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VOL - I (Part - III)

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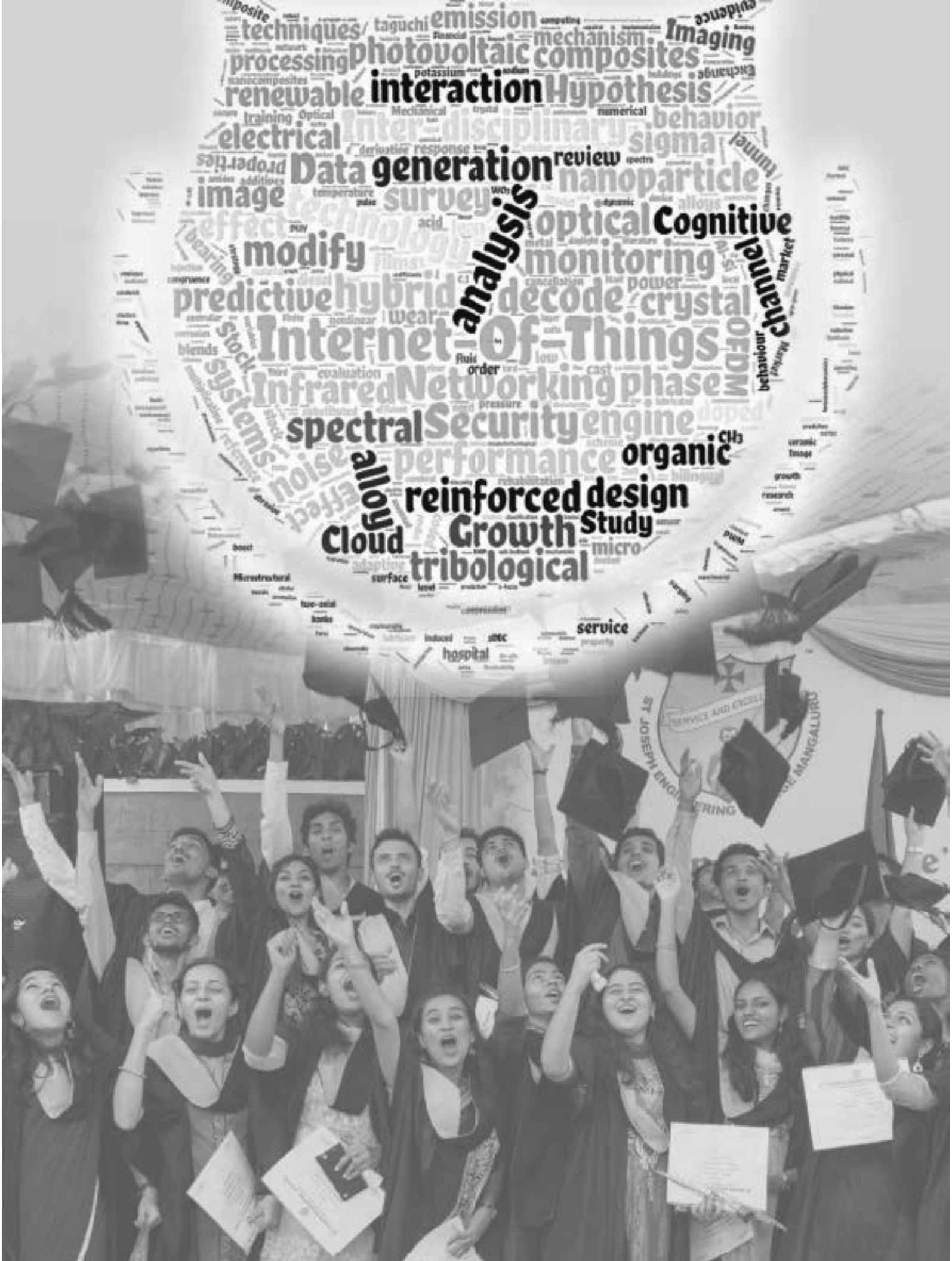
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IC-1	Karimbi Mahesh Kavitha Luis Gomes José Aires José Gabriel Pereira Lopes	Classification and selection of translation candidates for parallel corpora alignment	Proceedings of the 17th Portuguese Conference on Artificial Intelligence, Coimbra, Portugal, 2015, pp 723-734	341
IC-2	K M Kavitha Luis Gomes José Gabriel P Lopes	Bilingually motivated segmentation and generation of word translations using relatively small translation data sets	Proceedings of the 29th Pacific Asia Conference on Language, Information and Computation, Shanghai, China, 2015, pp 187 - 196	342
IC-3	K M Kavitha Luis Gomes José Gabriel P Lopes	Learning clusters of bilingual suffixes using bilingual translation lexicon	Proceedings of the Third International Conference on Mining Intelligence and Knowledge Exploration, Hyderabad, 2015, pp 607-615	343
NC-4	Hareesh B Vasudeva	A theoretical survey for land cover and land use assessment using graph based image processing techniques	National Conference on Signal and Image Processing, VCET, Puttur, 2015	344
NC-5	Hareesh B Vasudeva	A land cover and land use assessment for different agriculture cultivations using graph based image segmentation techniques	National Conference on Geospatial Information and Technologies Advancement, Shri Madhwa Vadiraja Institute of Technology & Management Bantakal, Udupi, 2015	345
IC-6	K M Kavitha Luis Gomes José Gabriel P Lopes	Using bilingual segments in generating word-to-word translations	Proceedings of the Sixth Workshop on Hybrid Approaches to Translation, Osaka, Japan, 2016, pp 61-71	346
ENGINEERING MATHEMATICS				
IJ- 1	Jagadeesha B B S Kedukodi S P Kuncham	Interval valued L-fuzzy ideals based on t-norms and t-conorms	Journal of Intelligent and Fuzzy System, 28 (6), 2015, pp 2631-2641	347
IJ-2	Ramananda H S	New Chinese remainder theorem and moduli sets	Mathematical Science International Research Journal, 4(2), 2015, pp 179-181	348
IJ-3	Ramananda H S	Strong congruence relation in atomistic lattices	Acta Mathematica Universatis Comenianae, 85(2), 2016, pp 337-346	349
IJ-4	S P Kuncham B S Kedukodi Jagadeesha B	Interval valued L-fuzzy cosets and isomorphism theorems	Afrika Matematika, 27, 2016, pp 393-408	350

ENGINEERING PHYSICS				
IJ-1	N B Rithin Kumar Vincent Crasta B M Praveen B Shreeprakash F Viju	Micro structural studies of PVA doped with metal oxide nanocomposites films	AIP Conference Proceedings, 1591(493), 2015, pp 493-495	351
NJ-2	Rithin Kumar N B Vincent Crasta B M Praveen Mohan Kumar	Studies on structural, optical and mechanical properties of MWCNTs and ZnO nanoparticles doped PVA nanocomposites	Nanotechnology Reviews, 4(5), 2015, pp 457-467	352
IJ-3	Rithin Kumar N B Vincent Crasta B M Praveen Mohan Kumar	Enhancement of optical, mechanical and micro structural properties in nanocomposite films of PVA doped with WO_3 nanoparticles	International Journal of Structural Integrity, 6(3), 2015, pp 338-354	353
IJ-4	Rithin Kumar N B Vincent Crasta B M Praveen Shreeprakash B	Enhancement of micro structural properties of PVA doped with MWCNT's and metal oxide nanocomposites films	AIP Conference Proceedings, 1665(140002), 2015	354
NJ-5	N B Rithin Kumar Vincent Crasta B M Praveen	Dielectric and electric conductivity studies of PVA (Mowiol 10-98) doped with MWCNTs and WO3 nanocomposites films	Materials Research Express, 3(055012), 2016, pp 1-12	355
IJ-6	P C Rajesh Kumar K Janardhana K M Balakrishna T Sheela	Study of non linear optical properties of a chalcone doped PVA composite material	Procedia Engineering, 141, 2016, pp 83-90	356

SUMMARY OF PUBLICATIONS 2015-2016

ARTICLES	CSE	CV	EC	EE	ME	MBA	MCA	BASIC SCIENCE	TOTAL
NC	2	-	6	3	4	-	2	-	**17**
IC	8	2	3	3	4	1	4	-	**25**
NJ	1	1	2	1	1	7	-	2	**15**
IJ	4	3	4	11	43	4	-	8	**77**
BOOKS	-	-	-	-	-	1	-	-	**1**
TOTAL	**15**	**6**	**15**	**18**	**52**	**13**	**6**	**10**	**135**

NC- National Conference, **IC**– International Conference, **NJ**- National Journal, **IJ**- International Journal

COMPUTER SCIENCE AND ENGINEERING

Cross-Layer Property Verification with Property Sequence Charts

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ABSTRACT

Monitoring and Adaptation forms an important phase in the life cycle of a Service Based Application (SBA). A vast body of research exists which deal with monitoring of properties and constraints of a SBA in the service composition. We find that there is a lack of coordinated holistic approach concentrating on all the layers of the SBA. This paper proposes a framework to monitor properties of the SBA across all the functional layers by using Property Sequence Charts and AOP techniques, illustrated with the help of an e-health case study.

**Full paper: Proceedings of the International Conference on Soft-Computing and Networks Security (ICSNS), 25th-27th February 2015, Coimbatore, Tamil Nadu, India, pp 547-552*

A Survey on SLA Negotiation Based on QoS Parameters in Cloud Environments

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ABSTRACT

Although cloud computing is in the nascent stage, the cloud services are fast catching on in the IT industry. Cloud users can save a lot of capital expenditure (CAPEX) and invest only in Operational expenditure (OPEX) and concentrate on doing their business. But often it is necessary to check the QOS parameters of a cloud service before signing a contract with the cloud provider. This is the case because SLA of cloud services heavily benefit cloud providers than cloud consumers. Therefore the SLA needs to be negotiated beforehand to avoid the above situation. In this paper we present a survey of SLA negotiation, highlighting its key concepts, covering the Scope of SLA, importance of QOS metrics, essential aspects of service negotiation. We also elaborate SLA establishment, focus on QOS Negotiation strategies like trade off v/s concessions (utility based) and fuzzy preference relation based consensus. We also describe the need for cloud brokers and need for personalized SLA for individual cloud customer. The aim of this paper is to provide a better understanding of the service negotiation based on QOS metrics in a cloud environment and identify important research directions in this important area.

**Full paper: Proceedings of the First International Conference on Futuristic Trends in Computational Analysis and Knowledge Management, ISBN 978-1-4799-8432-9, 25th-27th February 2015, Noida, pp 213*

An Efficient Two-Server Password Based Authentication System

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ABSTRACT

User Authentication in computer systems is an important basis in computer generation. The abstraction of a user id and password is one of the secure ways for authentication. It is not only the secure way, but also cost effectual and thoroughly efficient. Nowadays we can perceive the password cracking and hacking in every place. Currently we are using the single server system for this sort of password based authentication. Conventional protocols for password-based authentication imagine a single server which supplies all the data required to validate a user. When an aggressor gets the data stored on the server, he can get all the passwords which were stored in the server. To overcome this problem, a number of strategies have been proposed in which a user's password information is shared between numerous servers, and these servers combine to validate the user. In this paper, a new efficient two-server password based authentication is proposed where the client can establish different cryptographic keys with the two servers. The proposed system uses residue number system. This system is used for two server authentication scheme. Here, a single key is used for the authentication or it can also be referred as symmetric key. This key is split into a tuple which contains the representation of the key in residue number system. Single key of the tuple is used in either server for authentication. Further a redundant bit is used at the user side so that the key can be recovered by using this redundant bit which can be stored in one of the dedicated server. These two servers' runs parallel and collaborate with each other to validate the user.

**Full paper: International Journal of Innovative Research in Computer and Communication Engineering, NMAMIT, Nitte, Vol.3, Special Issue No. 5, 5th-6th May 2015, pp 49-52*

Blocking Misbehaving Users by K-Means Clustering Algorithm

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ABSTRACT

Recent development in technology made our work easier when compare to earlier times. Using Data mining techniques it is possible to search large amounts of data for definite rules and patterns. If applied to network monitoring data recorded on a host or in a network, they can be used to detect intrusions, attacks and anomalies. Intrusion detection is one of the major fields of research and researchers are trying to find new techniques for detecting intrusions. This paper presents the application of data mining methods to packet and flow data captured in a network. Here we have presented a novel flow-based anomaly detection scheme based on the K-means clustering algorithm. Training data containing unlabeled flow records are separated into clusters of normal and anomalous traffic. The corresponding cluster centroids are used as patterns for computationally efficient distance-based detection of anomalies in new monitoring data.

**Full paper: International Journal of Innovative Research in Computer and Communication Engineering, NMAMIT, Nitte, Vol.3, Special Issue 5, 5th-6th May 2015, pp 283-288*

Multi Objective Evolutionary based Approaches for Intrusion Detection-A Review

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ABSTRACT

Every real-world problem contains several competing objectives and involves simultaneous optimization. In single objective optimization, an attempt is made to obtain a best solution. In multiple objective optimizations, a set of solution exists where every solution will be different from the other. Users will have the option of selecting the best solution based on the requirements. In recent years, Multi-objective Evolutionary Algorithms (MOEAs) are the most widely used technique in various fields due to their power in solving difficult problems with relative ease especially in the field of intrusion detection. This paper presents the taxonomy of various MOEA based approaches proposed by various researchers to detect intrusions along with their pros and cons.

**Full paper: International Conference on Emerging Trends in Engineering (ICETE-15), May 2015, NMAMIT, Nitte*

Multi-Keyword Based Sorted Querying Over Encrypted Cloud Data

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ABSTRACT

Cloud computing creates a versatile workspace in which anything can be stored and referenced at any time. Adopting this technology means all the sensitive information must be encrypted prior to storage to overcome the security issues. The problem lies in querying the encrypted data. The existing system supports only exact keyword search which makes effective searching a very challenging task. Multi-keyword based Sorted Querying provide an effective mechanism for searching over encrypted cloud data by maintaining the keyword privacy and by tolerating the spelling mistakes and keyboarding error in the user input. This solution supports multi-keyword querying where the searching result is sorted according to the relevance criteria of occurrence of keywords in input sequence.

**Full paper: Proceedings of the IEEE International Conference on Futuristic Trends on Computational Analysis and Knowledge Management (ABLAZE), 25th-27th February 2015, Noida, New Delhi, pp 23-27*

Survey on Web Service Discovery and Availability in Mobile Environments and Future Trends in Mobile Web Services

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ABSTRACT

The advancement in technology related to mobile devices has become a very important platform to share mobile information among millions of users across the globe. Also the mobile devices are easily available and accessible among the people. Recently, the mobile devices have been powered by faster and multicore processors, more available memory and sophisticated user display. People prefer smart phones rather than carrying laptops or desktops because of their small size, light weight and anywhere anytime information provider. Many users need to access the services on these mobile phones connecting through the web. Just like centralized service providers there is a great need of providing service through mobile phones. In most scenarios, personal smart phones also provide web services. These services are referred as mobile web services since the devices are in mobility. In this paper, a review on the availability and discovery of web services in resource constrained mobile specific environments and the future trends have been discussed.

**Full paper: International Journal of Computer Applications (0975 – 8887), ISBN: 973-93-80890-57-3, DOI: 10.5120/ijca2015907621, Vol. 132, Issue No.12, Dec 2015, pp 16-19*

Analysis of Product Twitter Data though Opinion Mining

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ABSTRACT

In recent years, there is a rapid growth in online communication. There are many social networking sites and related mobile applications, and some more are still emerging. Huge amount of data is generated by these sites everyday and this data can be used as a source for various analysis purposes. Twitter is one of the most popular networking sites with millions of users. There are users with different views and varieties of reviews in the form of tweets are generated by them. In this paper, we have concentrated on providing the opinion on the particular product using the Twitter data. There are millions of reviews on single product and it would be impossible for the customer or the organization to read each review and judge the quality of the product. This implementation paper provides the opinion mining on particular product based on reviews. The work includes determination of positivity, negativity of tweets and provides overall percentage of positive, negative and neutral tweets. The main idea behind this work is that the customer should automatically get suggestion about the product based on previous tweets. This implementation paper also provides effective decision making opinion to the customer and also provides feedback to the company to improve their product and business.

**Full paper: Proceedings of the IEEE Annual India Conference (INDICON 2016), December 2016, Bangalore, pp 1-5*

Metrics for Monitoring a Hierarchical Service-Based System

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ABSTRACT

The dynamic nature of service infrastructure causes the Quality of Service (QoS) of Service- Based Systems (SBS) to be unpredictable during execution. This necessitates monitoring and analysis tools which collect measure and analyse metrics that characterise performance of a SBS from diverse facades in order to recognize elements that contribute to anomalies. To have a clear insight into the working of a business process, performance metrics should be defined and measured from multiple facets of the SBS. Existing approaches which attempt to manage performance of a SBS focus on metrics of the business process, services or infrastructure resources. There is a lacuna in studies which define and assimilate metrics from all levels in order to gain a holistic view of the business process performance. In this study we define metrics at design-time to manage performance and obtain metrics from all the levels of an SBS during execution using Complex Event Process (CEP) paradigm. The empirical results demonstrate that our approach has negligible effect on the performance of the SBS .

**Full paper: International Journal of Applied Engineering Research, Vol. 11, Issue No. 6, 2016 pp 3897-3904*

Managing Dependencies for a Hierarchical Service-Based System

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ABSTRACT

This study proposes a hierarchical model of a Service-Based System (SBS) to represent horizontal and vertical dependencies within a SBS. In order to detect root-causes and conduct impact-analysis of anomalies occurring in a SBS, we represent the SBS as a multi-layer system consisting of Business Process Management (BPM) layer, Service Composition and Coordination (SCC) layer and Service Infrastructure (SI) layer using Hypergraphs. The intra-layer and inter-layer relationships are depicted by hyperedges that effectively depicts n-ary relationships which are not possible with simple graphs. Using hypergraphs and hyperedges we have effectively represented intra-layer horizontal time dependencies and inter-layer vertical time and resource dependencies. Horizontal time dependencies help us to analyse the impact of a time delay on related entities of the same layer. Vertical resource dependencies help in root-cause analysis of the time delay. Vertical time dependencies aid in finding the impact of service delay on activities of the business layer. Our approach based on hypergraph helps to model relationships of a SBS from multiple perspectives using hyperedges. The proposed approach meticulously represents various vertical and horizontal dependencies between elements of a SBS and can be effectively utilised to identify root-cause of an anomaly and its impact on related entities of a hierarchical SBS.

**Full paper: Indian Journal of Science and Technology, Vol. 9, Issue No. 25, 2016*

Automated Negotiation of QoS parameters using Fuzzy Logic Based Concession Strategy for Cloud Computing Environments

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ABSTRACT

Cloud service negotiation can happen in two ways i.e using tradeoff and concession but there are other ways of accomplishing service negotiation. The model we propose below is using the fuzzy model. We generate a negotiation strategy which can give better social benefit and success rate for the problem under consideration. In our model we have used fuzzy logic to give acceptance on a proposal being exchanged between cloud consumer and cloud provider. Although the strategy is similar to concession it gives better utilities when compared to the previous concession strategy. It is also observed that Fuzzy Logic based concession(FLC) achieves better utilities for both consumer and provider 55% of the time over a random dataset as compared to only 10% for tradeoff approach. The success rate and social benefit of all strategies are consolidated in a table at the end.

**Full paper: Forth International Conference on Emerging Research in Computing, Information, Communication and Applications, 29th - 30th July 2016, Bangalore*

Development of an Evolutionary Framework for Autonomous Rule Creation for Intrusion Detection

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ABSTRACT

Network intrusion detection system (IDS) plays a major role in any security based architecture. Various IDS have been developed to detect the intrusions that occur in the real world. The most commonly used network security tool used is Snort IDS. Snort is a rule-based system that generates alerts for the matching network patterns. Most of the rules stored in the Snort database fail to generate alerts for real network traffic. It is necessary to create rules that detect the attacks efficiently. In this paper we have made an attempt to autonomously generate rules using the evolutionary approach. The rules produced were tested for Darpa 1999, ISCX 2012 and ICMP network packets and were able to detect attacks with a high detection rate.

