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1.

Authors: Poonam Vishal Sadafal, R. H. Borhade

Paper Title: Secure Clustering Algorithm for WSN

Abstract: In wireless sensor network, due to the high density of nodes, the redundant data will be detected by neighboring nodes while sensing an event. So energy consumption is key issue in wireless sensor network. In order to save energy all these redundant data will be aggregated at intermediate node and then it will send to sink node. Wireless sensor network has some key constraints such as limited energy resources, lack of infrastructure. All these constraints impose some security challenges. Now days wireless sensor network widely used in many civilian application areas which include environment and healthcare applications, home automation, habitat monitoring and traffic control. Security plays a fundamental role in many wireless sensor network applications. In this paper secure DRINA algorithm is implemented for routing purpose and security is achieved for secure data transmission. DRINA –Data routing in network aggregation, which gives best aggregation quality compared to previous algorithm i.e.InFRA and SPT. [1].

Keywords: Wireless Sensor Network (WSN), Data routing for in-network aggregation for WSNs (DRINA), Routing, Clustering, Security.

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2.

Authors: Rahul C. Salunkhe, R. H. Borhade

Paper Title: Energy Aware Anycast Technique to Maximize the Life Time of WSN

Abstract: Wireless sensor network is collection of sensor nodes and one sink node. Sensor nodes sense the signals and forward to the sink node. In event driven wireless sensor network where some event is happened that event is sense by one of the sensor node and forward to sink node. Sensor nodes are small in size so the energy capacity of sensor node is very less. In the event driven wireless sensor network energy is consumed when radios are on waiting for packet to arrive. In most of the Event-Driven wireless sensor network Sleep Wake-Up scheduling is used where most of the time sensor node is in sleep mode so that the energy is saved but one drawback of this sleep wake up scheduling is that it introduces delay in the network. So it is very important that to save the energy so that life time of sensor node is maximize for this "Anycat Packet" Forwarding scheme is used where each node forwards the packet to the first neighboring node that wake up among multiple nodes. In sleep wake-up scheduling energy consumed by sensor nodes are depends on the wake up rate of the node. If the wake –up rate of node having less energy is more then that node not alive more time.This paper gives the details of how anycast forwarding scheme is used along with Sleep Wake up scheduling to balance the wake up rates of all sensor nodes so that the lifetime of WSN is increase.

Keywords: WSN, Anycast technique, Sleep –Wake up scheduling, Sensor node, Asynchronous.

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Authors: **Amanjot Kaur, Sukhwinder Bir, Harjasdeep Singh**

Paper Title: **Image Segmentation Using Entropy: A Review**

Abstract: The main objective of Image Segmentation is to partition an image into different parts. Image segmentation basically used to detect the edges and boundaries. This is done to simplify and/or change the representation of an image in a more meaningful and easier way. Many image segmentation techniques are available in the literature. Some of them used gray level histograms, some used spatial and some used thresholding techniques. Under thresholding techniques there are different methods. One of those methods is entropy. Entropy is a measure of unpredictability. A good segmentation will be one that maximize the uniformity of pixels within the regions and minimize the uniformity across the regions. So we can say that entropy is a natural characteristic to be incorporated in evaluation function. This paper attempts to provide a brief review for image segmentation using entropy.

Keywords: 2D and 3D images, entropy, image segmentation, thresholding.

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Authors: **K. Fathima, K. Shanmugavalli**

Paper Title: **Zig Bee Based Monitoring System for Electrical Machines**

Abstract: Electrical machines plays an important role, the use of medium-sized electric machines burned every year around about 16%. In addition, because of electrical failure, damage caused by accident's even at home appliances as well as factory production cause the indirect economic losses even more greater. Detailed analysis of motor operation and fault conditions due to over voltage, load, etc can be solved by the usage of the current performance of microcontroller, zigbee and sensors embedded –to analyze the general motor protection devices, by improving the software to hardware to achieve best utilization of the machines. The normal conditions are to be stored in the database when the results occur abnormal the differences between the values are to be calculated accurately and the fault occurrences are rectified itself.

Keywords: Zigbee, sensors, monitoring system.

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5.

Authors:	**Amit A. Hingane, S. H. Sawant**
Paper Title:	**An Overview of Disarray in Undamped Dynamic Vibration Absorber Subjected to Harmonic Excitation with Nonlinear Parameters**

Abstract: Vibration is omnipotent, universal and multifaceted phenomena. Vibration absorption is a method of adding a tuned spring-mass absorber to a system to create anti-resonance at a resonance of the original system. Most real-world phenomena exhibit nonlinear behavior. In these paper overviews of various works are done. This paper tries to give an idea about the previous researches & their finding about study of nonlinearity in spring and mass, Static analysis of spring and study related to vibration absorber and its application.

