.

We used ECC cryptosystem for encryption and decryption of message (SMS). Text Encryption will be a third-party application capable of running on any Android system. It will allow users to send and receive encrypted text messages using our application. About key exchange we used Diffie Hellman key exchange mechanism it'll allow automatically exchange key between soldiers and start a secure session. In this way, we hope to provide a safe and secure means of transferring private messages between any two Android phones and it'll also provide identifying end user as a valid user or not.

Keywords: Android, Decryption, Encryption, ECC, SMS, Text secure, Cryptosystem.

I. INTRODUCTION

Messaging (SMS) is getting more popular now-a- days. It will play a very important role in the mobile messa mobile commerce [3] (M-Commerce). Up to now many business organizations use SMS for their business purposes. SMS's security has become a major concern for business organizations and customers. There is a need for an end to end SMS Encryption in order to provide a secure medium for communication. Security is main concern for any business company such as banks who will provide these mobile banking services. Currently there is no such scheme that provides complete SMSs security. The mobile messaging market is growing rapidly and is a very profitable business for mobile operators. It can be seen from figure1 that the growth rate of SMS in worldwide during 2000 – 2015F (F stands for forecast) in billion.SMS has a variety of advantages and disadvantages for M-Commerce purpose [3]. The advantages are easy to use, common messaging tool among consumers, works across all wireless operators, affordable for mobile users, no specific software required to installation, allows banks and financial institutions to provide real-time information to consumers & employees, stored messages can be accessed without a network connection.

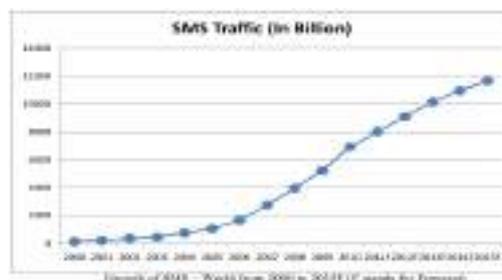


Fig. 1: SMS Traffic

AN EFFICIENT GENETIC ALGORITHM BASED SYSTEM FOR NETWORK INTRUSION DETECTION

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Introduction

While designing an intrusion detection system, detection accuracy is an important consideration. The system needs to perform a proper detection task with high detection rate on malicious activities but low false alarms on normal computer usages. If an intrusion is detected quickly enough, an intruder can be identified quickly and ejected from the system before any damage is done or any data are compromised. Even if the detection is not sufficiently timely to preempt the intruder, the sooner that the intrusion is detected, the less is the amount of damage done and more quickly that recovery can be achieved. An effective intrusion detection system can serve as a deterrent, so acting to prevent intrusion detection enables the collection of information about intrusion techniques that can be used to strengthen the intrusion prevention facility.

The significant increase of our everyday life dependency to Internet-based services has intensified the survivability of networks. During the past number of years, machine learning and data mining techniques have received considerable attention among the intrusion detection researchers to address the weaknesses of knowledge base detection techniques [1]. This has led to the application of various supervised and unsupervised techniques for the purpose of intrusion detection. Different machine-learning techniques such as Bayesian Classifiers and Decision Trees have been trained on the KDD Cup 99 data set [3] to learn normal and inconsistent patterns from the testing data and thus generate classifiers that are able to detect an intrusion attack [2]. In order to make IDS more efficient, reducing the dimensions and data complexity have been used as simplifying features. Feature selection can reduce both the data and the computational complexity [8].

In this paper, we present the application of machine learning to intrusion detection. We analyze two learning algorithms (NB and BayesNet) for the task of detecting intrusions and compare their relative performances [4]. There is only available data set is KDD data set for the purpose of experiment for intrusion detection. KDD data set contain 42 attributes. Using all the attributes of the data set causes increase in the learning time of the algorithm means late detection of the intrusion by IDS. Here we are proposing the feature reduction of the data set using Genetic Algorithm.

Proposed Approach

There are different phases in the proposed architecture for the efficient Intrusion detection system. NSL-KDD is selected during selection of suitable dataset phase. Genetic Algorithm approach is used for features optimum subset selection. In the third phase, J48, JRIP, k-Star and Naive Bayes classifier algorithms are used for the classification. The output of the classifier is compared with a classification done by Best First Search Feature Selection and the results of the two methods are analysed. Figure 1 is a block diagram for the proposed system.

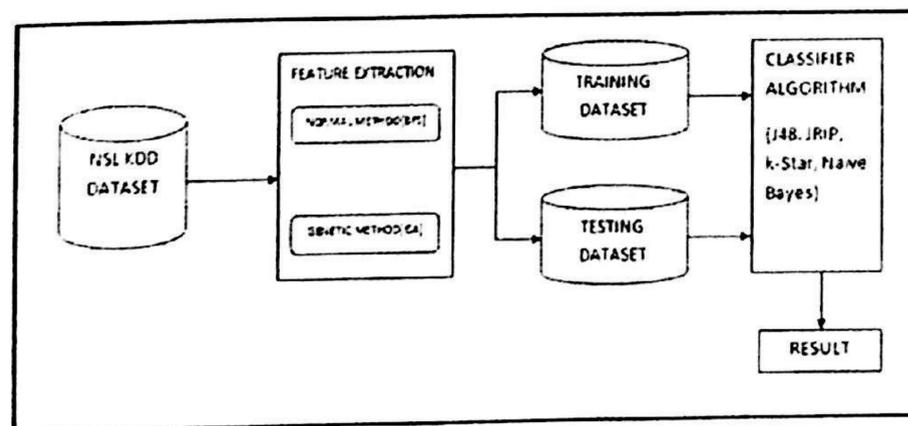


Fig 1 Block Diagram Of Proposed System

Feature Selection

In order to make IDS more efficient, reducing the dimensions and data complexity have been used as simplifying features. Feature selection can reduce both the data and the computational complexity. It can also get more efficient and find out the useful feature subsets. It is the process of choosing a subset of original features so that the feature