**Full paper: Proceedings of the Sixth IEEE International Conference on Advanced Computing, SRKR Engineering College, Bhimavaram, 2016, pp 534-538*

Survey on Data Dissemination with Incentive Aware Mechanism in Delay Tolerant Mobile Network

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ABSTRACT

Data Dissemination is the release of data obtained from a statistical activity to users through various media. For each data release there is also a need to effectively communicate the data to data users and a requirement to make known the availability of the release. Delay Tolerant Networks (DTNs) have the unique feature of intermittent connectivity, which makes routing quite different from other wireless networks. DTNs have applications in several ad hoc networking and data dissemination operations, like crisis management, battlefield, wildlife monitoring, transportation engineering, Pocket Switched Networks etc. In this paper Data dissemination with incentive aware mechanism is proposed where data fall into a range of interest types and each node may have one or multiple interests. Incentive-based Dissemination scheme allows nodes to cooperatively deliver information of interest to one another via chosen delivery paths that utilize few transmissions.

**Full paper: National Conference on Recent Advances in Information & Communication Engineering (NCRAICE), 2016, AIT, Chikkamagaluru, Karnataka*

Analysis and Prediction of Application Usage in Android Phones

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ABSTRACT

Predictive Analytics analyze the present and the historical informations and make future predictions utilizing data mining or machine learning techniques. Predictive models usually check for some patterns and relationships leading to certain behaviours based on the dependent variables. This paper proposes a mechanism named Analysis and Prediction of Application Usage (APAU) in Android Phones for providing recommendations to a smart phone user while selecting applications of their interest like mail checking, messaging and making calls. APAU mainly focuses on identifying usage patterns and investigating the human behaviour during application selections by extracting the generic behavioural patterns to predict and provide useful set of recommendations.

**Full paper: Second International Conference on Advances in Electrical, Electronics, Information, Communication and Bio-Informatics (AEEICB), 27th-28th February 2016, Chennai, Tamil Nadu*

Enhanced Dynamic Load Balancing Algorithm for Resource Provisioning in Cloud

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ABSTRACT

Cloud computing is a vigorous technology by which a user can get software, application, operating system and hardware as a service without actually possessing it and paying only according to the usage. Load balancing is a critical aspect that ensures that all the resources and entities are well balanced such that no resource or entity neither is underloaded nor overloaded. The load balancing algorithms can be static or dynamic. In this paper, an enhanced dynamic load balancer based on HTV load balancer has been implemented which permits the user to input the number of hosts, VMs, job requests and also the type of application to perceive priority considerations for executing the jobs. The results obtained from the proposed load balancer portrays that it is adept to achieve better performance, resource utilization and load balancing than the HTV load balancer.

**Full paper: IEEE International Conference on Inventive Computation Technologies (ICICT), 26th-27th August 2016, Coimbatore, Tamil Nadu*

CIVIL ENGINEERING

Blast Induced Response of a Tunnel in the Presence of a Two Storied Structure

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[2&3]Department of Civil Engineering, National Institute of Technology, Karnataka

ABSTRACT

Blast induced vibrations are common, adjacent to construction sites. Buildings adjacent to tunnel with blasting at close proximity from structures are highly vulnerable to vibrations. In this study three velocity time histories of different PPV's are applied at three different boundaries of the model. Building storey taken into consideration is a 2-storeyed building. 3 Dimensional Distinct Element code is used for the study. Response velocity spectrum generated due to blast is noted at various target points in the model. Study revealed that at higher storey the velocity and displacement increases. Displacement values indicate that models subjected to input Velocity time history at the base of model, led to greater displacement at various points of the tunnel and columns of the building compared to velocity time histories applied at other boundaries of the model.

**Full paper: Journal of International Society of Rock Mechanics, Vol.4, Issue No.1, 2015, pp 10-14*

Flow Regionalization under Limited Data Availability-Application of IHACRES in the Western Ghats

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ABSTRACT

Long-term measurements of river stream flow are essential for numerous applications in water resources. In many parts of the world, rivers remain un-gauged; stream flow prediction for such un-gauged catchment requires information transfer from gauged catchments that are perceived to be hydrologically similar to them. Prediction of stream flows at un-gauged catchments is typically performed through the transfer of hydrologic information (e.g., model parameters, hydrologic indices, stream flow values) from gauged to un-gauged catchments. This procedure is commonly referred to as regionalization. Hydrologic models have been used extensively for the purpose of transfer of hydrologic model parameters from gauged to un-gauged catchments and these models include HBV, IHACRES and PDM.

In the present study, for the purpose of regionalisation, a lumped conceptual model namely, IHACRES has been used. IHACRES is a parsimonious model having six numbers of parameters and requires small data input. The model parameters are used to characterise the daily stream flow of the catchment and are related to the landscape attributes of the catchments. Further, as an offshoot, IHACRES provides for base-flow separation and development of unit hydrograph, which becomes an input in other hydrological works.

In the current paper, the model IHACRES is applied at daily time step to six catchments (Malathi, Hemavathi, Lakshmanthirtha, Yetthinahole, Kadumanehalla and Kumaradhara) in the region of Western Ghats, Karnataka. IHACRES, being parsimonious, requires precipitation and temperature as the only data-input. Information is compiled for physical catchment descriptors using the elevation map of the area (DEM) and relationships are developed between the parameters and the descriptors. These relationships are validated by modelling daily stream flow of a gauged catchment (Nethravathi). This work proves that as an alternative model, IHACRES does well in the domain of flow regionalization with least data inputs.

**Full paper: Proceedings of the International Conference on Water Resources, Coastal and Ocean Engineering, Aquatic Procedia, Vol. 4, 2015, NITK, pp 933-941*

Suitable Site Detection for Groundwater Recharge in Parts of Shambhavi- Pavanje River Basin

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ABSTRACT

The present study is the result of the research work carried out by generating the thematic maps based on satellite images and integrating the maps in a GIS environment, to suggest suitable locations/structures for artificial recharging of groundwater aquifers. Remote sensing (RS) data provides synoptic view, repetitive coverage and multispectral information, can be used successfully to generate different thematic maps. The study area covers about 355sq.km, which includes part of Shambhavi and Pavanje River basins of Mangalore, Karnataka. The area lies between 13000' and 13008' North latitude and 74045' and 750 00' East longitudes. SOI topographical map, satellite images of IRS-IC LISS III data, and Google images were used in the present study. ERDAS 2013 and Arc Map 10 software's have been used to generate and integrate various thematic maps. Structures like nala bunds, check dams are suggested for recharging aquifers.

**Full paper: International Journal of Science and Research, Vol. 4, Issue No. 7, ISSN: 2319 – 7064, July 2015, pp 1410-1413*

Treatment of Tannery Effluent Using Electrocoagulation

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ABSTRACT

In the present study, the treatment of tannery wastewater was performed by electrocoagulation method (EC) using aluminum electrodes in a bipolar connection. The removal of COD, Turbidity, TDS and Conductivity was experimentally investigated using direct current (DC) electrocoagulation (EC). In the EC of tannery wastewater, the effect of pH, electrolysis time and voltage were examined. The batch experimental results revealed that the removal efficiency of the overall COD, Turbidity, TDS, Conductivity, Total carbon, Chromium, Sulphate, Total solids and Chloride concentration, depend on the nature of the electrode material. The optimum operating range for each operating variable was experimentally determined. The highest COD and Turbidity removal efficiency were obtained with the use of aluminum electrode. The overall COD and Turbidity removal efficiencies reached 91% and 100%, respectively.

**Full paper: International Journal of Innovative Research in Science, Engineering and Technology, ISSN: 2319-8753(O) ISSN: 2347-6710(P), Vol. 4, Issue No. 7, July 2015, pp 6554-6560*

Response of Strata and Buildings to Blast Induced Vibrations in the Presence and Absence of a Tunnel

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ABSTRACT

Blast induced vibrations form an inevitable and major part of modern day construction. The changes that happen to the strata or buildings surrounding the blast are evident in a fraction of a second. Effect of damage is more pronounced in the absence/presence of the tunnel. The vibration produced due to blast may be induced due to a deep underground explosion, a surface explosion or even an in-tunnel explosion. In this study the above three situations are numerically modeled by a Distinct Element software 3DEC (3.0). Soil properties are varied representing soft and stiff strata. Further, three velocity time histories of 2, 45 and 85 Hz are used as an input in the model and are applied at three different boundaries of the model. Results of the analysis reveal that the response of building in softer strata and lower frequencies led to greater magnification of velocities and displacements compared to response of buildings in stiff strata. Presence of the tunnel led to reduction of peak velocity (PV's) and displacements at the building top due to damping effect. PV's at the top floor were greater than the PV's at the bottom floor and there was an upliftment of the soil mass at the ground level. However, the upliftment in the presence of the building was lower than the upliftment in the absence of the building. Stress in the tunnel lining increased in the presence of the building, however percentage reduction of stress depends on the number of building stories.

**Full paper: Journal of Geotechnical and Geological Engineering, Springer, Vol.34, 2016, pp 1013-1028*

Tunnel-Soil-structure Interaction Subjected to Blast Loads of Varying Intensities

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[2]Department of Mining Engineering, National Institute of Technology, Karnataka

ABSTRACT

Vibrations induced from blasting are common near mining and construction sites. Buildings which are in close proximity to direct or indirect explosions are highly vulnerable to excitations. The effect of vibrations is more pronounced in the presence of a tunnel. In this study two velocity time histories with different frequencies are applied at the crown of the tunnel. Building storeys are varied as 2, 4 and 8 storeys. Two different combinations of geo-mechanical properties of soil and structure are considered. Three dimensional Distinct Element Code are used for the study. Response velocity, displacement and stress time histories were noted at various target points in the model. Irrespective of the soil type, concentration of velocity in the top floors was more than the bottom floors. Stress concentration at the sides of the tunnel in the presence of building and tunnel are higher than the stress concentration generated only in the presence of a tunnel. Amplification of velocity was observed when the frequency of the input wave was 2Hz.

**Full paper: Proceedings of the International Conference on Geotechnical Engineering, 10th-11th August 2016, Colombo, pp 495-498*

ELECTRONIS AND COMMUNICATION ENGINEERING

Region Incrementing Schemes in Visual Cryptography using Matlab

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ABSTRACT

In Visual Cryptography Scheme (VCS) one whole image is considered as single secret level and same encoding rule is applied for all pixels of that image. But in Region Incrementing Visual Cryptography Scheme (RIVCS), different encoding rule is used for different regions depending upon the secret levels. Initial research was made on RIVCS by Wang, which is Wang's (2, n) RIVCS where k=2 is a threshold and n is number of shares (or shadows), share is the part of secret image in unreadable form. Secret image is divided into multiple regions where each region has a certain level of secret. Any t shadow images, can be used to reveal (t-1)th region where 2<t<n. This is suitable only for k=2 and also suffers from incorrect-color problem (color of reconstructed images may be reversed).To overcome this (k, n) RIVCS was developed for any values of k and n where k<n. It reveals correct colors for all regions, reduce pixel expansion, and enhance contrast; comparative study of both schemes was performed and shares.

**Full paper: International Conference on Innovative Research and Solutions (ICIRS) 11th April 2015, Bengaluru, Karnataka, India*

Visual Cryptography Schemes using Matlab

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ABSTRACT

Visual Cryptography Scheme (VCS) is a cryptographic technique where secret image (plaintext) is encrypted into shares (cipher text) such a way that decryption is simple OR operation. To make secure transmission of shares digital watermarking is applied to the shares. In VCS one whole image is considered as single secret level and same encoding rule is applied for all pixels of that image. But in Region Incrementing Visual Cryptography Scheme (RIVCS), different encoding rule is used for each pixel of different regions depending upon the secret levels. Visual cryptography is widely used in applications like Remote Electronic Voting, banking, Anti-Spambot safeguard, and in secure transmission of financial documents. Initial research was made on VCS where binary image is encoded into n number of shares but decoded image suffers from poor contrast and pixel expansion. Next is RIVCS by Wang, Wang's (2, n) RIVCS where k=2 is a threshold and n is number of shares. Share is a part of secret image in unreadable form. Secret image is divided into multiple regions where each region has a different level of secret. Any t shares, can be used to reveal (t-1) th region where $2 \leq t \leq n$. This is suitable only for k=2 and also suffers from incorrect-color problem (color of reconstructed images may be reversed).

To overcome this problem Yang et al.'s (k, n) developed RIVCS for any values of k and n where $k<n$. It reduces pixel expansion and enhances contrast. An approach is done for embedding shares into the host image to provide authentication to the shares by applying DWT (Discrete Wavelet Transform). Comparative study of all the schemes is performed. Yang et al.'s (k, n)-RIVCS gives comparatively better output with less pixel expansion and enhances the contrast when compared to the Wang's scheme and VCS.

Visual cryptography and region incrementing visual cryptography schemes are performed on gray and binary images in this project. It can be extended for colour images and different watermarking techniques can also be implemented in order to increase the security.

**Full paper: Proceedings of the National Conference on Advances in Communication and Signal Processing (NCACSP-2015), 13th-14th August 2015, St. Joseph Engineering College, Mangaluru, Karnataka, India, pp 133-140*

An Enhanced and Secure Image Transmission Technique using Secret Fragment Visible Mosaic Image

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ABSTRACT

Paper deals with the creation of a new type of computer art image called the secret fragment visible mosaic image, which contains small fragments of secret image. The preliminary mosaic image is created by dividing the secret image into fragments called tile images and embedding them into the target image based on the image similarity measure between the tile image and target blocks. The Preliminary mosaic image is created by fitting small fragments of secret image into the target image, achieving an effect of embedding. The given source is secretly embedded into the resulting Preliminary mosaic image. The information of tile image fitting sequence is embedded into the Preliminary mosaic image, which is required to recover the original secret image. The image obtained after embedding the required information, to recover the original secret image is called as mosaic image. The receiver first recovers the tile image fitting sequence from mosaic image and this information is used to retrieve the original secret image. This method is used to ensure secrecy of the image, secure image transmission and for covert communication.

**Full paper: International Journal of Engineering Research and Technology (IJERT), Vol. 3, Issue No.19, 2015, pp 662-667*

An Efficient Steganography with Mosaic Image for Secure Communication

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ABSTRACT

Paper deals with the creation of a new type of computer art image called the secret fragment visible mosaic image, which contains small fragments of secret image. The preliminary mosaic image is created by dividing the secret image into fragments called tile images and embedding them into the target image based on the image similarity measure between the tile image and target blocks. The Preliminary mosaic image is the result of fitting secret blocks into the target blocks based on the block similarity measure between secret and target blocks. The similarity between secret and target blocks is obtained using h-feature. The information of the secret block fitting sequence is embedded into the preliminary mosaic image using Lossless LSB replacement technique. This information is required to recover the original secret image. The image obtained after the process of embedding is called mosaic image. The receiver first recovers the secret block fitting sequence from the mosaic image and this information is used to retrieve the original secret image.

**Full paper: National Conference on Advances in Communication and Signal Processing, ISBN: 978-93-81195-84-0, 13th-14th August 2015, St. Joseph Engineering College, Mangaluru*

Biometric Based Iris Recognition System for Person Identification

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ABSTRACT

In the recent years, the need for security is increasing a lot. The biometric system provides improved security than the conventional security systems like passwords, pin numbers etc. Iris recognition system is considered as one of the best biometric recognition system. It consists of five major steps i.e. Preprocessing, Segmentation, Normalization, Feature extraction and Matching. In the preprocessing stage iris is converted to grey scale. The Segmentation is performed using Canny edge detector and Circular hough transform. The Normalization is performed by Daugman's rubber sheet model. The Log gabor filter is used for extracting the features. The Matching is carried out by Hamming distance method. The system is tested on Casia and Ubiris iris images using Matlab and their results are compared.

**Full paper: International Journal of Advanced Research Trends in Engineering and Technology (IJARTET), ISSN 2394-37777 (Print), ISSN 2394-3785 (Online), Dayananda Sagar College of Engineering, Bengaluru, Vol. 2, Special Issue 27, June 2015, pp 36-40*

Segmentation of Breast Thermogram Images for the Detection of Breast Cancer-A Projection Profile Approach

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ABSTRACT

Breast Thermography is an emerging medical imaging tool, used for early detection of breast cancer. The growing tumor in the breast will cause the occurrence of some asymmetric heat patterns in the left and right breast. Asymmetry analysis of left and right breast is used for detecting the breast cancer from the breast thermogram images. This paper presents a method for segmenting the left and right breast from breast thermogram images using Projection Profile Approach. Horizontal Projection Profile (HPP) method is used for locating the lower and upper borders of the breast by detecting the infra-mammary fold and axilla curves of the breast respectively. Vertical Projection Profile (VPP) method is used for locating the left and right borders of the breast thermogram image, which detects the parabolic shape of the breast. The results of segmentation are satisfactory. Generalization of this method can be done for various types of breast thermogram images by standardizing the height, background and removal of the noise present in the image.

**Full Paper: Journal of Image and Graphics, Vol. 3, No. 1, June 2015, pp 47-51*

Medical Imaging Techniques and Computer Aided Diagnostic Approaches for the Detection of Breast Cancer with an Emphasis on Thermography – A Review

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ABSTRACT

In this article, a study of various medical imaging modalities and survey of computer aided detection (CAD) approaches used for the detection of breast cancer are presented. Early breast cancer detection, is important as it can increase the rate of diagnosis, cure and survival of the affected women. Medical imaging techniques can detect early signs of breast cancer. They are also used to diagnose, stage breast cancer and guide treatments. This article explains the imaging procedure, analysis of images, benefits and limitations of standard medical imaging techniques such as mammography, ultrasound, magnetic resonance imaging, and thermography. Also some of modern imaging techniques are discussed here. Comparative study of mammography, ultrasound, thermography and magnetic resonance imaging describes the benefits of thermography in early detection of breast cancer. CAD provides a fast, reliable, and cost-effective second opinion to support doctors with the diagnostic management of breast cancer. This article reviews various CAD algorithms developed and studied for mammography, ultrasound and thermography. From the literature review, it is observed that accuracy of detection of breast abnormalities using CAD are decided by many factors, such as size of database, image quality, segmentation of region of interest, extracted features and classifiers used, etc.

**Full paper: International Journal of Medical Engineering and Informatics (Inderscience), Vol. 8, No. 3, 2016, pp* 275-299

Asymmetry Analysis of Breast Thermograms using Automated Segmentation and Texture Features

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ABSTRACT

In this article, we present a new approach for breast thermogram image analysis by developing a fully automatic segmentation of right and left breast for asymmetry analysis, using shape features of the breast and Polynomial curve fitting. Segmentation results are validated with their respective Ground Truths. Histogram and grey level co-occurrence matrix-based texture features are extracted from the segmented images. Statistical test shows that features are highly significant in detection of breast cancer. We have obtained an accuracy of 90%, sensitivity of 87.5% and specificity of 92.5% for a set of eighty images with forty normal and forty abnormal using SVM RBF classifier.

**Full paper: Signal Image and Video Processing (DOI: 10.1007/s11760-016-1018-y, Springer November 2016*

Analysis of BER Performance of Different Channel Estimation Algorithms in OFDM Systems

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ABSTRACT

Orthogonal frequency division multiplexing (OFDM) provides an effective transmission over frequency selective fading channels, eliminating inter symbol interference (ISI). This technique has gained a lot of interest in mobile communication research, as the radio channel is usually frequency selective and time variant. Channel estimation is required to properly recover the transmitted signals with minimum error. To obtain the channel state information, training OFDM symbols or pilot symbols are transmitted along with the OFDM symbols. Pilot symbol aided channel estimation is especially attractive for wireless links, where the channel is time varying. Channel estimation of OFDM systems is done using block type pilot insertion, where pilot symbols are inserted into all the subcarriers for channel estimation. In this paper, bit error rate (BER) performance of channel estimation is analyzed using three different algorithms, least square (LS) algorithm, minimum mean-square error (MMSE) algorithm and singular value decomposition (SVD) algorithm. The BER performances of three algorithms are plotted using MATLAB. The BER plot concludes that the performance of the MMSE estimator is better than LS estimator. SVD estimator is the simplified version of MMSE and its performance is almost similar to MMSE in case of low Signal to Noise ratio (SNR).