Keywords: Vibration Absorber, Resonance, Nonlinear behavior.

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6.

Authors:	**Ananthoju Vijay Kumar, T. V. Rajini Kanth**
Paper Title:	**A Data Mining Approach for the Estimation of Climate Change on the Jowar Crop Yield in India**

Abstract: The Intergovernmental Panel for Climate Change (IPCC) projections on temperature predicts an increase of 1.8 to 4.0°C, by the end of this century. There is a likelihood of a considerable impact on agricultural land-use due to snow melt, availability of irrigation, frequency and intensity of inter and intra seasonal droughts and floods, soil organic transformation matters, soil erosion and availability of energy as a result of global warming, impacting agricultural production. Global warming due to greenhouse effect is expected to impact hydrological cycle viz. precipitation, evapo-transpiration, soil moisture etc., which would create new challenges for agriculture. In the present paper an attempt is made to predict the impact of temperature variance on the Jowar crop production. To know the impact of temperature on the Jowar crop yield in India, an experiment is conducted on the Jowar yield and temperature of India from the period 1950-2011. In the experiment it is proved that Jowar yields are very fewer dependent on the temperature. In the end it is know that there may be other factors impacting the yield at a high level because Jowar crop yields were increased even when the temperature is decreased.

Keywords: Yield Estimation, Data- mining, Correlation, Correlation Analysis, Regression and Regression Analysis.

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	Authors:	**N. V. Pujari, Mahajan S. R, Mohite Y. B**
	Paper Title:	**Optimization of Silencer - An Integrated Approach of Acoustic Performances & Backpressure**

Abstract: A pollutant of concern to the mankind is the exhaust noise in the internal combustion engine. However this noise can be reduced sufficiently by means of a well designed silencer. The suitable design and development will help to reduce the noise level, but at the same time the performance of the engine should not be hampered by the back pressure caused by the silencer. With the stringent legislative requirements for noise in automobiles, the concern for properly designed s for specific applications is increasing .Optimized design of requires an integrated study of acoustical and engine performance viz. backpressure. However, the Backpressure loss itself depends upon engine characteristics geometry indicated by the transmission loss, flow induced noise, type of - reactive, absorptive, hybrid, etc. Most of the work till date covers the acoustical and engine performance in isolation rather than in an integrated fashion due to the multidisciplinary nature of the problem. The objective of this study is to develop an integrated methodology to predict the performance of the at the design stage resulting in an optimized time and cost effective design. In the present study, the acoustical and engine performance of was predicted using CFD techniques. Using the integrated approach, it was possible to optimize the design and meet the two conflicting requirements and reduce the design cycle time.

7.

Keywords: Silencer, Acoustic, Backpressure, CFD.

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	Authors:	**Aleenjeet Sheoran, Parveen Sharma, Manoj Yadav, M. P. Sharma**
	Paper Title:	**Assessment of Land Use/Land Cover Changes in Jind District of Haryana in a Period of 1.5 Decade Using RS and GIS Approach**

Abstract: The present paper assesses change in land use/land cover in Jind district of Haryana in a period of 1.5 decades(1992-2008) using remote sensing (RS) and Geographic Information System (GIS).For the study, Land use/Land cover (LULC) maps of two different years i.e. 1992-1993 and 2007-08, were prepared using multi-date satellite data. Land use/Land cover maps were prepared by digitization of different features through visual interpretation on satellite imagery using GIS software, after geometric correction of the satellite imageries. The total geographical area of Jind district was 274893 hac and it was categorized in built-up land, agricultural land, wasteland, water bodies, forest and transportation. The satellite data used for year 1992-93 was IRS-IA/IB LISS-I data with 72m resolution, however satellite data for year 2007-08 was IRS-P6 LISS-III data with 23.5m resolution. The agricultural land increased between 1992-93 and 2007-08, whereas fallow land decreased in the prescribed time period. There was an increase in built-up land from 1992-93 to 2007-08. The area under wasteland decreased due to increase in agricultural land and reclamation of salt-affected and waterlogged lands. The paper concludes that with the passage of time built-up increased with increase in human population and also man has reclaimed some wasteland and converted it to agricultural land to increase production for this increasing population.

8.

Keywords: LISS-I, LISS-III, LULC, GIS, RS.

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9.