**Full paper: National Conference on Advances in Communication and Signal Processing, ISBN: 978-93-81195-87-1, 11th-12th August 2016, St. Joseph Engineering College, Mangaluru*

Reduction of Noise for Speech Signal Enhancement Using Spectral Subtraction Method

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ABSTRACT

To improve the intelligibility and quality of the speech, speech enhancement is done. Speech signal when recorded in the noisy environment degrades the clean speech signal. Speech enhancement reduces the noise without distorting the original (clean) signal. In this concept, the method of Multi-Band Spectral Subtraction (MBSS) is used to enhance the noisy speech signal. The fact that the speech spectrum is affected by colored noise differently at various frequencies is taken into account. Later, the properties of this method are derived in terms of input and output SNR.

**Full paper: Proceedings of International Conference on Information Science, Department of Computer Science and Engineering, College of Engineering, ISBN: 978-1-5090-1987-8, 12th-13th August 2016, Cherthala, pp 46-49*

Tomato Maturity Grading using Image Processing

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ABSTRACT

Tomatoes are in high demand because the world population consumes them daily. So the quality of the tomato is important. Tomato maturity grading means checking the ripeness level of the tomato. The major problem in tomato color grading by human vision was due to the subjectivity of human vision and error prone by visual stress and tiredness The quality level of tomato is classified here into 3 grades, first grade (ripe tomato), second grade (half ripe tomato) and third grade (unripe or spoiled tomato). The image of tomato should undergo process like pre-processing, segmentation and then feature extraction and classification. The proposed method gives structure feature as well as texture feature of the input image of tomato. Color in tomato is the most important visible characteristic used to assess ripeness. Color and shape comes under structure feature extraction. In the proposed method color feature is extracted using color histogram method and Color Coherence Vector (CCV) method. Shape can be detected using edge detection algorithm. Texture feature extraction is done by using Local Binary Pattern (LBP) method. The extracted features are given to an Artificial Neural Network (ANN) , CCV and edge detection features given to K- means classifier. Feature matching process is done in ANN and K-means. The extracted features can be compared and classification comparison is done in terms of efficiency.

**Full paper: Proceedings of the National Conference on Advances in Communication and Signal Processing (NCACSP), St. Joseph Engineering College, Vamanjoor, 2016. pp 95-101*

Tomato Quality Evaluation Using Image Processing

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ABSTRACT

Tomato is one of the most popular fruit in the world. Day by day tomato consumption is increasing. Evaluating tomato maturity is to decide the ripeness and expiry of the tomato fruit. Color in tomato is the most important visible characteristic used to assess ripeness. The main factor of consumer intake is based on the color of the tomato. The image of tomato should undergo process like pre-processing, segmentation and then feature extraction. After feature extraction process, feature training and feature matching is done. In feature matching comparison of data images take place in order to get a ripened or a raw tomato. The proposed method gives structure feature as well as texture feature of the input image of tomato. The extracted features are compared by using Artificial Neural Network (ANN) and K-means clustering algorithm.

**Full paper : International Conference on Signal Processing, Communication and Computational Research (IFERP), Mysuru, 2016*

Image Restoration Using Adaptive Region-Wise p-norm Filter with Local Constraints

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ABSTRACT

In this work, we introduce a feature adaptive second-order p-norm filter with local constraints for image restoration and texture preservation. The p-norm value of the filter is chosen adaptively between 1 and 2 in a local region based on the regional image characteristics. The filter behaves like a mean curvature motion (MCM) [A. Marquina and S. Osher, SIAM Journal of Scientific Computing 22, 387–405 (2000)] in the regions where the p-norm value is 1 and switches to a Laplacian filter in the rest of the regions (where the p-norm value is 2). The proposed study considerably reduces stair-case effect and effectively removes noise from images while deblurring them. The noise is assumed as Gaussian distributed (with zero mean and variance σ ^2) and blur is linearly shift invariant (out-of-focus). The filter converges at a faster rate with semi-implicit Crank–Nicholson scheme. The regularization parameter is initialized and updated based on the local image features and therefore this filter preserves edges, structures, textures and fine details present in images very well. The method is applied on different kinds of images with different image characteristics. We show the response of the filter to various kinds of images and numerically quantify the performance in terms of standard statistical measures.

**Full paper: International Journal of Image and Graphics (WORLD SCIENTIFIC), Vol. 16, Issue No. 02, 2016, pp 1-25*

A PAPR Reduction Technique for OFDM Using Moving Average Filter

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ABSTRACT

Orthogonal frequency division multiplexing (OFDM) is a widely used modulation scheme, due to its immunity towards frequency selective fading. But, due to its multicarrier nature, the scheme suffers from high Peak-to-Average Power Ratio (PAPR), which degrades the transmitter efficiency. In this paper, a simple filtering scheme has been proposed which will drastically reduce PAPR at the cost of no additional bandwidth requirements and with minimum computational complexity. Analytical result for the proposed scheme has been derived which is supported by simulations indicating a better PAPR performance as compared to the conventional OFDM scheme.

**Full paper: National Conference on Advances in Communication and Signal Processing (NCACSP 2016), 11th-12th August 2016, St. Joseph Engineering College, Mangaluru*

Implementation of Adaptive Bit and Power Loading Algorithms in OFDM Systems

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ABSTRACT

Orthogonal Frequency Division Muliplexing (OFDM) is a kind of Multicarrier Modulation (MCM) method which is popularly used in wireless communication systems that are affected by frequency selectivity. In this modulation scheme, a high data rate signal is divided into a number of low data rate signals. This paper presents an OFDM system to which link adaptation algorithms are applied. The OFDM system used in this project is a SISO (Single-Input Single-Output) system. Assuming that the channel condition is known both at the transmitter and receiver, the bit and power allocation algorithms are applied to each subcarrier. The project shows that the BER performance of wireless system is improved by applying link adaptation algorithms to the systems.

**Full paper: Proceedings of the 4th National Conference on Advances in Communication and Signal Processing (NCACSP), ISBN: 978-93-81195-87-1 11th-12th August 2016, St. Joseph Engineering College,Mangaluru, pp 74-79*

ELECTRICAL AND ELECTRONICS ENGINEERING

Performance Analysis of Single Phase Inverter-Based on Unipolar PWM Technique

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ABSTRACT

Performance of a single phase unipolar PWM inverter is compared based on circuit configurations. Configuration 1 is a soft switching PWM Inverter and Configuration 2 is a Hard switching PWM Inverter. A part of main switches are connected to high frequency arm and the remaining switches to low frequency arm. The main purpose of using Unipolar PWM inverter is to reduce output voltage harmonics.

**Full paper: Proceedings of the International Conference on Emerging Trends in Engineering, 8th-9th May 2015, Nitte, pp 162-165*

Design of a Programmable Flyback Based FES System for Restoring Foot Drop in Stroke Rehabilitation

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ABSTRACT

Functional electrical stimulation (FES) is an assistive neurorehabilitation technology that utilizes low levels of electrical currents for neuromuscular stimulation of paralyzed extremities resulting from cerebral stroke or similar conditions. Optimization of the FES circuit is essential to reduce power consumption and to minimize power dissipation that can cause tissue damage. In this work, an improved foot pressure sensor based programmable, single channel, multi-pattern transcutaneous FES system was developed using power electronic systems and tested to correct foot-drop in stroke patients. The FES prototype developed herein uses a unique flyback circuit design and the electrical stimulation is tuned to achieve maximum functional response with minimal power drain. The flyback also provides galvanic isolation required by patient safety standards. The development of multi-pattern stimulation envelopes with variable intensity profile is an important contribution of this work, since this approach enables controlled and customized treatment depending upon the patient's status and stroke type, so that the stimulation can be much safer and more effective. With slight modifications, the circuit can also be used for rehabilitation of children with spastic cerebral palsy. The prototype is non-invasive, portable, flexible, low-cost and suitable for point-of-care applications.

**Full paper: Proceeding of the Annual IEEE India Conference (INDICON), 17th-20th December 2015, Jamia Milia Islamia University, New Delhi, India, pp 1-5*

Simplified 7 Level Multilevel Inverter

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ABSTRACT

The power electronic converter which converts DC power to AC power at required voltage and frequency is known as Inverter. Inverters with different levels of output voltage and current are called Multilevel Inverter. Multilevel inverters have very high efficiency and their output waveform almost reaches sinusoidal in shape as the numbers of levels are increased. Their main disadvantage is their complexity, requiring a great number of power devices and passive components, and complex control circuitry. This work highlights a multilevel inverter using an H-bridge output stage with two bidirectional auxiliary switches. It also achieves a significant reduction in number of power devices used. A 7-Level Multilevel inverter is discussed in this paper. The proposed inverter circuit is simulated using Matlab/Simulink tool and the results are obtained.

**Full paper: International Journal of Electrical & Electronics Engineering and Tele Communications, Vol.1, Issue No.1, March 2015, pp 201-208*

Double Boost Converter for Photovoltaic Power-Generation Systems

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ABSTRACT

Photovoltaic (PV) system is capable of solving problems of global warming and energy exhaustion due to excess energy utilization. In this paper, a double boost converter for photovoltaic (PV) power generation system is proposed. The topology is used to increase efficiency and to reduce switching losses. The present topology is verified for 289 W prototype.

**Full paper: International Journal of Electrical and Electronoics Engineering & Telecommunications, Vol. 1, Special Issue No. 1, March 2015, pp 266-271*

Analysis of Photovoltaic Systems to Achieve Maximum Power Point Tracking with Variable Inductor

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ABSTRACT

Photovoltaic (PV) system is the most promising source of energy and a new concept in use, which is obtaining popularity due to increasing importance to research for alternative sources of energy over exhaustion of customary fossil fuels worldwide. These systems are developed to draw energy from the sun, in the most competent manner. In this project Buck converter based PV system with resistive load is considered. The converter topology uses a variable inductor which provides adequate harmonic reduction. Employing the theorem that matching impedance yields maximum power transfer, a number of algorithms have been developed for Maximum Power Point Tracking (MPPT). In this paper Incremental Conductance with integral regulator MPPT algorithm has been used. The proposed system is simulated using Matlab/Simulink environment.

**Full paper: International Journal of Electrical and Electronics Engineering & Telecommunications, Vol. 1, Special Issue No. 1, March 2015, pp 214-220*

Boost Converter with MPPT and PWM Inverter for Photovoltaic System

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ABSTRACT

This paper presents boost converter with maximum power point tracking technique for photovoltaic system to extract maximum power from solar panel, and the system is connected with battery storage system, and cascaded with PWM inverter along with an RC low pass passive filter which outputs a stable AC voltage, which is not possible in traditional PV inverter system. The circuit operation principle, control strategy, and characteristics of the system are analysed in detail. Simulation results are shown to verify the theoretical analysis.

**Full paper: International Journal of Emerging Technology in Computer Science and Electronics, ISSN: 0976-1353, Vol.13, Issue No.4, March 2015, pp 285-289*

High Efficient Single Stage Bridgeless Step-Up Converter for Low Voltage Applications

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ABSTRACT

A high efficient single stage step up converter is proposed to work as bridgeless circuit for energy harvesting applications. Bridgeless step up converter is an arrangement of boost and buck-boost converter. The proposed topology avoids the complexity of bridge rectifier and efficiently step up the input voltage, reduces the losses and shares the same inductor and capacitor for the operation of both boost as well as buck-boost converter and reduces the size of the converter. The Low AC input voltage of 0.4 v is rectified and boosted to dc output voltage of 3.3 v satisfactorily and the results are achieved with the help of MATLAB software using simulink.

**Full paper: International Journal of Electrical and Electronic Engineering & Telecommunications, ISSN: 2319-2518, Vol.1, Special Issue No.1, March 2015, pp 298-304*

Low Cost Speed Controller for Brushless DC Motor Using Sensorless Technique

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ABSTRACT

Brushless DC (BLDC) motors are widely used in aerospace, space vehicles, electric vehicles, robotics and other motion control applications. They are replacing brushed DC motor and induction motors because of their advantages like better speed-torque characteristics, high dynamic response, high efficiency, long operating life, noiseless operation, and high speed range. In this paper an electronic speed controller circuit is presented with MOSFET as switching element driven with low cost MOSFET/IGBT gate driver ICs. The gate driver IC eliminates the use of multiple power supplies in the circuit. This paper explains the speed control method by sensing the back emf. In this paper overall circuit is simulated and implemented in hardware.

**Full paper: Eighth National Conference on Advances in Energy Conversion Technologies (AECT-2016), 28th-30th January 2016, Manipal*

Simulation and Performance Analysis of Simplified Multilevel Inverter

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ABSTRACT

Multilevel converters are widely used due to its high efficiency, low harmonics and also its output waveform is almost similar to sinusoidal shape. There are many topologies developed for multilevel converter each of them has various advantages and disadvantages. In this paper a new topology is proposed which is a combination of conventional multilevel topology and H-bridge circuit having advantages of both. Here a 7 level multilevel inverter derived from the proposed topology is explained for analysis.

**Full paper: Conference on Advances in Electrical Engineering (NCAEE), 11th-12th April 2016, Nitte*

Harmonic Reduction Analysis of Three Phase Inverter by Comparing Two PWM Techniques

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ABSTRACT

In recent days power electronic engineers and power consumers are more focused on power quality i.e. reduction of harmonics from current and voltage due to advanced development in solid- state power electronic devices and microcontroller through which PWM's are generated. This paper focuses on implementation of two Pulse Width Modulation techniques for the harmonic reduction in three phase inverter. There are many Pulse Width Modulation techniques available in the literature, this paper deals with Sinusoidal Pulse Width Modulation and Trapezoidal Pulse Width Modulation techniques with and without filter. Here the Total Harmonic Distortion of odd multiple of fundamental frequency has been carried out.

**Full paper: International Conference on Innovative Research and Solutions (ICIRS16), 16th April 2016, Tirupathi*

Analysis and Simulation of Multimode Single Leg Bi-directional Converter

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ABSTRACT

Power electronic technology based energy conversion can be applied towards electric vehicles and renewable & alternative energy generation systems. In this approach battery pack is the prime concern since it is used forenergy storage. So it is important to pay more attention for charging/ discharging and power management. The system response improvement and battery protection can be achieved by ultra capacitors. Conversion systems using power electronics technology basically contains generators, converters, power storage and inverters. In this paper to reduce cost and increase the efficiency of power conversion multimode single leg power converter is introduced. This converter provides the function of boost as well as bi-directional converter. Hence efficiency and fault tolerance capability of the system is improved. In the proposed system there are four modes of operations. Each mode is simulated using MATLAB SIMULINK.

**Full paper: International Journal of Innovative Research in Electrical Electronics, Instrumentation and Control Engineering, Vol. 4, Special Issue 2, April 2016, pp 171-176*

Application of Multimode Single Leg Converter in Power Electronic Technology Based Conversion System

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ABSTRACT

Multimode power conversion system is proposd in this paper. This consists of multimode single leg converter which replaces bidirectional and boost converter. Proposed converter performs the function of boost as well as bidirectional converter there-by increasing system efficiency and fault tolerance capacity. Proposed converter has four modes of operation. These modes are simulated using SIMULINK. This power electronic technology can be applied to renewable & alternative energy generation systems (RAEGS) and electric vehicles (EV).

**Full paper: International Journal of Innovative Research in Science, Engineering and Technology, Vol.5, Special Issue 9, May 2016, pp 608-614*

MPPT in Battery Charging for PV Applications

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ABSTRACT

This paper deals with the implementation of maximum power point tracker (MPPT) for solar panel along with safe battery charging algorithm for lead acid battery. This is a stand-alone system with incremental conductance MPPT algorithm and can be used for stand-alone application. Single ended primary inductor converter (SEPIC) is used to match the impedance of solar panel and battery to deliver maximum power. Voltage and current from the solar panel is sensed and duty cycle of gating signal is varied accordingly by the algorithm to attain maximum power transfer.

**Full paper: International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering, ISSN: 2321-2004, NMAM Institute of Technology, Nitte, Vol. 3, Special Issue 2, 2016, pp 265-268*

Reliability Analysis of Converters

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ABSTRACT

Performance of power electronic converters has become a major concern in the present day. Converters should be designed with the objective of gaining a high efficiency, increased reliability and less complexity. This paper presents the reliability analysis of three converters. Reliability of two-stage interleaved boost converter, two-stage and single-stage PFC converter is measured. It is shown that number of components in a device effects the reliability of a system.

**Full paper: International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering, ISSN: 2321-2004, NMAM Institute of Technology, Nitte, Vol. 3, Special Issue 2, 2016, pp 269-272*

Piezoelectric Energy Harvesting with Boost Rectifier

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ABSTRACT

Nowadays, a major concern is the need to develop new energy sources. In this context, a sector that has attracted much interest is one in which devices that are able convert other types of energy into electrical energy. This technique is known as Energy Harvesting and consists of energy capture and storage from ambient sources. This paper works with piezoelectric transducers, which are able to convert mechanical vibrations into electrical energy. However, when an electrical circuitis coupled to the transducer the mechanical system is strongly influenced by it. Piezoelectric power generation provides a convenient alternative to traditional power sources. Piezoelectric material transforms ambient vibrations into electrical energy that can be stored. This paper describes the design of piezoelectric sensor. The proposed topology combines boost and buck-boost converter which manages the energy harvested from a piezoelectric sensor. This topology provides optimum impedance to piezoelectric for energy harvesting. The converter is designed to operate in discontinuous mode.

**Full paper: Journal of Innovative Research and Solutions (JIRAS), Vol. 2, Issue No.2, July-December 2016, pp 129-138*

Study on Impact of Different Light Levels on Human Circadian Rhythm

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ABSTRACT

This paper makes an attempt to study the impact of different light level on human circadian rhythm. The pattern of light/dark cycle due to revolution of earth brings about the biological changes in humans. This biological changes in humans can be observed as changes in circadian rhythm. The hormone production, core body temperature, sleep/awake cycle exhibit the circadian rhythm. Sleep/awake cycle is governed by production of hormone. The progression of Melatonin is such that it is maximum during the night period and minimal during the day. The study considers two conditions first one normal lighting with bright light illuminance of 500 lux during day and minimum of 10 lux during night. Second condition inc lude bright light illuminance of 1000 lux at night and minimum light of 10 lux during the day. The plots obtained for the two lighting conditions is given in the paper. The analysis reveals that bright light at night suppresses the melatonin and leads to more activation of neuron cells maintaining alertness at night. A low light level of 10 lux at night triggers Melatonin during the night and brings sleep.

**Full paper: Proceedings of the Control Instrumentation System Conference, MIT Manipal, 2016, pp 30-32*

Closed Loop Speed Control of Dc Motor Using PID Controller

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ABSTRACT

This paper presents simulation and hardware implementation of constant speed dc motor, using Thyristor Bridge, which operates in two quadrants. The firing angle is controlled by PID controller and is given to Thyristor Bridge which intern control the armature voltage of dc motor. Pic microcontroller PIC16F877A is used to implement PID controller. Variable resistor is used to set the speed of motor. This project is done for 0.5Kw motor. Motor gives constant speed for the variation in input voltage.

**Full paper: International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering, Vol.4, Special Issue No. 2, April 2016, pp 165-170*

Instantaneous Buck Boost Converter with Better Transient Effect for Battery Power Applications Using Micro-Controller

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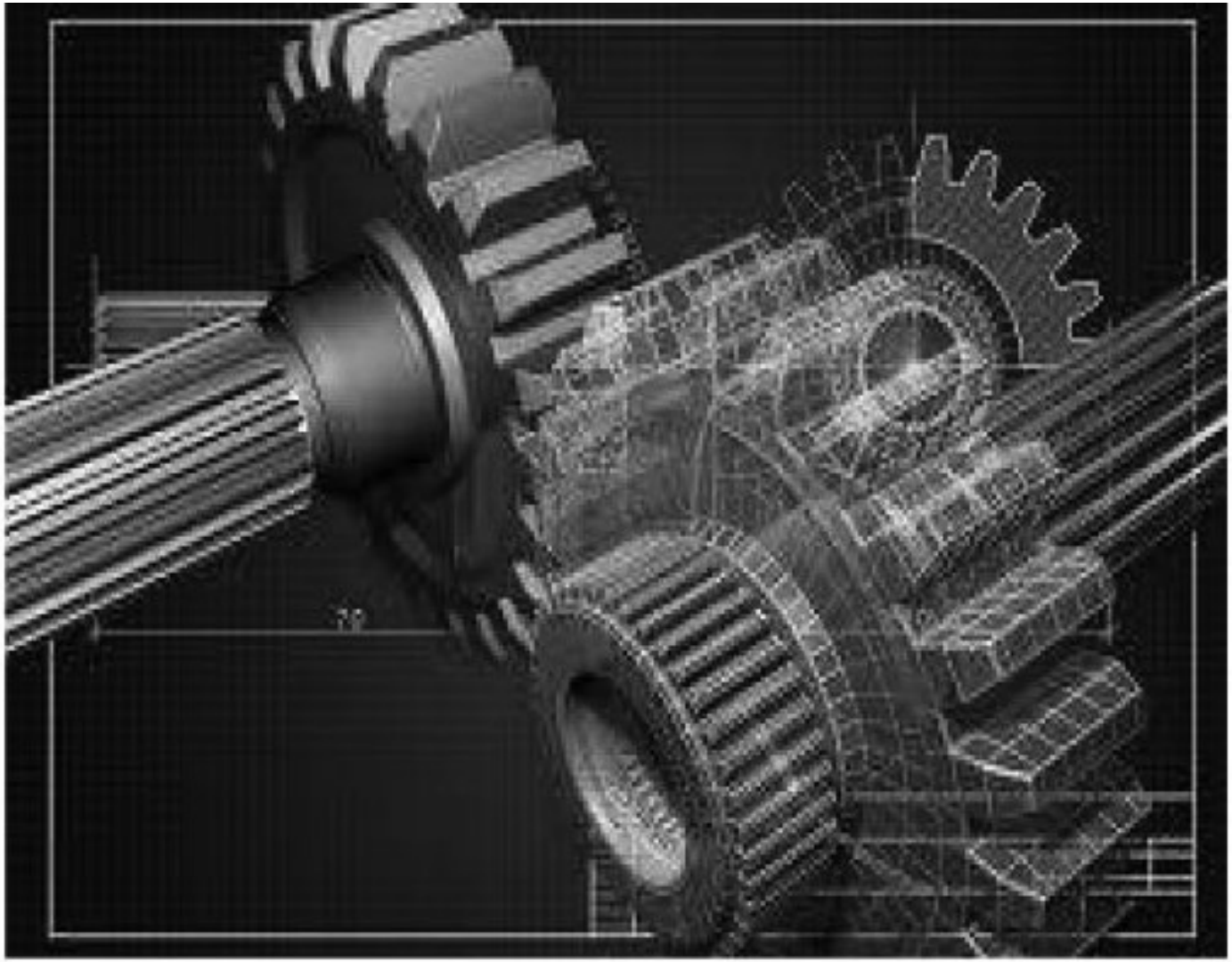
ABSTRACT

A transitional grouping mode of control is introduced using microcontroller for the buck boost converter. A constant output voltage is obtained by applying a input voltage from 8V to 14V along with increase in saturation. The price, efficiency, decrease in wrinkle in the waveform and voltage across the load can be superior. By introducing combination A and B between the three modes with better transient response which reduces the distortions in the output voltage. By using all the transitional combination mode, a ripple content will be decreased and efficiency can be better in the regulated output voltage.

**Full paper: International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineerin, Vol.4, Special Issue No. 2, April 2016, pp 188-192*



MECHANICAL ENGINEERING

Post-ECAP Ageing Treatment of Aluminum 6063 Alloy

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ABSTRACT

Equal Channel Angular Pressing (ECAP) has attracted much attention from the material community, because of its ability to produce ultrafine grained microstructures. The advantage in ECAP is that a large amount of strain can be imposed on the material without a significant change in geometric shape or cross section. In the present work, the effect of ECAP on the ageing of aluminum 6063 alloy was studied. The samples were first solutionized, followed by ECAP and were then aged at a temperature of 175°C. Multipass pressings were conducted on the billets for different processing routes such as routes- A, B_A, B_C and C. The pressings were performed at room temperature using a die having a channel angle of 150°. Post ECAP ageing was found to reduce the ageing time considerably till three passes.

Full paper: American Journal of Materials Science, Vol. 5, Issue No. 3C, 2015, pp 74-76

Effect of Tin on the Wear Properties of Spray Formed Al–17Si Alloy

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ABSTRACT

In the present study, the effect of Sn on the dry sliding wear behavior of spray formed and hot pressed Al–17Si alloy as a function of applied load and sliding speed has been investigated and compared with that of as-cast alloy. The microstructure of spray formed Al–17Si alloy consists of fine and uniformly distributed Si particles and that of Al–17Si–10Sn alloy consists of fine and uniform dispersion of Si particles and ultra-fine Sn particles in α-Al matrix. Coarse and segregated microstructures were observed in as-cast alloys. The wear resistance of spray formed alloys is higher than that of as-cast alloys. The wear resistance of as-cast Al–17Si–10Sn alloy is higher than that of as-cast Al–17Si alloy. The high wear resistance of spray formed Al–17Si–10Sn alloy is discussed in the light of its microstructural features and the nature of worn-out surfaces.

**Full paper: Transactions of IIM, Vol. 68, Issue No. 1, 2015, pp 3-7*

Investigation on the Wear Behavior of Spray Formed Al–35Si–4Fe Alloy

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ABSTRACT

In the present study the microstructural features, hardness and wear properties of spray formed Al–35Si–4Fe alloy have been compared with that of as-cast alloy. The microstructure of spray formed Al–35Si–4Fe alloy consisted of fine and uniformly distributed Si coexisting with granular Fe containing intermetallic phase in Al matrix. In contrast, the microstructure of as-cast alloy consisted of coarse Si plates and needles of β-Al–Fe–Si phase in Al matrix. The hardness of spray formed alloy was found to be higher than that of as-cast alloy. The dry sliding wear tests at varying load and sliding speed revealed that wear rate and coefficient of friction for spray formed alloy were invariably lower than that of as-cast alloy. The high hardness and wear resistance of spray formed alloy were discussed in the light of its microstructural features and the morphology of worn-out surfaces.

**Full paper: Transactions of IIM, Vol. 68, Issue No. 6, 2015, pp 1001-1005*

Investigation on the Performance of CI Engine with Blends of Cotton Seed and Honge Bio-Diesel

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ABSTRACT

This study presents one of the approaches to investigate the performance of compression ignition engine with cotton seed and honge bio-diesel blends and diesel. Performance tests were conducted on a Kirloskar AV-1 single cylinder four stroke diesel engine. The performance of all the blends of cotton seed and honge bio-diesel are better than that of diesel. As the load increased, the brake specific fuel consumption decreased for all the fuel samples. The increase in brake power by the increase in load is attributed by the better air-fuel mixture at higher load. As the load increased, the brake thermal efficiency also increased for all the fuel samples used in the test. It is found that the brake power (BP), brake specific fuel consumption (BSFC) and brake thermal efficiency (BTE) for the hybrid blend of 5% honge + 15% cotton seed + 80% diesel are better than that for 100% diesel, 100% honge and 100% cotton seed bio-diesels.

**Full paper: IJMEMS, ISSN: 0974-584X, Vol. 8, Issue No. 1, 2015, pp 69-74*

Effect of Compression Ratio on the Performance and Emission Characteristics of Blends of Lard Oil Methyl Ester and Diesel on C I Engine

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ABSTRACT

In the present study, Lard oil methyl ester (LOME) has been extracted from pig fats by base-catalyzed transesterification with methanol in the presence of sodium hydroxide (NaOH) as catalyst. The effect of LOME addition to pure diesel on the performance and emission characteristics of direct injection diesel engine has been experimentally investigated by varying the compression ratio at a constant load. The experimental test results showed that the addition of LOME to diesel decreased the brake thermal efficiency of the engine by 3% and increased the specific fuel consumption by 3% compared to pure diesel. But for B20 blend, carbon monoxide (CO), hydrocarbon (HC), oxides of nitrogen (NOx) and smoke emission are decreased by 20%, 4%, 14%, and 3% respectively as compared to pure diesel at full load of the engine.

**Full paper: Energy and Power, (DOI: 10.5923/c.ep.201501.02), Vol. 5, Issue No. 1A, 2015, pp 5-9*

A Study on Performance and Emission Characteristics of Cotton Seed Methyl Ester, Sapindous Mukorossi Seed Oil, and Diesel Blends on CI Engine

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ABSTRACT

In the present study, bio-fuel prepared from the blends of cotton seed methyl ester (COME), sapindus mukorossi oil (SNO) and diesel has been tested on a CI engine at an injection pressure of 240 bar. Its performance and emission characteristics are studied and reported. It was found that the brake thermal efficiency of COME25SNO5 was higher than that of diesel by 3%. At the maximum load the brake specific fuel consumption of COME15SNO5 and COME20SNO5 blends are 2% higher than that of diesel and for COME20SNO5 blend, the brake specific fuel consumption is 10.5% higher than that of diesel. At full load the COME15SNO5 blend and neat diesel have the same percentage of CO emission. Smoke opacity of diesel is higher compared to the blended fuels.

**Full paper: Energy and Power, (DOI: 10.5923/c.ep.201501.03), Vol. 5, Issue No. 1A, 2015, pp 10-14*

Effect of Compression Ratio on the Performance and Emission Characteristics of CI Engine for a Blend of Soapnut Oil, Cottonseed Oil Methyl Ester and Diesel

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ABSTRACT

In the present work, soap nut oil, cotton seed oil methyl ester and diesel were blended in the proportion of 10:15:75 by volume to form a bio diesel blend of B25. It has been observed that the calorific value is lower and viscosity is higher for B25 as compared to diesel. The performance and emission characteristics were studied using a variable compression ratio diesel engine test rig for three different compression ratios of 17, 17.5 and 18. The results showed that the brake thermal efficiency has increased by 5.2% at a compression ratio of 18 compared to the brake thermal efficiency at a compression ratio of 17. Brake specific fuel consumption has decreased by 4.7% with the increase in compression ratio. However the brake thermal efficiency for B25 is lower than that of diesel. It has been observed that the NOx emissions are higher by 2% and hydrocarbon emissions and smoke opacity are lower by 55.5% and 12.4% respectively for B25 as compared to diesel at full load.

**Full paper: Energy and Power, (DOI:10.5923/c.ep.201501.04), Vol. 5, Issue No. 1A, 2015, pp 15-18*

A Study on Vibration Characteristics of Engine Oil based Magnetorheological Fluid Sandwich Beam

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ABSTRACT

Magnetorheological fluids belong to a group of smart materials. The key feature of Magnetorheological fluids is that their rheological properties will change on the application of magnetic/electric field. The ability to change from liquid to semi solid can be used to provide a good damping effect. Using this concept a cantilever beam structure has been fabricated. It consists of three layers of which the top and bottom layers are of aluminum plates and between the plates an MR Fluid has been sandwiched. This experimental study investigates the controllability of vibration characteristics such as natural frequency, amplitude of vibration, damping factor and demonstrates the vibration suppression capabilities of MR fluids in structural elements.

**Full paper: Journal of Mechanical Engineering and Automation, DOI: 10.5923/ c.jmea. 201502. 17, Vol. 5, Issue No. 3B, 2015, pp 84-88*

Rheological Characterization of Magnetorheological Fluid using Cone and Plate Type Rheometer

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ABSTRACT

Magnetorheological fluid is a kind of smart material belonging to the class of controllable fluids and the essential characteristic of MR fluid is its ability to reversibly change from free flowing linear viscous liquid to semisolid having controllable yield strength in milliseconds when applied to a magnetic field. In this research work the Magnetorheological fluid has been synthesized in the laboratory and tested using cone and plate type rheometer for viscometric and oscillatory studies. The results from viscometric study show that viscosity of the fluid reduces initially with increase in shear rate and then remains constant and the results from oscillatory study show that the shear modulus approximately remains linear with increase in frequency.

**Full paper: Proceedings of the International Conference on Advances in Materials and Materials Processing (AMMP), Department of Mechanical Engineering, School of Mechanical Sciences, 22nd-23rd Januarry 2015, Karunya University, Coimbatore, Tamil Nadu, India, pp 271-279*

Development and Characterization of Low Cost Polymer Composites from Coconut Coir

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ABSTRACT

This work is mainly focused on development and evaluation of physical, mechanical, tribological and hydrophilic behavior of epoxy based composites filled with different percentage of coconut fibers (CF 0-15% by wt in steps of 5% by wt). Composite panels were made by hand lay-up process and properties are tested as per ASTM standards. Density of the composites was found to increase and hardness found to decrease with the increase in percentage of coconut fiber. Tensile test revealed that the composite CF10% has the maximum strength and it was found to reduce as we increased the percentage of coconut fiber. Water absorption test reveal that, the minimum water absorption was observed for the composite CF5%. It is also found that with the increase of coconut fiber, the water absorption rate increases. Abrasive wear test revealed that, composite CF15% has the minimum wear loss. Dry sliding wear test reveals that for composite CF10% and CF15%, wear loss is found to reduce, but for CF20% composite the wear loss slightly increases and composite with CF15% has the minimum wear loss.

**Full paper: American Journal of Materials Science, DOI: 10.5923/c.materials.201502.13, Vol. 5, Issue No. 3C, 2015, pp 62-68*

Formulation and Viscosity Analysis of TiO_2 Nanoparticle Dispersions in Engine Oil

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ABSTRACT

Stable suspensions of TiO_2 nanoparticle additives in engine oil are obtained using the two-step method at concentrations ranging from 0.05 wt.% to 2.5 wt. %. The obtained nano-oils are subjected to viscosity analysis using rotational rheometer at different concentrations and temperatures. The experimental results are used to develop empirical viscosity models for TiO_2 dispersions at varying concentrations and temperatures. The obtained models are compared with classical models and other recently published models. The comparative results provide the theoretical framework to simulate shear viscosities of TiO_2 dispersions in engine oil with respect to concentration and temperature.

**Full paper: American Journal of Materials Science, Vol. 5, Issue No. 3C, 2015, pp 198-202*

Experimental Study of Hydrodynamic Pressure Distribution in Oil Lubricated Two-Axial Groove Journal Bearing

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ABSTRACT

Hydrodynamic pressures in oil lubricated two-axial groove finite journal bearing is measured experimentally using a newly developed test rig. Details of design and fabrication of the test rig is presented. Hydrodynamic oil film pressures were measured using two techniques, viz. pressure measurement with sensor mounted on shaft surface and pressure measurement with sensor located outside the bearing assembly. Pressure measurement with first approach was found to yield only the groove pressures. The maximum pressures obtained using second approach is compared with theoretical values. Maximum experimental pressures are found to have a 20% difference in comparison with theoretical maximum pressures.

**Full paper: Materials Today Proceedings, Vol. 2, Issue No. 4-5, 2015, pp 3453-3462*

Static Characteristics of Two-Axial Groove Journal Bearing Operating on TiO_2 Nanolubricant

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ABSTRACT

A modified Krieger-Dougherty viscosity model is used in conjunction with classical two dimensional Reynolds equation to obtain theoretical steady state performance characteristics of two-axial groove journal bearing operating on TiO_2 nano-particle dispersed engine oil. The modified Reynolds equation is non-dimensionalised and solved numerically by finite difference method satisfying the Reynolds boundary condition. A computational code is developed using MATLAB to simulate the bearing characteristics at different eccentricity ratios and volume fractions of TiO_2 nanoparticle additives. Results reveal a significant improvement in load carrying capacity, hydrodynamic pressure distribution, and oil side leakage for two-axial groove journal bearing operating on TiO_2 based nano-oil as compared to plain oil

**Full paper: Journal of Mechanical Engineering and Automation, Vol. 5, Issue No. 3B, 2015, pp 94-99*

Performance and Emission Characteristics of a C.I. Engine Fuelled with Diesel and TiO_2Nanoparticles as Fuel Additive

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ABSTRACT

In this study Titanium dioxide nanoparticles are used as fuel additive in a compressed ignition engine. Concentration of nanoparticles to be added for a stable dispersion is optimized experimentally. Density, fire point, viscosity, and calorific value of nanoparticle dispersion in diesel are experimentally determined. It is seen that properties of conventional diesel improve with the addition of TiO_2 nanoparticles. Engine performance and emission tests for diesel fuel and diesel fuel with TiO_2 nanoparticles were performed. It is observed that with the addition of nanoparticles there is an increase in brake thermal efficiency of the engine. Brake specific fuel consumption decreases by 22% at maximum load with the addition of TiO_2 nanoparticles. Among emissions, addition of TiO_2 nanoparticles decreases emissions of unburnt hydrocarbons by 18% and carbon monoxide by 25%.

**Full paper: Materials Today: Proceedings, Vol. 2, Issue No. 4-5, 2015, pp 3728-3735*

Finite Element Investigations of Temperature Distribution in Fins with Circular Perforations

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ABSTRACT

This study examines the heat transfer enhancement achieved from a vertical rectangular fin embedded with circular perforations under natural convection as compared to an equivalent solid (non-perforated) fin. The effect of perforation profile, diameter of the perforation and its pitch on the temperature distribution are analysed by using finite element method. Establishing finite element procedure for heat transfer analysis of fins with perforations and comparing performance of perforated fin results verses non-perforated fins; it was observed that perforated fins show considerable reduction in temperature. The increase in perforation diameter resulted in reduced fin temperatures compared to all other variations and is suggested to be the best measure for enhancement of heat transfer. The finite element method results closely match with published experimental thermocouple results of previous investigators within ±10% deviation. The finite element analysis procedure developed can be used for heat transfer analysis of fins with different kinds of perforation.

**Full paper: American Journal of Materials Science 2015, Vol. 5, Issue No. 3C, pp 157-161*

Analytical and Numerical Validation of Epoxy/Glass Structural Composites for Elastic Models

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ABSTRACT

In the present study, elastic properties like Young's modulus (E1 and E2) and Poisson's ratio (v12 and v21) are evaluated for n different volume fractions along the material principal directions using finite element method (FEM). The standard commercial software ANSYS is adopted as a solver. These computational results are compared with the results obtained from analytical methods such as Rule of mixture, Halpin-Tsai, Nielsen and Chamis elastic models. The main objective of this paper is to compare the computational results with analytical methods to determine the best elastic properties. The study indicates that the Epoxy/Glass composite is more effective when the load is applied along the fiber direction. The FEM predicted results are in good comparison with results of analytical methods.

**Full paper: American Journal of Materials Science, Vol. 5, Issue No. 3C, 2015, pp. 162-168*

Productivity and Performance Improvement in the Medical Records Department of a Hospital: An Application of Lean Six Sigma

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ABSTRACT

Purpose – The purpose of this paper is to illustrate how Lean Six Sigma (LSS) methodology wasapplied to a medical records department (MRD) of a hospital in India to reduce the Turn-Around-Time(TAT) of medical records preparation process and thus to improve the productivity and performanceof the department.

Design/methodology/approach – The research reported in this paper is based on a case studycarried out using LSS approach and in improving the medical records preparation process.

Findings – The root causes for the problem were identified and validated through data-based analysisfrom LSS tool box, at different stages in the project. As a result of this project, the TAT was reducedfrom average 19 minutes to eight minutes and the standard deviation was reduced by one-tenth, whichwas a remarkable achievement for department under study. This was resulted in the reduction in thework-in-process inventory of medical records from 40 units to 0 at the end of the day. Project in-turnreduced the staffing level from the earlier level of six to a current level of four.

Research limitations/implications – The paper is based on a single case study executed inIP-MRD of a single hospital and hence there is limitation in generalizing the specific results from thestudy. But the approach adopted and the learning from this study can be generalized.

Originality/value – This paper will be helpful for those professionals who are interested in implementing LSS to healthcare organization to improve the productivity and performance.