Authors: Ravindra P. M, Nagaraja P. S

Paper Title: Effect of External Posttensioning on Member Forces of Determinate Pratt Pattern Bridge Truss

Abstract: Transportation on land is the most common one among all the modes of transportation: may be on roads or railways. In India and abroad bridges have been built along roadways and railways in order to make the transportation system more efficient and economical. Some of them are steel truss bridges and majority of which are very old and have been designed as per the codal standards existing at the time of their construction. Problems with these truss bridges are that, they are deteriorated to such extents which are not able to resist the loads for which they are originally designed and/or they may not be able to match with the current loading and traffic requirements. Hence there is a need to strengthen these existing truss bridges. The method to be adopted for strengthening should be cheap and economical with minimum disturbance to the existing traffic. Even though there are different methods of strengthening of bridges, one of the best methods is the posttensioning by high tension steel tendons. In the present analytical investigation, only the truss portion of the steel truss bridge is undertaken for strengthening. Pratt pattern of the truss is considered as it is one of the commonly used trusses. In order to know the effect of posttensioning on member forces, the truss is externally posttensioned with two-drape tendon layout which is placed below the bottom chord. Stiffness matrix for two-drape tendon is developed and MATLAB computer programs are generated for the posttensioned truss analysis. From the results obtained after analysis, significant reduction in member forces is noticed and the reduction in member forces increases with the increase in the vertical distance between the bottom chord and tendon. If the truss is internally posttensioned by keeping tendon along the bottom chord, there will be reduction of forces only in the bottom chord members; whereas in external posttensioning, there is reduction in almost all the members of the truss and the percentage reduction is also more when compared to that due to internal posttensioning. Hence, to reduce the member forces external posttensioning is more efficient than internal posttensioning.

Keywords: Bridges, Chord, Posttensioning, Pratt, Tendon, Truss, Two-Drape.

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10.

Authors: S. Manikandan, P. Indiramma, T. Rajesh

Paper Title: Village Wise Drought Mitigation Measures -A Case Study Using Remote Sensing and GIS in Sivaganga Taluk

Abstract: Drought is a recurring phenomenon in many parts of the world, bringing significant water shortages, economic losses and adverse social consequences. Hence knowledge of the drought risk area, their occurrence and their course is an essential aspect for planning. In southern state Ramand district is well known for its frequent monsoon failure, drinking water scarcity and worst drought condition, Remotely sensed data and GIS is widely accepted as a tool for the establishment of integrated information. Drought risk area, by nature, is a result of interrelated parameters concerned. The study area taken in to consideration is Sivagangai taluk, part of old Ramanad district historically a drought prone area. Using geomatic tools detailed analysis has been made with respect to rainfall, water level, subsurface formation, and the geomorphology derived out of remotely sensed data products. The collateral data collected from the field have been converted in to spatial themes and overlay analysis helped to derive the pattern of water level variation, ground water quality deterioration and ground water potential changes. Estimation of ground and surface water potential for a considerable period helped to identify the water stress condition and the same has been correlated with respect to individual villages of Sivagangai taluk. The village wise stress condition helped to plan for effective water resources management by providing recharge and remedial measures to combat the drought condition.

Keywords: Hydrological drought, metereological drought.

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11.

Authors: **Pooja Sabherwal**

Paper Title: **Design Issues for Micro Electromechanical Systems (MEMS)**

Abstract: This paperdiscusses the design issue in the field of MicroElectromechanical System (MEMS).MEMS offer the handheld and consumer electronics industry great hope for enhanced functionality. MEMS based accelerometers, microphones, pressure sensors, antennas, RF switches and embedded memory chips are being integrated with IC products and leading to new applications. Definition of MEMS as the name suggests, it is the electronic with the mechanical parts (moving/non moving)on the same chip in the microscale. MEMS is the type of enabling technology in VLSI where the most important thing is the ability to add value to the existing or new systems/Ips in the field.Design process of any implication begins with the definition of the problem and the required problem specification followed by the generation of concepts, the evaluation of concepts and then the product design.

Keywords: MEMS, VLSI.

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12.

Authors: **Soo See Chai, Kok Luong Goh**

Paper Title: **Neural Network Ensembles: Combining Multiple Models for Downscaling of Soil Moisture**

Abstract: Soil moisture estimation is important for land surface modeling and climate modeling, with soil moisture being employed as a critical parameter. Although, the derivation of soil moisture from passive microwave remote sensing has been theoretically and practically proven to be possible, its spatial resolution however tends to be coarse-grained, at a range of about 20-40 km. As this does not satisfy the requirements of models using higher resolution grids, it is thus desirable to downscale soil moisture to finer resolutions of between 1 to 5 km. Neural network ensembles are known to be able to effectively improve the overgeneralization that arises from the combination of a set of neural network classifiers with a diverse range of error distributions. In this paper, a neural network ensemble method was explored to downscale soil moisture content from 20km to 2km resolution. The dataset used in this experiment was captured using low resolution L-band passive microwave observations from regional air-borne measurements in the study of Goulburn River catchment in Australia. The results have shown that by using a neural network ensemble, an average accuracy of 2.33% can be obtained for the downscaled soil moisture at a 2km resolution.