**Full paper: International Journal of Productivity and Performance Management, (Emerald publisher) DOI: http://dx.doi.org/10.1108/IJPPM-04-2014-0063, Vol. 65, Issue No. 1, 2015, pp. 98-125*

Application of Operations Research Technique to Improve the Performance of the HID of a Hospital

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ABSTRACT

Application of industrial engineering tools has never been more important than it is today in service sector in general and hospitals in specific. Operations Research is one such technique which has its proven effect in manufacturing sector, and also can be effectively applicable in Hospitals. The research demonstrates one such application in the Health Information Department (HID) of a super speciality hospital in India. The study has been carried out in order to improve the productivity and performance in the department by assigning right person to the right job. The study adopted an exploratory research methodology and collected data was subjected to statistical analysis. Further, assignment technique has been used to determine the right person for the right job. The study reported a drastic improvement in the productivity of the department.

**Full paper: Journal of Mechanical Engineering and Automation, (Scientific & Academic publisher) DOI: 10.5923/c.jmea.201502.16, Vol. 5, Issue No. 3B, 2015, pp. 81-83*

Effect of Heat Treatment Variables on the Abrasive Wear Behaviour of Al-6061 Alloy and Al 6061-SiCP Composites Using Taguchi Technique

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ABSTRACT

In this paper an effort has been made to study the effects of ageing variables on the abrasive wear behavior of Aluminium 6061 alloy and Silicon Carbide particulate reinforced Aluminum 6061 Composites. The composite material was prepared by using stir casting technique. The as-cast material was heat treated by a method called homogenization annealing to obtain uniform grain size. Fractional factorial experimentation was carried out using four parameters namely volume fraction of reinforcement, solutionizing time, ageing temperature and ageing time at three different levels. The results show that the predicted values for abrasive wear loss were in close agreement with experimental results. And moreover the volume fraction of reinforcing particles was found to be most influential parameter in affecting the wear loss of the materials followed by the ageing temperature and all the other parameters and their interactions.

**Full paper: American Journal of Materials Science, (Scientific & Academic publisher) DOI: 10.5923/c. materials.201502.30 Vol. 5, Issue No. 3C, 2015, pp. 151-156*

Adaptation of Six Sigma Concepts in a Printing Process: A Case Study in a Small-Scale Industry

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ABSTRACT

Six Sigma has been a powerful and successful tool in medium to large manufacturing industries to reduce the rejection and to improve productivity. This paper presents a Six Sigma case study in reducing TAT (Turnaround Time) of a printing process at a small scale industry in India. The systematic step-by-step DMAIC (Define–Measure–Analyse–Improve–Control) approach has been followed to identify the root causes and to improve the process yield. This paper provides empirical evidence on Six Sigma implementation in a technical field of a printing process from scratch, to lift the quality to world-class level. The project also reveals the bottlenecks in the implementation of Six Sigma methodologies in a small organization. As a result of this project, the TAT was reduced from 1541.2 minutes to 1303.36 minutes, which was a remarkable achievement for this small scale industry. This in turn resulted in a financial gain of US$ 8000 per annum due to the improved productivity in the organization.

**Full paper : Proceedings of the International Conference on Statistics for 21st Century -2015 (ICSTC) organized by Department of Statistics, 17th-19th December 2015, University of Kerala, Trivandrum, India, pp. 43-45*

Effect of Introduction of Water into Combustion Chamber of Diesel Engines – A Review

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ABSTRACT

Introduction of water vapours directly or indirectly into the combustion chamber, is one of the effective and most economical tool in reducing oxides of nitrogen (NOx) and particulate matter (PM) in the exhaust gases of diesel engines. Many researchers have developed different systems to introduce water into the combustion chamber like direct water injection, fumigation and water-fuel emulsion. All the different systems have started during the early days of development of aircraft piston engines and since then a significant progress has been made to develop an optimum system to reduce the pollutants from the exhaust gases. This review paper presents both advantages and disadvantages of different water introduction systems achieved by the most recent studies. Also it covers the different features, main findings and theoretical and experimental approaches for water-diesel emulsion and direct water injection for DI diesel engine for further emission reduction.

**Full paper: Journal Energy and Power, Vol. 5, Issue No. 1A, 2015, pp. 28-33*

Investigation of Tooth Load Distribution Along the Path of Contact in Altered Tooth-Sum Gears

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ABSTRACT

The various needs of power and motion transmission in drives are undoubtedly fulfilled by gears. Satisfying the needs required for efficient and effective transmission depends on the tooth geometry. Hence, gear design involves a detail study of the tooth geometry as it determines various performance aspects regarding to load carrying capacity, wear characteristics, efficiency and noise. Among them the load carrying capacity is a fundamental requisite which depends on the bending strength calculated using Lewis equation which was formulated one hundred years ago. Most often, the tooth geometry of standard gears fail to meet certain needs, hence it is modified for better performance. The most common way of modifying the tooth geometry is by profile shift by using S-gearing, such profile shifting of gears influence the performance. As an alternative to S-gearing, it is proposed to modify the tooth geometry by altering the tooth-sum of a gear pair when center distance and module are specified. This involves increase or decrease of tooth-sum with eventual negative or positive profile shift respectively. With such alteration the gears are found to have different tooth geometry with unique benefits that are studied. The amount of profile shift for altering the tooth-sum of a gear pair can be calculated by the established equations of involutometry and trigonometry. The load distribution along the path of contact of such altered tooth-sum gears is understood using load sharing diagram that indicates the pattern of loading along the path of contact. The study in this research article considers only spur gears under static load, it involves comparison and analysis of load distribution on the gear tooth along the path of contact for both standard as well as altered tooth-sum gears

**Full paper: International Open Access Journal of Modern Engineering Research (IJMER), ISSN: 2249–6645, Vol. 5, Issue No.4, April 2015, pp. 1-10*

Load Sharing Analysis of Bending Strength in Altered Tooth-Sum Gears Operating Between a Standard Center Distance and Module

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ABSTRACT

Power transmission between shafts that need positive drive is well assured by gears. The size and shape of the gear tooth is a critical consideration if specific drive requirements are imposed. Thus, design of gears calls for a detailed study of the tooth geometry that defines the performances like load carrying capacity, wear characteristics, efficiency and noise. Among them load carrying capacity is one of the fundamental requirements which depends on bending strength that can be computed using well known Lewis equation. Most often, tooth geometry is modified using S-gearing to influence the performance that may be either So or S+ type. Tooth geometry can also be modified by way of altering the tooth-sum of meshing gears for a standard center distance and module. Such modifications have some inherent benefits that are unique. Hence, this study is focused on analysis of bending stress as well as contact ratio in altered tooth-sum gears using load sharing diagram. The diagram clearly shows the loading pattern and contact length for both standard and altered tooth-sum gears at different points of contact. The load sharing analysis is carried out for altered tooth-sum spur gears having tooth-sum 100, 2 mm module, face width 10 mm and 20o pressure angle with a tangential load of 9.81N/mm of face width.

**Full paper: European Journal of Engineering and Technology, ISSN: 2056-5860, Vol. 3, Issue No. 1, 2015, pp. 50-61*

Design of Spur Gears Using Profile Modification

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ABSTRACT

In this work, a profile modification technique was used in design of a spur gear. In this technique, the tooth-sum is varied to obtain the desired contact ratio and low contact stress for a specified center distance. A program has been developed using C language to compute the contact stresses by varying the amount of profile shift for a tooth-sum of 100 teeth (±4%). The selected tooth-sum of 96, 100, and 104 gears was subjected to cyclic loading using a back-to-back test rig. The morphology of the damaged gear tooth surface after cyclic loading was examined by scanning electron microscopy. The morphological investigation reveals that the degree of damage observed in negative number of teeth alterations is less compared to standard and positive alteration tooth-sum due to lower contact stress.

**Full paper: Tribology Transactions, Vol. 58, Issue No. 4, 2015, pp. 736-744*

Design and Testing of Gears Operating Between a Specified Center Distance Using Altered Tooth-sum Gearing (Z± Gearing)

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ABSTRACT

Altered tooth-sum gearing is a unique type of non-standard gearing having their profiles shifted due to altering the tooth-sum for a specified center distance and module. This approach is aptly termed as Z± gearing because it involves increasing the sum of teeth (positively altered toot-sum or aptly Z+ gearing) or decreasing the sum of teeth (negatively altered tooth-sum or aptly Z− gearing) of the mating gears working on an operating pressure angle. Here, both the center distance and gear ratio remains unaltered, such a study is less explored in gear research. This paper deals with determining experimental bending stress in standard and altered tooth-sum spur gears having involute form, further the results are compared with AGMA bending stress. For this purpose a Gear Tooth Bending Test (GTBT) fixture is developed which uses a single tooth specimen having a strain gauge bonded in its fillet region. Under the application of load a strain indicator reads out the strain. The specimen is a single tooth model having accurate involute profile and circular fillet, it is developed using advanced modeling software and manufactured using CNC machine. From the experiment it is observed that the tooth of Z− gearing subjected to positive profile shift has a lower bending stress (favorable) and the tooth of Z+ gearing subjected to negative profile shift has a higher bending stress (unfavorable, of course with higher contact ratio) compared to the tooth of standard gearing. This infers that the bending strength of a gear tooth can be influenced by altered tooth-sum design. The results obtained closely agree with AGMA values.

**Full paper: Journal of Mechanical Engineering and Automation, Vol. 6, Issue No. 5A, 2016, pp. 102-108*

Design and Fabrication of Heat Exchanger for Waste Heat Recovery from Exhaust Gas of Diesel Engine

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ABSTRACT

Internal combustion (IC) engine is one of the most important prime movers driving many of the automobiles today. Improving efficiency and reducing energy losses is the focus of research in IC engines. It is a known fact that exhaust gas from an internal combustion engine carries away about 30% to 40% of the heat of combustion. The energy available in this exit stream of exhaust gases goes as waste, if not utilized properly. This paper presents a concept of recovering waste heat energy of exhaust gas of diesel engine by placing a heat exchanger in the exhaust manifold so that energy from the exhaust gases can be used for preheating fuel. Initially a simple concentric tube type design is used to estimate the temperature of fuel by utilizing energy from exhaust gases. Based on the output obtained from this initial design, a shell and tube heat exchanger is fabricated for diesel engine to recover waste heat from exhaust. Maximum fuel temperature achieved for concentric tube heat exchanger is 133°C at 25% of full load at 1500 rpm. For shell and tube heat exchanger, 73°C and 90°C of fuel preheat temperatures are achieved for parallel and counter flow arrangements at 50% of full load at 1500 rpm. Effectiveness of heat exchanger is found to be 75% for parallel flow and 81% counter flow. Waste heat recovered at 50% full load condition is found to be 48.5% for parallel flow and 72% for counter flow arrangements respectively. Preheating fuel using heat exchanger is very much useful for biodiesel application in diesel engines.

**Full paper: Journal of Mechanical Engineering and Automation, Vol. 6, Issue No. 5A, 2016, pp. 131-137*

Investigation on the Performance and Emissions Characteristics of CI Engine Using Different Blends of Waste Cooking Oil Methyl Ester-Ethanol-Diesel Oil

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ABSTRACT

In this study, performance and emission characteristics of waste cooking oil methyl ester, diesel oil and ethanol blends in a compression ignition engine are experimentally investigated. Work is carried out on pure diesel oil and blends B20, B20 with E10 and B15 with E5. Various physio-chemical properties of these fuel samples were determined. It has been observed that calorific value decreases for the blends when compared with diesel oil. The effect of waste cooking oil methyl ester blends on the engine performance and exhaust emissions has been examined at the injection pressure of 200 bar by varying the load. The experimental results observed that BTE for B20 with E10 blend is marginally higher compared to diesel oil and other blends at higher loads. BSFC increases by 1.03% for B20 with E10 at higher loads compared to diesel oil. NOx and CO emissions for B20 with E10 is lowered by 13.95% and 18.91% respectively compared to that of diesel oil at higher loads. HC emissions for B20 with E10 are 50% higher compared to that of diesel oil. Smoke opacity for B20 with E10 decreased by 35.85% compared to that of diesel oil at higher loads.

**Full paper: Energy and Power, DOI: 10.5923/c.ep.201601.05, Vol.6, Issue No. 1A, 2016, pp. 28-32*

Vibration Analysis of Magnetorheological Elastomer Sandwich Beam Under Different Magnetic Fields

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ABSTRACT

Vibration analysis is important when the applied load is not constant and induces unstable modes of vibration or resonance. This reduces performance and may cause catastrophic failure. It is important to control vibrations and limit its transfer to the secondary bodies attached to it. In the present work, a Magneto Rheological Elastomer (MRE) sandwich beam is fabricated using a MRE between two thin aluminium layers. An electromagnet setup is designed and fabricated to provide the required magnetic field. The design of electromagnet is analysed numerically using the Finite Element Method Magnetics (FEMM) software. An experimental test rig is set up to investigate free and forced vibration response of the MRE sandwich beam under zero magnetic field and magnetic fields of 50 mT, 100 mT, 150 mT, 200 mT, 250 mT and 285 mT. Results reveal a frequency left shift trend. It has been observed that the first natural frequency of the MRE sandwich beam decreases by 11.96% when the applied magnetic field is increased from 0 mT to 285 mT at the location 120 mm from the fixed end of the MRE sandwich beam.

Full paper: Journal of Mechanical Engineering and Automation, DOI: 10.5923/c.jmea.201601.14, Vol.6, Issue No. 5A, 2016, pp. 75-80

Production of Al-Al_2O_3 MMC by P/M Route and to Study the Feasibility of Fusion Welding

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ABSTRACT

Aluminium matrix composite with aluminium dioxide as a reinforcement has gained wide popularity because of their high physical, mechanical and other desirable characteristics like high thermal conductivity, low coefficient of thermal expansion and low density. They have a wide verity of applications in the emerging fields like automobile, aerospace, biomedical and industrial purposes. In the present study Al/Al_2O_3 particulate metal matrix composite was processed by conventional powder metallurgy route. A customized punch and die was fabricated using EN-8 grade steel and composite with different weight % of Al_2O_3 particle (5, 10 & 15 weight % of Al_2O_3) were compacted in it. The green compacts were sintered in a furnace with optimum temperature and time for densification. The composites manufactured were subjected to tungsten inert gas welding without any filler. The microstructure and macrostructures were analyzed to study the feasibility of fusion welding. The microstructures in the base metal and fusion zone reveal a decrease in volume fraction of Al_2O_3 in the fusion zone. The cause for this phenomenon was investigated.

**Full paper: American Journal of Materials Science, Vol. 6, Issue No. 4A, 2016, pp. 99-101*

Fabrication of an Automated Collison Avoidance System Using Ultrasonic Sensor

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ABSTRACT

Vehicle accidents are ubiquitous in recent years. This is because of heavy increase in population of vehicles, due to its high demand. They pose a serious threat to life and property. A system must be designed to minimize the effects of these accidents. The aim is to design a device which successfully scans, surrounding driving environment and apply brake to avoid front end collision of the vehicle, along with extension of bumper. Ultrasonic sensor provided on the front end of the vehicle detects the presence of the obstacle. The data of the sensor is an input to the microcontroller. Microcontroller8051 decodes the logic and generates appropriate control signals for the activation of driver alert mechanism, along with automatic actuation of pneumatic braking circuit and automatic bumper circuit. Automatic braking circuit applies brake to bring vehicle to halt, and the latter one provides, for the safety of vehicle on impact. Driver alert mechanism is included to alert the driver at a safe braking distance from collision. All of this is integrated in a single system to provide for maximum protection of passenger, vehicle and property.

**Full paper: Journal of Mechanical Engineering and Automation, Vol. 6, Issue No. 5A, 2016, pp. 97-101*

Effect of Alumina Nanoparticles on the Performance and Emission Characteristics of CI Engine Fuelled with Lard Oil Methyl Ester Blends

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ABSTRACT

In the present study the effect of alumina (Al2O3) nanoparticles (ANP) on the performance and emission characteristics of blends of Lard Oil Methyl Ester (LOME) on a CI engine has been investigated. Lard oil has been extracted from pig fat and was subjected to transesterification to obtain LOME. The blend samples (B10, B20 and B30) of LOME were used for comparison. The alumina nanoparticles were dispersed uniformly at a concentration of 100 ppm by an Ultrasonicator. The results report that for B20+100ANP, the concentration of HC (ppm), CO emission (%) and smoke opacity have been reduced after the addition of alumina nanoparticles by 15, 33 and 25% respectively. The comparison of all the biodiesel blends leads to a conclusion that B20+100ANP has maximum reduction in HC concentration, CO percentage and Smoke opacity.

**Full paper: American Journal of Materials Science, (DOI: 10.5923/ c.materials.201601.18), Vol. 6, Issue No. 4A, 2016, pp. 94-98*

Effect of Titanium Dioxide and Calcium Carbonate Nano Additives on the Performance and Emission Characteristics of C.I. Engine

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ABSTRACT

In this paper an attempt is made to use titanium dioxide and calcium carbonate nanoparticles as fuel additive in a C.I. Engine. Dispersion of nanoparticles in B20 methyl ester of pongamia pinnata oil is carried out using a probe sonicator. The physiochemical properties are characterized. The fuel samples are then tested in C.I. Engine test rig. Results reveal that use of titanium dioxide nanoparticles as fuel additives lead to enhanced performance and emission characteristics in comparison to plain fuel and calcium carbonate nano fuel samples. The brake thermal efficiency of the engine is improved by 2% with the usage of TiO_2 nanoparticles in B20 blend, when compared with fuel sample without nano additive. A 6% reduction in BSFC value is observed for TiO_2 nano fuel in comparison to plain oil. It is observed that the blend B20 with TiO_2 nanoparticles result in an average 16% lesser smoke emission compared to plain B20.

**Full paper: Journal of Mechanical Engineering & Automation, (DOI:10.5923/c.jmea.201601.06), Vol. 6, Issue No. 5A, 2016, pp. 28-31*

Effect of Al_2O_3 Nanoparticles on the Performance and Emission Characteristics of CI Engine Fuelled with Lard Oil Methyl Ester Blends

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ABSTRACT

In the present study the effect of alumina (Al_2O_3) nanoparticles (ANP) on the performance and emission characteristics of blends of Lard Oil Methyl Ester (LOME) on a CI engine has been investigated. Lard oil has been extracted from pig fat and was subjected to transesterification to obtain LOME. The blend samples (B10, B20 and B30) of LOME were used for comparison. The alumina nanoparticles were dispersed uniformly at a concentration of 100 ppm by an Ultrasonicator. The results report that for B20+100ANP, the concentration of HC (ppm), CO emission (%) and smoke opacity have been reduced after the addition of alumina nanoparticles by 15, 33 and 25% respectively. The comparison of all the biodiesel blends leads to a conclusion that B20+100ANP has maximum reduction in HC concentration, CO percentage and Smoke opacity.

**Full paper: National Conference on Emerging Trends in Mechanical Engineering (e-TIME), 5th-6th August 2016, St. Joseph Engineering College, Mangaluru, Karnataka, India*

Effect of Tio_2 and $Caco_3$ Nano Additives on the Performance and Emission Characteristics of C.I. Engine

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ABSTRACT

In this paper an attempt is made to use titanium dioxide and calcium carbonate nanoparticles as fuel additive in a C.I. Engine. Dispersion of nanoparticles in B20 methyl ester of pongamia pinnata oil is carried out using a probe sonicator. The physiochemical properties are characterized. The fuel samples are then tested in C.I. Engine test rig. Results reveal that use of titanium dioxide nanoparticles as fuel additives lead to enhanced performance and emission characteristics in comparison to plain fuel and calcium carbonate nano fuel samples. The brake thermal efficiency of the engine is improved by 2% with the usage of TiO_2 nanoparticles in B20 blend, when compared with fuel sample without nano additive. A 6% reduction in BSFC value is observed for TiO_2 nano fuel in comparison to plain oil. It is observed that the blend B20 with TiO_2 nanoparticles result in an average 16% lesser smoke emission compared to plain B20.

**Full paper: National Conference on Emerging Trends in Mechanical Engineering (e-TIME), 5th -6th August, 2016, St. Joseph Engineering College, Mangaluru, Karnataka, India*

Mechanical and Tribological Properties of Injection Moulded Modified CaCO3/PP, LDPE Composites

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ABSTRACT

This study examines physical, mechanical and tribological properties of polypropylene (PP) and low density polyethylene (LDPE) sample prepared by manual lever operated plunger injection moulding equipment. In addition, calcium carbonate (CaCO3, 20%) is added to the polymer material as an additive and the properties of the composite have been tested. The results showed that 20%-CaCO3 addition improved hardness, tensile property and tribological property of the PP and LDPE.

**Full paper: American Journal of Material Science, DOI: 10.5923/c.materials.01.12.2016, Vol.6, Issue No.4A, 2016, pp. 61-66*

Application of Taguchi Method to Predict the Abrasive Wear Behavior of CP Titanium

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ABSTRACT

The commercially pure (CP) titanium cylindrical flat pins were subjected to wear on a standard pin-on-disc machine against a SiC abrasive disc for a dry sliding condition in the atmospheric air. The design of experiments (DOE) approach using Taguchi method was employed to predict the wear behavior against variable parameters such as load, speed and sliding duration. Also signal-to-noise ratio and analysis of variance (ANOVA) were used to study the influence of these parameters on the wear loss. It was observed that load has a significant effect on wear followed by speed and duration. A multiple linear regression equation has been developed and the error associated with confirmation test is 1.52% to 10.96%.

**Full paper: Journal of Mechanical Engineering and Automation, DOI:10.5923/c.jmea, 01.03.2016, Vol.6, Issue No.5A, 2016, pp.13-17*

Processing and Testing of Hybrid Sandwich Composites for Vibration Damping and Mechanical Properties

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ABSTRACT

Natural fibers due to their low cost, high specific strength, recyclability, and environmental friendliness, are finding increasing applications in automotive, aerospace, bio-medical, and sports equipment. In the present work, hybrid sandwich composites using Jute and Glass fibers in Polyester polymer, namely: Jute-Glass-Jute (JGJ) and Glass-Jute-Glass (GJG), were prepared by curing under pressure using compression moulding technique. The prepared sandwich composites were subjected to tensile and flexural testing. Their vibration and damping characteristics were studied using free vibration and forced vibration test rigs. Further, the influence of using Magneto Rheological (MR) fluid on vibration damping properties of the composite samples has also been investigated. The tensile and flexural strengths of GJG composites were found to be higher than that of JGJ and plain jute composites. In terms of their free vibration response, JGJ composites showed slightly higher natural frequency for first 3 modes while GJG showed better damping factors. Under forced vibration test, the effect of MR fluid was observed to be better for JGJ composites which showed 8% higher reduction in amplitude in comparison to GJG composites.

**Full paper: Journal of Mechanical Engineering and Automation, Doi:10.5923/c.jmea. 201601.05, Vol.6, Issue No.5A, 2016, pp. 22-27*

Mechanical and Tribological Properties of Centrifugally Cast Al-Si-SiC Composites

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ABSTRACT

In this paper an effort has been made to study the properties of composites made using Al-18wt%Si as the base alloy and SiC particles as the reinforcement. The composite was prepared using a combination of stir casting with bottom pouring technique and centrifugal casting. The prepared samples where then checked for various mechanical and tribological properties and were then compared with that of the base alloy produced using centrifugal casting. It was seen that, the introduction of the SiC particles have improved the mechanical and tribological properties of the base alloy.

**Full paper: American Journal of Materials Science, DOI: 10.5923/c.materials.201601.06, Vol.6, Issue No. 4A, 2016, pp.31-35*

Study of Mechanical Properties of Aluminium Alloy Composites

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ABSTRACT

In the present paper, an effort has been made to study about the mechanical properties of composites prepared using Al-18wt%Si as the base metal. The base metal was reinforced with using SiC particles having an average size of 60μm. The composite was produced using a combination of bottom pouring stir cast machine and a horizontally rotating centrifugal casting machine. The prepared samples of the composite was checked for various mechanical properties like hardness, tensile strength, toughness etc and the results obtained where then compared with the mechanical properties of alloy cast under the same conditions. It was hence found that, the addition of SiC reinforcing particles have increased the mechanical properties of the alloy to a greater extent but has reduced its toughness.

**Full paper: American Journal of Materials Science, DOI: 10.5923/c.materials.201601.14, Vol.6, Issue No.4A, 2016, pp.72-76*

Design of a Model of Power Generation System Using Kites

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ABSTRACT

Most people associate wind power only with conventional wind turbines, but research has led to a yet new source of renewable energy, kite power. Kite power has the potential to be more economical than using wind turbines because kites can fly higher than turbines can operate. At higher attitudes, wind speeds and available power are increased. In order to bring this new concept to a higher state of public awareness, a kite power demonstrator was considered ideal. The work here will include a way of adopting two kites to harness power by alternately changing their angle of attack. The kite angle of attack will be changed in such a way that the force in one of the kite will be higher which pull the power line to its side rotating the turbine. Then the angle of attack will be reversed so it gives a churning effect. Reducing friction proved to be a challenging task. Using of bearing V pulleys is of great advantage to reduce friction.

**Full paper: International Journal for Scientific Research & Development, ISSN: 2321-0613, Vol. 4, Issue No. 1, 2016, pp. 106-108*

Influence of Injection Timing on Performance and Combustion Characteristics of Simarouba Biodiesel Engine

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ABSTRACT

Efforts are being made throughout the World to reduce the consumption of liquid petroleum fuels wherever is possible. Biodiesel is recently gaining prominence as a substitute for petroleum based diesel mainly due to environmental considerations and depletion of vital resources like petroleum and coal. According to Indian scenario, the demand for petroleum diesel is increasing day by day hence there is a need to find out an appropriate solution. This study investigates influence of injection timing of 20% blend Simarouba biodiesel on performance and combustion characteristics. The effect of varying injection timing was evaluated in terms of thermal efficiency, specific fuel consumption, and heat release rate and peak cylinder pressure. By retarding injection timing brake thermal efficiency can be improved of S20

**Full paper: International Journal of Innovative Research in Science, Engineering and Technology, (An ISO 3297: 2007 Certified Organization), ISSN: 2319-8753(O), ISSN (P): 2347-6710, Vol. 5, Issue No.4, April 2016, pp. 4865-4872*

Static Characteristics of Journal Bearings Operating on TiO_2 Nanolubricants at Low Shear Condition

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ABSTRACT

The use of TiO_2 nanoparticles as lubricant additives is reported to improve the static performance characteristics of journal bearings. A variable viscosity analysis using Krieger-Dougherty viscosity model and couple stress model reported an increase in load carrying capacity of fluid film bearings operating on TiO_2 nanolubricants at high shear condition. The shear condition was modelled using the maximum particle packing fraction of TiO_2 nanoparticle aggregates. The current study simulates the static characteristics of journal bearings for low shear conditions and compares it with the published results for high shear. Results reveal an increase in load carrying capacity for journal bearings operating at low shear conditions in comparison to high shear for nanolubricants. Results point to an increase in operational region of the journal bearing at low speed conditions due to the presence of TiO_2nanoparticle additives.

**Full paper: Journal of Mechanical Engineering and Automation, Vol. 6, Issue No. 5A, 2016, pp. 142-146*

Thermomechanical Properties of Epoxy/PTW Composites

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ABSTRACT

In this study, composites were prepared by reinforcing thermoset epoxy with different weight percentage (0, 10 and 20 wt%) of ceramic filler (Potassium Titanate Whisker, PTW) using casting method. The basic mechanical properties of test samples were evaluated as per ASTM standards and it was observed that except the strength all properties were found to improve with the PTW addition. The thermomechanical properties of the samples were investigated by Dynamic Mechanical Analysis (DMA) over a temperature range of 25°C to 125°C. Storage modulus and loss modulus of the Epoxy/PTW composite samples exhibited considerable improvement over the initial temperature range. However, damping (tan δ) peaks of composites were lowered by addition of PTW filler. The study indicated that incorporation of PTW in Epoxy could effectively improve the thermomechanical properties of composites.

**Full paper: Journal of Mechanical Engineering and Automation, Vol. 6, Issue No.5A, 6th August 2016, pp. 18-21*

Study of Wear Behaviour of Recycled Metal Powder Filled Epoxy Composites Using Factorial Analysis

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ABSTRACT

Epoxy composites were prepared by using reprocessed metal dust powder as filler by varying the filler content. The basic mechanical properties such as density and hardness and dry sliding wear performance were evaluated as per ASTM standards. Wear tests were conducted on samples using pin-on-disc machine for different parameters as per full factorial design approach. It was found that filler has contributed to the density and hardness of the epoxy polymer. Factorial analysis indicated that both friction and wear were predominantly influenced by the metal powder content. The study demonstrated that waste metal powders have good potential to be used as filler for thermosets like epoxy.

**Full paper: American Journal of Materials Science, Vol. 6, Issue No. 4A, 6th August 2016, pp. 82-87*

Effect of Surface Mechanical Attrition Treatment on High Temperature Oxidation of CP Titanium

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ABSTRACT

The commercially pure titanium (grade 2) was subjected to surface mechanical attrition treatment (SMAT) to obtain a nanocrystallized surface which was further subjected to oxidation in a fluidized bed furnace for 5 hours at three different temperatures; 500, 600 and 700°C. The effectiveness of this two stage treatment was assessed using optical microscopy, X-ray diffraction, glow discharge optical emission spectroscopy (GDOES) and Vickers hardness tester. The effect of SMAT on oxidation was found to influence the surface hardness profoundly though they featured lower oxidation rates and the coating thickness than the coarse grained titanium.

**Full paper: American Journal of Materials Science, DOI: 10.5923/c.materials.201601.04, Vol. 6, Issue No.4A, 2016, pp. 20-24*

Process and Productivity Improvement through Six Sigma: A Case Study at Production Industry

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ABSTRACT

The article presents a case study, conducted to increase the productivity by implementing Six Sigma (SS) methodology in a traditional Small Scale Industry (SSI) with very low capital investment and minimum changes to the existing technology. Further, DMAIC (Definition- Measure-Analysis-Improve-Control) approach is used to effectively deploy SS strategy. MINITAB statistical software is used to interpret the results. Implementation of the SS methodology has resulted in increased productivity in the organization. Rework of the leaf plate assembly which was a major concern of industry has been reduced. The current project is based on the single case study; thus results cannot be generalized. But, lessons learned and managerial implications are applicable to similar industries and projects. Further, due to the limited resources such as time, capital investment, and level of adaptability all the factors which would improve the productivity could not be tackled. But being under constraint, study has helped to increase the productivity of the organization. The problems faced by the SSI might be of different, but the methodology followed helps all other SSI to implement SS, being under their limitations.

**Full paper: Journal of Mechanical Engineering and Automation, (Scientific & Academic publisher) DOI: 10.5923/c.jmea.201601.07, Vol. 6, Issue No. 5A, 2016, pp. 32-39*

Enhancing the Performance of an Automobile Service Industry: Lean Thinking Approach

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ABSTRACT

The objective of the research is to identify challenges in an automobile service center and to determine optimal solutions to improve the overall performance. More specifically the research has the following objectives: To increase the productivity using Lean strategy; To reduce the wastage, non-value added activities; To create an easy and simple work environment; To develop a 5S Auditing control system to sustain the improved process; To educate Janitorial level people about benefits of using Lean strategy. The research reported in this research is based on a single case study carried out in an organization using Lean PDCA (Plan-Do-Check-Act) approach, 5S tool and its applications to enhance the productivity. The root causes for the problem in the servicing of cars has been identified through the data based analysis at different stages in the research. The process parameters have been optimized and measured for sustainability in the process. Lean strategy resulted in reduced amount of energy and non-value added activities associated with its production processes. Further, research resulted in the creation of a visual workplace, which has enhanced the production atmosphere, and created a simple and easy process design to lay the foundation to a future of continuous improvement. As a result of this research, the productivity would increase by 15 cars/day, which would be a remarkable achievement for the organization. The research provides guidance to organizations regarding the applicability and importance of quality concepts. Organizations need to work continuously with development-orientated activities in order to survive; irrespective of how these activities are labeled. The research will also serve as a basis for further research in this area, focusing on practical experience of these concepts.

**Full paper: Journal of Mechanical Engineering and Automation, (Scientific & Academic publisher) DOI: 10.5923/c.jmea.201601.08, Vol. 6, Issue No. 5A, 2016, pp. 40-48*

Taguchi Analysis on the Compressive Strength Behaviour of Waste Plastic-Rubber Composite Materials

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ABSTRACT

In this paper an attempt has been made to optimize the waste plastic-rubber composite materials using the Taguchi's Design of Experiment Methodology. Moreover, an investigation has been carried to find out the effect of various parameters such as waste plastic mix, rubber powder, and filler materials (calcium carbonate and fly ash) on the compressive strength of the material. The main objective was to reutilize the waste plastics into developing plastic-rubber composite materials. In the present research, waste plastics have been blended with rubber powder, calcium carbonate, and fly ash in a plastic extruder. Then the melt was transferred into cube moulds, and rammed to form the specimens. Taguchi's L9 orthogonal array has been utilized to perform the experiment, and to optimize the parameters. The samples have been subjected to compression tests on the Universal Testing Machine. The data obtained has been analyzed using MINITAB statistical software to draw the robust conclusion. SEM micrographs and Particle size analysis have been performed on the fly ash filler material. The results show that fly ash is a mixture of micro and nano sized particles with a wide range of particle sizes. Further, it is evident from the research that all the selected parameters like waste plastic, rubber powder, fly ash and calcium carbonate are having significant effect on the compressive strength of the material under study. The Analysis of Variance (ANOVA) revealed that waste plastic mix is the most influencing parameter for the compressive strength. Experimental results of compressive strength for optimum values of waste plastic-rubber composite material in comparison with clay brick revealed that it is 3 times stronger than the normal clay brick. These results indicate that waste plastic-rubber composite material could be used as low cost construction material and a cheaper substitute to clay bricks and various other building materials.

**Full paper: American Journal of Materials Science, (Scientific & Academic publisher) DOI: 10.5923/c. materials.201601.17, Vol. 6, Issue No. 4A, 2016, pp. 88-93*

A Study on Adaptation of Six Sigma Concepts in a Small Scale Production Industry

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ABSTRACT

The article presents a case study, conducted to increase the productivity by implementing Six Sigma (SS) methodology in a traditional Small Scale Industry (SSI) with very low capital investment and minimum changes to the existing technology. Further, DMAIC (Definition- Measure-Analysis-Improve-Control) approach is used to effectively deploy SS strategy. MINITAB statistical software is used to interpret the results. Implementation of the SS methodology has resulted in increased productivity in the organization. Rework of the leaf plate assembly which was a major concern of industry has been reduced. The current project is based on the single case study; thus results cannot be generalized. But, lessons learned and managerial implications are applicable to similar industries and projects. Further, due to the limited resources such as time, capital investment, and level of adaptability all the factors which would improve the productivity could not be tackled. But being under constraint, study has helped to increase the productivity of the organization. The problems faced by the SSI might be of different, but the methodology followed helps all other SSI to implement SS, being under their limitations.

**Full paper: Second National Conference on Emerging Trends in Mechanical Engineering (eTIME), Organized by Department of Mechanical Engineering, 5th-6th August 2016, St. Joseph Engineering College, Mangaluru, D.K*

A Study on Implementation of Lean Approach in Automobile Service Industry

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ABSTRACT

The objective of the research is to identify challenges in an automobile service center and to determine optimal solutions to improve the overall performance. The research reported in this project is based on a single case study carried out in an organization using Lean PDCA (Plan-Do-Check-Act) approach, 5S tool and its applications to enhance the productivity. The root causes for the problem in the servicing of cars has been identified through the data based analysis at different stages in the project. The process parameters have been optimized and measured for sustainability in the process. Lean strategy resulted in reduced amount of energy and non-value added activities associated with its production processes. Further, project resulted in the creation of a visual workplace, which has enhanced the production atmosphere, and created a simple and easy process design to lay the foundation to a future of continuous improvement. As a result of this project, the productivity would increase by15 cars/day, which would be a remarkable achievement for the organization.

**Full paper: Second National Conference on Emerging Trends in Mechanical Engineering (eTIME), Organized by Department of Mechanical Engineering, 5th-6th August 2016, St. Joseph Engineering College, Mangaluru, D.K*

Productivity Enhancement in a Traditional Small Scale Industry: Application of Six Sigma Strategy

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ABSTRACT

Six Sigma has been a powerful and successful tool in medium to large manufacturing industries to reduce the rejection and to improve productivity. This paper presents a Six Sigma case study in reducing rejection in the assembly line of a manufacturing process at a traditional small scale industry in India. The project was conducted to increase the productivity by implementing Six Sigma (SS) methodology with very low capital investment and minimum changes to the existing technology. Further, DMAIC (Definition- Measure-Analysis-Improve-Control) approach is used to effectively deploy SS strategy. This paper provides empirical evidence on SS implementation in a technical field of a manufacturing process from scratch, to lift the quality to world-class level. The project also reveals the bottlenecks in the implementation of Six Sigma methodologies in a small organization. Implementation of the SS methodology has resulted in increased productivity in the organization. Rework in the assembly line which was a major concern of industry has been reduced. As a result of this project, sigma level was improved from 2.09 to 3.9, which was a remarkable achievement for this small scale industry. This in turn resulted in a financial saving of US$ 9000 per annum due to reduction in the rejection rate .

**Full paper: Proceedings of the Second International Conference on Statistics for Twenty First Century-2016 (ICSTC), organized by Department of Statistics, 21st-23rd December 2016, University of Kerala, Trivandrum, India, pp. 34-38*

Design of Multi-Loop Controller for Minimization of Energy Consumption in the Distillation Column

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ABSTRACT

An attempt has been made to design a decoupling controller for systems with more inputs more outputs with deadtime in it. The de-coupler is designed for the chemical process industry 3×3 plant transfer function with dead time. TheQuantitative Feedback Theory (QFT) based controller has also been designed here for the 2×2 distillation column transferfunction. The developed control techniques were simulated using the MATLAB/Simulink. Also, the stability of the process wasanalyzed, together with the presence of various perturbations in it. Time domain specifications like setting time along withovershoot and oscillations were analyzed to prove the efficiency of the de-coupler method. The load disturbance rejection wastested along with its performance. The QFT control technique was synthesized based on the stability and performancespecifications in the presence of uncertainty in time constant of the plant transfer function through sequential loop shapingtechnique. Further, the energy efficiency of the distillation column was improved by proper tuning of the controller. Adistillation column consumes 3% of the total energy consumption of the world. A suitable control technique is very importantfrom an economic point of view. The real-time implementation of the process is under process in our laboratory.

**Full paper: Proceedings of the 18th International Conference on Information and Communication Engineering (ICICE), Organized by World Academy of Science, Engineering and Technology, 19th-20th September 2016, Chicago, USA, pp.1352-1360*

MANAGEMENT & BUSINESS ADMINISTRATION

Market Response to Stock Splits in the National Stock Exchange

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ABSTRACT

The Efficient Market Hypothesis is one of the most significant theories in modern finance. Market efficiency studies assess how rapidly and correctly the market reacts to a particular type of new information. Information usefulness studies assess the degree to which company returns react to release of a particular bit of news. In this direction the present study examines the Efficient Market Hypothesis in the Indian stock market. The effects of Stock splits announcements are studied for companies listed in the National Stock Exchange for the period 2009 to 2013. Event study methodology has been used to test the semi strong form of EMH. The study observes that average abnormal return on the day of announcement for the sample is 2.02% which is significant at 5% level.

**Full paper: ELK Asia Pacific Journals, Vol.1, Special Issue, April 2015, pp. 15-19*

Re-Visiting Calendar Anomalies in Indian Stock-Market: Empirical Evidence of Monthly Pattern from CNX Pharma Index

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ABSTRACT

Anomalous behaviour of stock returns at different calendar points has been widely researched area in the financial literature. Considerable studies in India and abroad documented the existence of calendar anomalies in the stock returns. India one of the emerging economies of the world has witnessed tremendous revolution in information technology and continuous reforms in stock market has made an investor believe that that Indian stock markets are informationally efficient. Nevertheless, we do find studies carried on in the recent years that confirm the presence of seasonal irregularities in the Indian stock market. In this regard, this paper is an attempt to re-visit calendar anomalies in the Indian stock market. Added to this, there not many literatures that report the existence of calendar anomalies in the sectoral indices of National Exchange India.