Keywords: Downscaling, ensemble neural network, radiometer, soil moisture.

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Authors: **Jung-Jeng Huang**

Paper Title: **Small Cosmological Constant from De Broglie- Bohm Quantum Theory**

Abstract: We propose a unified mechanism for generating a small cosmological constant through cascade transition in the history of the Universe in the context of de Broglie-Bohm quantum theory. In our previous work we studied the possible effects of trans-Planckian physics on the Bohm quantum trajectories of massless minimally coupled scalar field in de Sitter space. The result showed that for the Corley-Jacobson type dispersion relation with sextic correction, there exists a transition in the evolution of the quantum trajectory from well before horizon exit to well after horizon exit, providing a possible mechanism for generating a small cosmological constant. In this paper we obtain similar transitional behaviour for the Corley-Jacobson type dispersion relation with quartic correction. We find that if we compare the trans-Planckian effects on the Bohm quantum trajectories due to quartic and sextic corrections, the latter is much smaller than the former. We calculate explicitly the finite vacuum energy density due to fluctuations of the inflaton field and show how the cosmological constant reduces during the slow-roll inflation at the grand unification phase transition. Similar reduction mechanisms at the electroweak, quark-hadron and current accelerating phase transitions are also suggested to yield the current small value of the cosmological constant.

Keywords: Cosmological constant, de Broglie-Bohm theoty, Schrödinger picture, trans-Planckian physics.

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Authors: **Ruchika Sharma**

Paper Title: **Perform Sentiment Analysis with Machine Learning Techniques**

Abstract: Sentiment Analysis has become an indispensible part of product reviews in present scenario. We consider the problem of analyzing the overall sentiment of a document using Machine learning techniques. Sentiment Analysis is a very well studied field, but the scale remains limited to not more than a few hundred researchers. We improve the results using SVM kernel approach and compare the same with previously used techniques. The present research is a comparison and extension of the work proposed by Mullen and Collier (2003). Our system consists of a feature Extraction phase and a learning phase; on the basis of which the overall sentiment of the document is analyzed. Our present work uses the movie review data set used by Pang (2002). The present work shows that SVM Kernel approach outperforms the Naïve bayes approach.

Keywords: Sentiment Analysis, Classifier, SVM, td-idf, Naïve Bayes, PCA.

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Authors: **Shadrack K. Kimutai, Edna Milgo, David Gichoya**

Paper Title: **Isolated Swahili Words Recognition using Sphinx4**

Abstract: Speech recognition is one of the frontiers in Human Computer Interaction. A number of tools used to achieve speech recognition are currently available. One of such tools is Sphinx4 from Carnegie Mellon University (CMU). It has a recognition engine based on discrete Hidden Markov Model (dHMM) and a modular structure making it flexible to a diverse set of requirements. However, most efforts that have been undertaken using this tool are focused on established dialects such as English and French. Despite Swahili being a major spoken language in Africa, literature search indicates that little research has been undertaken in developing a speech recognition tool for this dialect. In this paper, we propose an approach to building a Swahili speech recognizer using Sphinx4 to demonstrate its adaptability to recognition of spoken Swahili words. To realize this, we examined the Swahili language structure and sound synthesis processes. Then, a 40 word Swahili acoustic model was built based on the observed language and sound structures using CMU Sphinxtrain and associate tools. The developed acoustic model was then tested using sphinx4.

Keywords: Sphinx4, Swahili Language, Speech Recognition, Hidden Markov Model.

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Authors: **Aleem Ahmed Khan, Muhammad Asif Munir, Muhammad Rafay Khan, Kashan Hussain, Muhammad S. Askari**

Paper Title: **Designing, Analysis and Tracking of a Concentrated Solar Power System**

Abstract: At present, world is suffering from the biggest issue of energy. This problem can be eradicated by shifting the power generation dependency from fossil fuels to the renewable energy resources that is cost effective and environment friendly. The main idea of this research project is to collect the solar thermal resource for the purpose of power generation. This paper covers the aspects of system designing, analysis and practical implementation of the Concentrated Solar Power system. The system employs PVC mirror sheet in parabolic shape to concentrate the sun's rays onto the receiver tubes. Water present inside the Receiver tubes heated up to the exact 100°C to produce steam. Steam is used to drive conventional steam turbine which is mounted on the shaft of a generator that produces electricity. Experiment has been performed; shows that it is an effective approach of power generation but the amount of generated steam is very small. However some improvement and advancement of this system are also presented for large scale applications.

Keywords: Concentrating Structure, Heat Receiver tube, Parabolic Trough Technology, Renewable energy, Steam Turbine.

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