Hence, to fill this gap the present study aims at discovering the presence of monthly effect, turn of the month effect and month-of-the-year effect in Indian stock market by using CNX Pharma index over the period from April 2001 to March 2013. In the current study daily closing stock prices are converted into daily return by taking natural log of the difference in the price at day t and the price at day t-1. The study uses two approaches viz. Calendar day approach and Trading day approach. Summary statistical measures like mean and standard deviation have been applied to study the distribution pattern of the daily stock returns across a month. To test the significance of the observed results the parametric t-test and the non-parametric Mann-Whitney U test and Kruskal Wallis H test have been used.

**Full paper: Udyog Pragati: The Journal for Practising Managers published as a Quarterly Journal by the National Institute of Industrial Engineering, Mumbai, Vol. 39, Issue No. 3, 2015, pp. 1-13*

An Empirical Analysis of Monthly Effect and Turn of the Month Effect in Indian Stock Market

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ABSTRACT

In an efficient market, all relevant information is fully reflected in stock prices so that no investor is able to make excess profits based on any existing information. This implies that securities are correctly priced. However, contradiction to this theory, several calendar anomalies are reported in the stock markets across the world. One such calendar anomaly documented in financial literature is the monthly effect. The objective of this paper to examine the existence of monthly effect and turn of the month effect in Indian stock market by using CNX Bank index over the period from April 2001 to March 2013. In this study the daily closing stock prices are converted into daily return by taking natural log of the difference in the price at day t and the price at day t-1. Summary statistical measures like mean and standard deviation have been applied to study the distribution pattern of the daily stock returns across a month. To test the significance of the observed results the parametric t-test and the non-parametric Mann-Whitney U test have also been used.

**Full paper: ELK Asia Pacific Journal, 1(Special Issue), 2015, pp. 26-32*

Financial Literacy and Planning of Retail Investors in Dakshina Kannada District, Karnataka

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ABSTRACT

Financial literacy is intended to enable individuals to handle their financial resources efficiently in order to sustainably develop their living conditions. The financial education needs of individuals vary with regard to their current levels of financial literacy. The requirements of an individual change throughout the lifetime in response to the changing financial needs. Individuals also feel that they need a minimum level of knowledge that helps them to handle financial services that are easier, simpler and allow them to sustainably secure their livelihoods. For the current study, a survey has been conducted in Dakshina Kannada District of Karnataka State to extract the response of the investors. The key variables of the study are demographics, attitude of the investors towards money, financial planning, retirement planning and their behavior towards financial decision-making. The data analyzed in the in the paper provides an understanding of investors' level of financial literacy and assessment of their attitudes. The results of the study reveal that the investors have positive attitude towards money and financial planning. Moreover the retail investors have good idea about the financial instruments as well. However , level of financial literacy of the investors is not encouraging.

**Full paper: ANVESHA –The Journal of Management, Vol. 8, Issue No.4, October-December 2015, pp. 28-38*

Emergence of Cheque Truncation System

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ABSTRACT

Clearing has been an important part of the banking system and will always remain a part of it for years to come. Clearing in banking indicates the transfer of fund from one person to another. This clearing of fund can take place in 2 ways either through cash or through cheque. There has been no major change in the cash transactions except for the changes in value of money. However the cheque clearing system has undergone lot of changes. The origin of cheque can be traced back to the first century AD, where banks in and around Persia used to issue letters of credit called "Sakks" wherein the banks used to pay the identified payees as per the instructions. This eliminated the cumbersome process of carrying money or gold which was very risky. Changes have taken place in cheque clearing over the period of time. From ordinary cheque clearing to MICR clearing and finally to the latest in clearing 'Cheque Truncation System'. This is a conceptual paper which tries to explore the changes that have taken place in the bankclearing system in the past and speaks about the present system of cheque clearing the Cheque Truncation System.

**Full paper: International Journal of Management, IT and Engineering, Vol. 5, Issue No. 7, July 2015, pp.261-269*

Financial Inclusion through SHG-BLP: A Case Study of SKDRDP and NGVCT in India

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ABSTRACT

This paper unleashes the level of financial inclusion achieved through SHG-BLP. Level of financial inclusion is measured using leading indicators highlighted in the literature. Study confined to the SHG members of two leading NGOs of D.K. District of Karnataka State in India. A total of 766 SHG members spread in 5 taluks of the district have been interviewed using a structured schedule. Analysis has been undertaken covering 3 research objectives and 7 hypotheses. Research data has been validated using appropriate parametric and non-parametric statistical tests such as t-test and Wilcoxon Signed Ranks test. Study covers the financial inclusion permeated by the linked banks from April 2006 to March 2013. Substantial financial inclusion indicators have shown an unfavourable indication for the existence of financial inclusion in the pre SHG-BLP period and a highly favourable indication for the existence of financial inclusion in the post SHG-BLP. This finding clearly implies that SHG-BLP is highly successful in extending greater financial inclusion in the district. Few indicators of financial inclusion have also shown an absolute zero or weak existence of financial inclusion even after SHG-BLP. However, the size of such unfavourable indication is absolutely negligible as compared to the total size of indicators.

**Full paper: World Review of Business Research, Vol.5. Issue No. 3, September 2015, pp. 91-107*

Financial Exclusion: Concept, Causes & Consequences A Tri-Dimensional Literature Analysis

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ABSTRACT

This research paper has an objective to analyze the available literature on financial exclusion, alternatively referred to as financial inclusion as well. It is to understand and conceptualize the meaning, nature, causes and consequences of financial exclusion worldwide through a mixture of past empirical studies. Decision makers can use the literature discussed in this paper to draw appropriate implications for policy formulation. Bankers can take insights from the literature and redesign their strategies to have greater financial inclusion or to lower financial exclusion. In addition, paper also serves the purpose of researchers as it provides adequate studies at a single-point on financial exclusion. It covers the literature over a period of two and half decades and it includes manifold studies conducted in the major countries of the world. It also covers the pioneer studies undertaken by leading researchers like Kempson, Leyshon, Thrift and Whyley and several other recent studies. Paper unleashes the diversity in conceiving the concept of financial exclusion, its causes and consequences across the nations. Each study unfolds different experience and adds fresh and varied dimension to financial exclusion. The vulnerable sections of the society, financial service providers and the governments have to borrow heavily from this paper for better understanding of problems involved in financial exclusion for finding suitable solutions through collective efforts of all, so that the probability of people being excluded from financial services is eliminated. However, study does not go ahead to compare results based on empirical evidences of past studies among various countries.

**Full paper: International Journal of Applied Financial Management Perspectives, Pezzottaite Journals. Vol. 4, Issue No.1, January-March 2015, pp.1605-1613*

Risk Anomalies: Equity Market

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ABSTRACT

Conventional finance is based on the idea that high risk is rewarded with higher average returns. It is intriguing to note that portfolios comprise high-risk stocks have considerably underperformed their lower-risk counterparts. This anomaly identified as low-volatility anomaly offers potential opportunities for investors. The fact that low risk stocks have higher expected returns is a notable anomaly in the field of finance. It is notable because it is continual – existing now and as far back in time as we can see. It is also notable because it is all-inclusive. The objective of this paper is to examine the risk anomaly on the scrips traded in National Stock Exchange. It is an approach which attempts to build a portfolio which maximizes returns for scrip while keeping volatility at minimum. The volatility in the research undertaken is determined by the standard deviation of the stock returns. The study is limited to those stocks which are traded in the National Stock Exchange (NSE).

**Full paper: SCMS Journal of Indian Management, Vol. 12, Issue No.2, April-June 2015, pp. 39-53*

Employee Engagement- A Means to Employee Involvement

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ABSTRACT

Organizations rely heavily on financial measures such as profitability, revenue, market share and cash flow, but human oriented aspects such as employee engagement & involvement are not given much importance due to which the organization's outcomes such as customer satisfaction, retention, productivity, and profitability are at stake. Not many studies have been done to find out the relationship between Employee Engagement and Involvement in tea industry. Thus in order to fill the gap in the relevant area the present study on, 'Employee Engagement- a means to employee Involvement' with reference to The United Nilgiri Tea Estates Co., Ltd was taken up. Out of 1069 employees 230 respondents were taken as the sample for the study from all the divisions of the company. Survey guided by a structured questionnaire data was analysed by applying chi-square test, t-test, ANOVA, correlation and regression. Correlation result stated that there was a positive correlation between the level of engagement and involvement. It was also observed that employees with less than five to ten years of experience were highly engaged and also money acted as a greatest motivator in keeping the employees engaged at the work place. The study suggested measures to enhance employee engagement and involvement through a model. Since engaged employee is productive and motivated, his involvement in most of the strategic organizational decisions that promotes growth and profitability will also be highest. It is important for every organization to take supreme care in keeping their employees engaged in order to enable higher involvement from them.

**Full paper: PEARL, Vol. 7, No. 2, May-August 2016, pp. 165-179*

Impact of Stock Splits and Rights Issue Announcements on Market Price, Evidence from India

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ABSTRACT

The current paper studies the impact of two events i.e stock splits and rights issue announcement on the stock returns of companies listed on the Bombay Stock Exchange. The study consists of a sample of 90 announcements for stock splits and 29 announcements for rights issue during the period 2011-2014. Market model is used to calculate the abnormal returns of securities. Positive Average Abnormal Returns were observed for the two events on the day of their announcements; however they are not statistically significant. The study concludes that the Indian stock market is efficient in its semi-strong form.

**Full paper: Drishtikon: A Management Journal, Vol. 7, Issue No. 2, March 2016, pp.1-16*

Self Help Group Model: A Strategy for Inclusive Growth

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ABSTRACT

Availability of suitable financial products or services to the rural mass is one of the criterion to achieve inclusive growth. This research paper highlights the role of Self Help Groups (SHGs) in achieving inclusive growth. Three major financial inclusion process indicators (FIPIs) and four major financial inclusion effectiveness indicators (FIEIs) have been used in the research to measure the effort of linked banks in providing financial products or services to the SHG members thereby fostering the inclusive growth. Research has been undertaken in Mangalore District of Karnataka State in India from 2006 to 2013. A total of 766 SHG members have taken active participation in the research through a structured schedule. Study has been divided in to two specific objectives and seven hypotheses. Wilcoxon Signed Ranks, a non-parametric statistical test has been used to validate the data. Both the indicators (FIPIs and FIEIs) have shown a weak presence before rural mass joined the SHGs. However, alarmingly all the three FIPIs have shown a considerable effort of linked banks in providing financial services to the SHG members after they joined the SHGs. At the same time, effectiveness of the efforts of the linked banks in offering financial services are also found to be robust in all the four FIEIs subsequent to joining SHGs by rural mass. Collectively, the FIPIs and FIEIs have shown an exceptional contribution in extending greater inclusive growth by accelerating the effort of providing financial services and its effectiveness in the District of Karnataka state in India through SHG model.

**Full paper: Third European Academic Research Conference on Global Business, Economics, Finance and Banking (EAR16Paris Conference) Paper ID: P606, ISBN: 978-1-943579-24-2, Paris, France. 1-3 July 2016, pp. 1-20*

An Empirical Analysis of Performance of Retail and Wholesale Conventional Banks in Bahrain

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ABSTRACT

The main purpose of this study is to examine the financial performance of retail and wholesale conventional banks in Bahrain. The study covers a period of five years from 2009 to 2013. Ratio analysis was used to analyse the comparative financial efficiency of banks under study and correlation analysis was used to test the significance. Descriptive statistical analysis was used to measure the dispersion and the stability-variability of the ratios. The results indicate that wholesale banks are more efficient than retail banks in terms of overall cost to income and asset utilisation whereas retail banks are more efficient than wholesale banks in staff cost to income and operations. Correlation analysis showed a high positive correlation of staff cost to income ratio with operational efficiency ratio and cost to income ratio in retail banks and positive correlation of staff cost to income ratio with operational efficiency ratio and cost to income ratio in wholesale banks.

**Full paper: British Journal of Economics, Finance and Management Sciences, Vol. 12, Issue No.1, June 2016, pp.1-10*

Book Published

Sl. No	Title of the Book	Author	ISBN	Publisher
1	Entrepreneurial Development	M M Munshi, Prakash Pinto Ramesh Khatri	978-93-5202-446-9	Himalaya Publishing House, 2015

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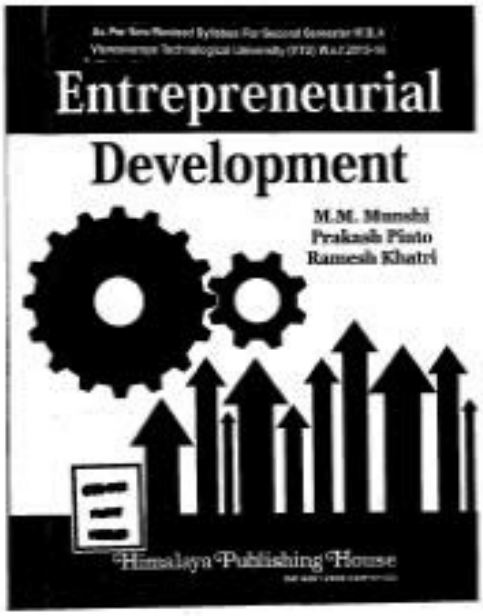

MASTER OF COMPUTER APPLICATIONS

Classification and Selection of Translation Candidates for Parallel Corpora Alignment

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ABSTRACT

By incorporating human feedback in parallel corpora alignment and term translation extraction tasks, and by using all human validated term translation pairs that have been marked as correct, the alignment precision, term translation extraction quality and a bunch of closely correlated tasks improve. Moreover, such a labeled lexicon with entries tagged for correctness enables bilingual learning. From this perspective, we present experiments on automatic classification of translation candidates extracted from aligned parallel corpora. For this purpose, we train SVM based classifiers for three language pairs, English-Portuguese (EN-PT), English-French (EN-FR) and French-Portuguese (FR-PT). The approach enabled micro f-measure classification rates of 95.96%, 75.04% and 65.87% respectively, for the EN-PT, EN-FR and FR-PT language pairs.

**Full paper: Proceedings of the 17th Portuguese Conference on Artificial Intelligence, EPIA 2015, Lecture Notes in Artificial Intelligence, Vol. 9273, Springer International, DOI: 10.1007/978-3-319-23485-4_73, September 2015, Coimbra, Portugal, pp. 723-734*

Bilingually Motivated Segmentation and Generation of Word Translations using Relatively Small Translation Data Sets

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ABSTRACT

Out-of-vocabulary (OOV) bilingual lexicon entries is still a problem for many applications, including translation. We propose a method for machine learning of bilingual stem and suffix translations that are then used in deciding segmentations for new translations. Various state-of-the-art measures used to segment words into their sub-constituents are adopted in this work as features to be used by an SVM based linear classifier for deciding appropriate segmentations of bilingual pairs, specifically, in learning bilingual suffixation.

**Full paper: Proceedings of the 29th Pacific Asia Conference on Language, Information and Computation (PACLIC29), Association for Computational Linguistics (United States), DOI: 10.18653/v1/Y15-2022, October 2015, Shanghai, China, pp. 187-196*

Learning Clusters of Bilingual Suffixes using Bilingual Translation Lexicon

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ABSTRACT

By learning bilingual suffixation operations from translations using an existing bilingual lexicon with near translation forms we can improve its coverage and hence deal with the OOV entries. From this perspective, we identify bilingual stems, their bilingual morphological extensions (bilingual suffixes) and subsequently clusters of bilingual suffixes using known translation forms seen in an existing bilingual translation lexicon. We rely on clustering to enable safer translation generalizations. The degree of co-occurrence between two bilingual morphological extensions with reference to common bilingual stems determines if each of them should fall in the same cluster. Results are discussed for language pairs English-Portuguese (EN-PT) and English-Hindi (EN-HI).

**Full paper: Proceedings of the Third International Conference on Mining Intelligence and Knowledge Exploration, (MIKE), Lecture Notes in Artificial Intelligence, Vol. 9468, Springer International, DOI: 10.1007/978-3-319-26832-3_57, December 9-11, 2015, Hyderabad, India, pp. 607-615*

A Theoretical Survey for Land Cover and Land Use Assessment using Graph Based Image Processing Techniques

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ABSTRACT

The term land use denotes the human use of land in turn which means that land modification and development of land for the human use. The high frequency satellite images provide the very useful data regarding the land use aspects. A large number of research experiments carried out in this field and experimental results shows that the image segmentation mechanism using graph based approach can be useful to develop the model for the proper land use. A detailed survey is carried out in this paper to explore the usage of graph based application in the field of image segmentation, which in turn reveals that the graph based application can be used to segment the images in the field of urban area planning and in the field of vegetation.

**Full paper: National Conference on Signal and Image Processing (NCSIP), ISBN: 978-81-9304-160-4, 01st-02nd May 2015, VCET, Puttur*

A Land Cover and Land Use Assessment for Different Agriculture Cultivations Using Graph Based Image Segmentation Techniques

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ABSTRACT

Remote sensing application plays a major role in the analysis of land cover and land use. The drift in generation leads to the change in the land use also. The globalization introduces and motivates the new trends in agriculture field which may be financially benefit to the formers but in the meantime it may also affect the land cover. This may leads to an unfortunate environmental adversity in the globe. There is no accurate and effective model or map which measures the land cover and land use over the period of years. An automated technique can be developed which assist experts, planners, policy makers, farmers and for other organization the proposed research

**Full paper: National Conference on Geospatial Information and Technologies Advancement (GITA-2K15), ISBN: 978-93-5254-003-7, 16 th-17th October 2015, Shri Madhwa Vadiraja Institute of Technology & Management, India*

Using Bilingual Segments in Generating Word-to-Word Translations

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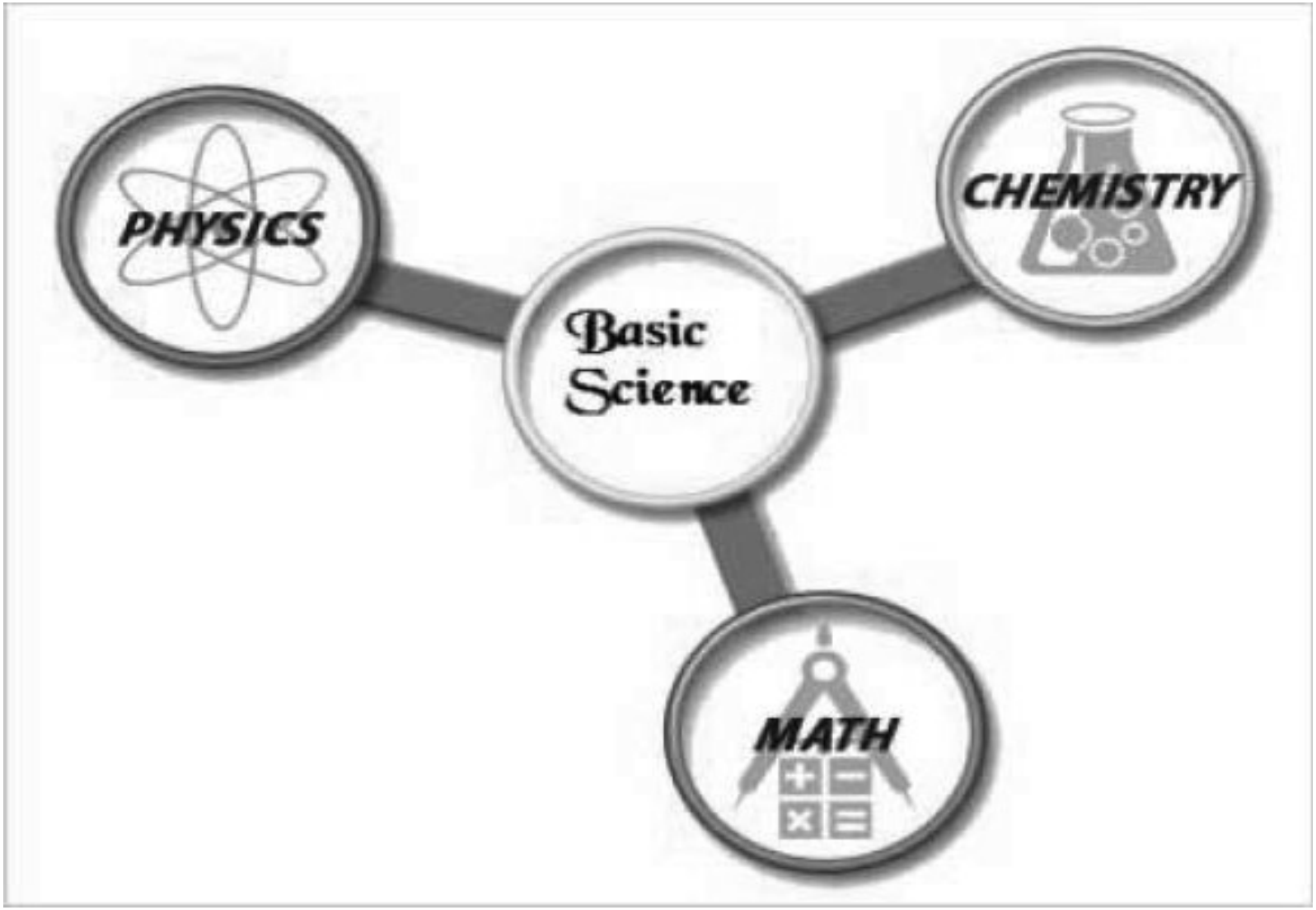
ABSTRACT

We defend that bilingual lexicons automatically extracted from parallel corpora, whose entries have been meanwhile validated by linguists and classified as correct or incorrect, should constitute a specific parallel corpora. And, in this paper, we propose to use word-to-word translations to learn morph-units (comprising of bilingual stems and suffixes) from those bilingual lexicons for two language pairs L1-L2 and L1-L3 to induce a bilingual lexicon for the language pair L2-L3, apart from also learning morph-units for this other language pair. The applicability of bilingual morph-units in L1-L2 and L1-L3 is examined from the perspective of pivot-based lexicon induction for language pair L2-L3 with L1 as bridge. While the lexicon is derived by transitivity, the correspondences are identified based on previously learnt bilingual stems and suffixes rather than surface translation forms. The induced pairs are validated using a binary classifier trained on morphological and similarity-based features using an existing, automatically acquired, manually validated bilingual translation lexicon for language pair L2-L3. In this paper, we discuss the use of English (EN)-French (FR) and English (EN)-Portuguese (PT) lexicon of word-to-word translations in generating word-to-word translations for the language pair FR-PT with EN as pivot language. Generated translations are filtered out first using an SVM-based FR-PT classifier and then are manually validated.

**Full paper: Proceedings of the Sixth Workshop on Hybrid Approaches to Translation (HyTra6) COLING 2016, Association for Computational Linguistics (United States), DOI: 10.18653/v1/W16-4508, December 11, 2016, Osaka, Japan, pp. 61-71*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Interval Valued L-fuzzy Ideals based on t-norms and t-conorms

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ABSTRACT

In this paper, we present an unified approach which defines interval valued L-fuzzy ideals of nearrings by incorporating interval valued t-norms and t-conorms. We characterize interval valued L-fuzzy ideals in terms of their level subsets. We study insertion of factors property and relate interval valued fuzzy points with interval valued fuzzy ideals.

**Full paper: Journal of Intelligent and Fuzzy System, Vol. 28, Issue No.6, 2015, pp.2631-2641*

New Chinese Remainder Theorem and Moduli Sets

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ABSTRACT

In this paper, mathematical proof for "New Chinese remainder theorem (New CRT-I)", proposed by Yuke Wang, is given. A new moduli set is proposed for converting from residue to binary number system. For the new moduli set , the reverse converter sets are also obtained using the Chinese remainder theorem as well as using The New CRT-I.

**Full paper : Mathematical Science International Research Journal, Vol.4, Issue No. 2, 2015, pp.179-181*

Strong Congruence Relation in Atomistic Lattices

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ABSTRACT

In this paper, for an atomistic lattice L satisfying the ascending and descending chain conditions, it is proved that:

1. the congruence lattice Con L is isomorphic to the sublattice of the set of all standard elements of L;

2. every congruence relation of L is representable.

Further, the notion of a strong congruence relation in lattices is introduced, some examples of strong congruence relations are given and it is proved that in a sectionally complemented lattice satisfying the ascending and descending chain conditions, every congruence relation is strong.

**Full paper: Acta Mathematica Universatis Comenianae, Vol. 85, Issue No. 2, 2016, pp. 337-346*

Interval Valued L-Fuzzy Cosets and Isomorphism Theorems

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ABSTRACT

In this paper, we study homomorphic images of interval valued L-fuzzy ideals of a nearring. If $f : N1 \rightarrow N2$ is an onto nearring homomorphism and $\hat{}\mu$ is an interval valued L-fuzzy ideal of $N2$ then we prove that $f-1(\mu\hat{})$ is an interval valued L-fuzzy ideal of $N1$. If $\hat{}\mu$ is an interval valued L-fuzzy ideal of $N1$ then we show that $f(\mu\hat{})$ is an interval valued Lfuzzy ideal of $N2$ whenever $\hat{}\mu$ is invariant under f and interval valued t-norm is idempotent. Finally, we define interval valued L-fuzzy cosets and prove isomorphism Theorems

**Full paper: Afrika Matematika, Springer-Verlag, USA, Vol. 27, 2016, pp.393-408*

Micro Structural Studies of PVA Doped with Metal Oxide Nanocomposites Films

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ABSTRACT

Nanostructured PVA polymer composites are of rapidly growing interest because of their sized-coupled properties. The present article deals with both ZnO and WO3 embedded in a polyvinyl alcohol (PVA) matrix using a solvent casting method. These films were characterized using FTIR, XRD, and SEM techniques. The FTIR spectra of the doped PVA shows shift in the bands, which can be understood on the basis of intra/inter molecular hydrogen bonding with the adjacent OH group of PVA. The phase homogeneity and morphology of the polymer composites have been analyzed using scanning electron microscope (SEM).The crystal structure and crystallinity of polymer nanocomposites were studied by X-ray diffraction technique (XRD). Thus due to the interaction of dopant and complex formation, the structural repositioning takes place and crystallinity of the nanocomposites decreases.

**Full paper: AIP Conference Proceedings, doi: 10.1063/1.4872650, Vol. 1591, Issue No. 493, 2015, pp. 493-495*

Studies on Structural, Optical and Mechanical Properties of MWCNTs and ZnO Nanoparticles Doped PVA Nanocomposites

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ABSTRACT

This paper presents a novel class of multiwalled carbon nanotubes (MWCNTs) and zinc oxide (ZnO) doped polyvinyl alcohol (PVA) nanocomposites prepared using coagulation and solvent casting method. The dopant, ZnO nanoparticles, was prepared using precipitation method, and another dopant, MWCNTs, was treated with H2SO4 and HNO3 taken in 3:1volume ratio to create carboxylated MWCNTs. Furthermore, prepared ZnO and treated MWCNTs were doped into PVA matrix to prepare PVA nanocomposites by solvent casting technique. The Fourier transform infrared (FTIR) spectra detect the irregular shift in the bands of doped PVA nanocomposites indicating the presence of intra/intermolecular hydrogen bonding creating the interaction between the nanoparticles and neighboring OH group of PVA. Crystallinity of the prepared nanocomposites films was investigated using XRD technique, which explores the average particle size of the embedded nanoparticles and explains the complex formation and variation in crystallinity of the nanocomposites due to interaction of dopants. The decrease in optical energy band gap of nanocomposite films and the information of Urbach energy (Eu) were assessed by UV/vis spectroscopy. By using a universal testing machine, the mechanical properties of doped polymer films found escalation for doping percentage concentration x = 7.5 wt%. The phase homogeneity, film morphology, and chemical configuration of the nanocomposites were inspected using atomic force microscope, scanning electron microscopy and energy-dispersive X-ray spectroscopy, respectively

**Full paper: Nanotechnology Reviews, https://doi.org/10.1515/ntrev-2015-0020, Vol. 4, Issue No. 5, 2015, pp. 457-467*

Enhancement of Optical, Mechanical and Micro Structural Properties in Nanocomposite films of PVA Doped with WO_3 Nanoparticles

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ABSTRACT

The purpose of this paper is to explore the synthesis, preparation and investigation of micro structural, optical and mechanical studies of polyvinyl alcohol (PVA) doped with tungsten oxide (WO_3) nanocomposites films. These films were prepared by simple solvent casting method is further characterized using Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), UV-visible spectroscopy, universal testing machine (UTM), scanning electron microscope (SEM), energy-dispersive analysis of X-rays (EDAX) and atomic force microscope (AFM) techniques to determine the enhancement in structural, optical and mechanical properties with increase in dopant concentration.

**Full paper: International Journal of Structural Integrity, DOI http://dx.doi.org/10.1108/IJSI-08-2014-0036, Vol. 6, Issue No. 3, 2015, pp. 338-354*

Enhancement of Micro Structural Properties of PVA doped with MWCNT's and Metal Oxide Nanocomposites Films

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ABSTRACT

WO3 nanoparticles were prepared by using precipitation method and the multiwall Carbon nanotubes (MWCNT's) were functionalized to make Carboxylated MWCNTs. Further, prepared WO3 and carboxylated MWCNT were doped into PVA matrix by coagulation technique and PVA nanocomposites were prepared by simple solvent casting technique. The films were characterized by XRD, FTIR spectroscopy and AFM. FTIR spectroscopy reveals the intensity of absorption of radiation at 3624.55 cm-1corresponds to the OH group of PVA. It changes in accordance with dopant concentration causing inter/intra molecular hydrogen bonding between the dopants and PVA back bone which leads to the complex formation. XRD data explores the crystalline nature of the film. It is found that for doping concentration x= 7.5 wt% the percentage crystallinity and crystallite size increases whereas micro structural strain and dislocation density decreases. An atomic force microscopy topographic analysis proves that the doped particles have an average size less than 15 nm, as confirmed by XRD data. It was found that roughness of the sample varies with dopant concentration causing variation in crystallinity.

**Full paper: AIP Conference Proceedings, http://doi.org/10.1063/1.4918211, Vol.1665, Issue No. 140002, 2015*

Dielectric and Electric Conductivity Studies of PVA (Mowiol 10-98) doped with MWCNTs and WO3 Nanocomposites Films

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ABSTRACT

In this article, we report the doping ofMWCNTsandWO3 nanoparticles into the PVA matrix for fabricating a novel class of PVA nanocomposite using solvent casting method. The behavioral effect of these embedded nanoparticles in PVA matrix for different doping concentrations on microstructural, dielectric and electric properties are analyzed for possible device applications. The formation of nanocomposites and their microstructural variations for different doping concentration were inspected by x-ray diffraction studies. As the doping concentration increases from x=0 to 7.5 wt%, theDCconductivity rises from 1.0528×10−11 to 3.7764×10−9 S cm−1 and beyond the dopant concentration x>7.5 wt% theDCconductivity was found to decrease. The frequency dependent dielectric constant decreases with an increase in dopant concentration. The values of electric modulus, ACconductivity and polarization relaxation time extracted from dielectric data spectacles an enhancement behavior in conducting property ofPVAnanocomposites with increasing concentration up to x=7.5 wt% and above x>7.5 wt% the values found decreasing. The information regarding the surface morphology and chemical configuration of the nanocomposites are determined by using atomic force microscope (AFM), scanning electron microscope (SEM) and energy dispersive analysis of x-rays (EDS) techniques.

**Full paper: Materials Research Express, DOI:10.1088/2053-1591/3/5/055012, Vol.3, Issue No. 055012, 2016, pp. 1-12*

Study of Non Linear Optical Properties of a Chalcone Doped PVA Composite Material

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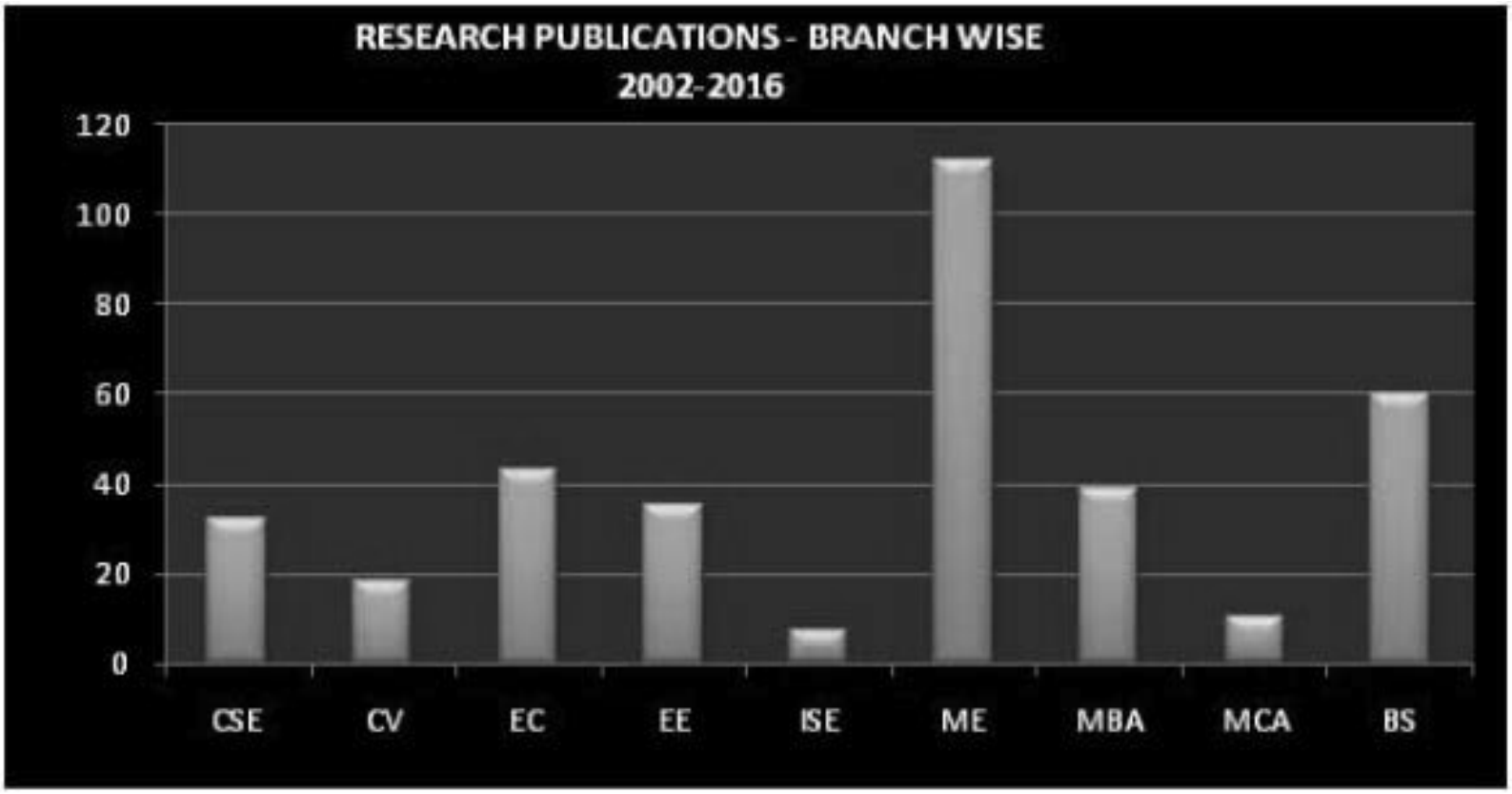
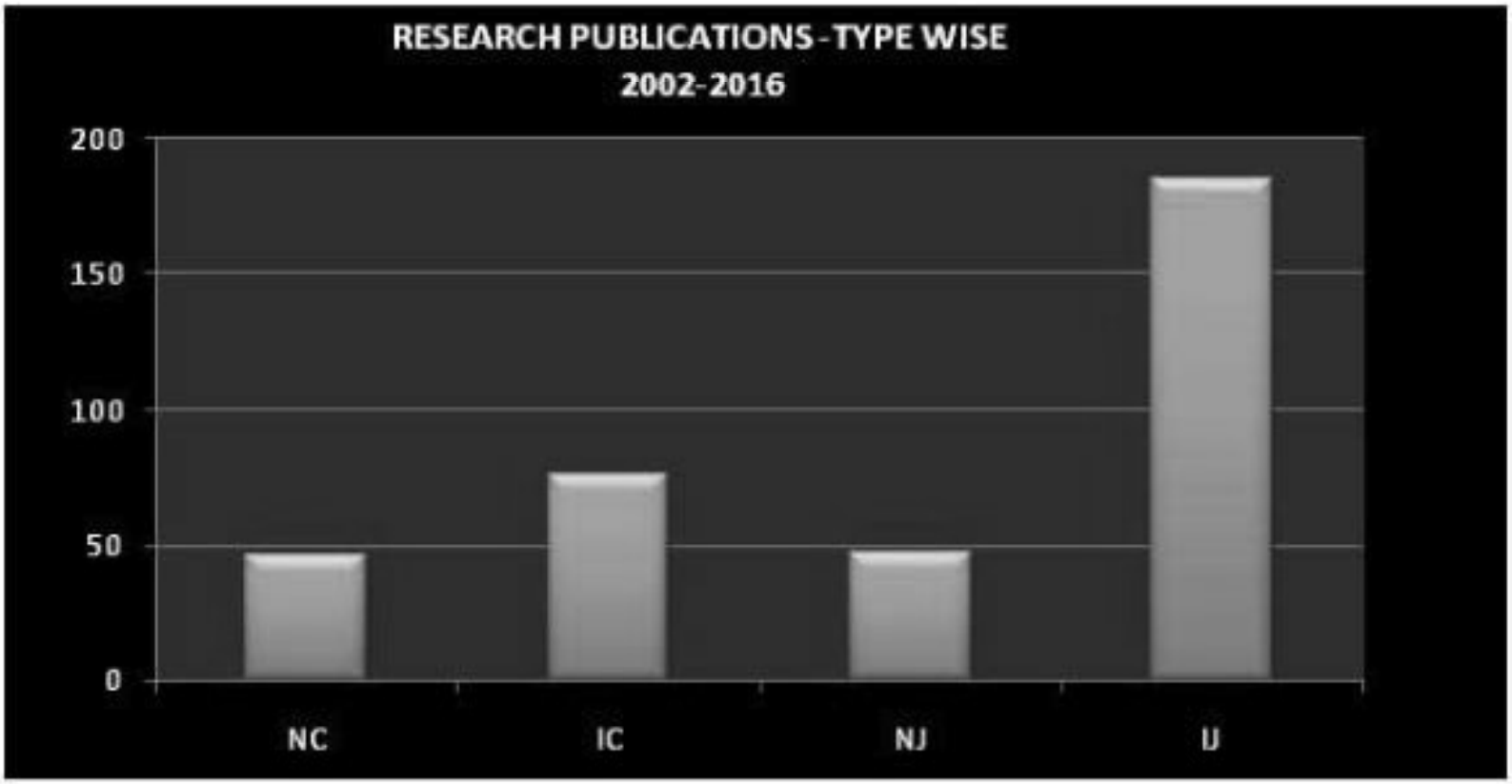
ABSTRACT

A chalcone, 1-phenyl-3-(4-dimethylamino phenyl) prop-2-en-1-one (PDAC) was synthesized and the structure was confirmed by FT-IR and single crystal XRD techniques. This chalcone was doped to Poly (Vinyl Alcohol) and films were prepared by solution casting method. The optical studies on pure PDAC and films were carried out with UV-Visible, Z-scan and DFWM techniques.The nonlinear parameters of the samples were obtained by z-scan. An enhancement in NLO response was observed in films. The results were compared with nonlinear parameters obtained with pico second DFWM experiment. The composite is thermally stable up to 298 ^{0}C.

**Full paper: Procedia Engineering, Vol. 141, 2016, pp. 83-90*





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