

**International Conference
on
Innovative Computing and
Communication**

ICICC-2019

21-22nd March 2019



Springer

Organized by



**Faculty of Electrical Engineering and Computer Science,
VŠB - Technical University Of Ostrava
Czech Republic, Europe**

Schedule

ICICC-2019

<p style="text-align: center;"><i>International Conference on Innovative Computing and communication (ICICC-2019) 21st-22nd MARCH 2019</i></p>		
VŠB - Technical University Of Ostrava		
Date	Time	Event
21.03.2019	8:00 A.M. - 9:00 A.M.	Registration
	9:00 A.M. - 10:00 A.M.	Inauguration
	10:00 A.M. - 11:00 A.M.	Key Note Speaker (1): Professor Laszlo T. Koczy, DSC, Budapest University of Technology and Economics, Hungary
	11:00 A.M. - 11:30 A.M.	Tea
	11:30 A.M. - 12:30 P.M.	Key Note Speaker (2): Professor Vaclav Snasel, VSB Technical University of Ostrava
	12:30 P.M. - 1:30 P.M.	Lunch
	1:30 P.M. - 4:00 P.M.	Technical Session -1: Networks and Cryptography
	1:30 P.M. - 4:00 P.M.	Technical Session -2: Artificial Intelligence
	4:00 P.M. - 4:30 P.M.	Tea
	6:00 P.M. Onwards	Cultural Event
	22.03.2019	9:00 A.M. - 10:00 A.M.
10:00 A.M. - 11:00 A.M.		Key Note Speaker (3): Dr. Pietro Ducange, Associate Professor, SMARTTEST Research Center, eCampus University, Novedrate (CO), Italy
11:00 A.M. - 11:30 A.M.		Tea
11:30 AM.- 12:30 PM		Key Note Speaker (7): Dr. Sandip Dey, Associate Professor, Global Institute of Management and Technology, India
12:30 P.M. - 1:30 P.M.		Lunch
1:30 P.M. - 4:00 P.M.		Technical Session -3: Networks and Cryptograph

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	1:30 P.M. - 4:00 P.M.	Technical Session -4:Artificial Intelligence and Data Mining
	4:00 P.M. - 4:30 P.M.	Tea

Pre-Conference Symposium
of
International Conference
on
**Innovative Computing and
Communication**

ICICC-2019

16th March 2019



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Guru Nanak Institute of Management
Affiliated to GGSIP University,
New Delhi, India.

Schedule for Pre-Conference Symposium

ICICC-2019

<i>Pre-Conference Symposium of ICICC-2019</i> <i>16th MARCH 2019</i>		
Guru Nanak Institute of Management, New Delhi, India		
Date	Time	Event
16.03.2019	8:00 A.M. - 9:00 A.M.	Registration
	9:00 A.M. - 10:00 A.M.	Key Note Speaker: Mr. Aninda Bose, Senior Editor, Springer.
	10:00A.M. – 11:00 A.M.	Tutorial Session
	11:00 A.M. - 11:30 A.M.	Tea
	11:30 A.M. - 4:00 P.M.	Technical Session -1
	11:30 A.M. - 4:00 P.M.	Technical Session -2
	11:30 A.M. - 4:00 P.M.	Technical Session -3
	1:00 P.M. - 2:00 P.M.	Lunch
	9:00 A.M. – 4:00 P.M.	SKYPE Presentation
	4:00 P.M. - 4:30 P.M.	Tea

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Message from Organizer



ICICC-2019



International Conference on Innovative Computing and Communications

Web: icicc-conf.com, Email: icicc.conf@gmail.com

Date: March 10, 2019

On behalf of the organizing committee of International Conference on Innovative Computing and Communication (ICICC-2019), we extend warm welcome to the management of the institute, keynote speakers, our panelists, delegates, paper presenters and participants of this conference. The presence of our dignitaries on the dias during the two day conference and one day pre-conference symposium is a further testimony to our sincere pursuits to achieve nothing less than the 'best', who have long trails of success behind them.

International Conference on Innovative Computing and Communication (ICICC-2019) is organized with the objective of bringing together innovative scientists, professors, research scholars, students and industrial experts in the field of Computing and Communication to a common forum. The primary goal of the conference is to promote the exchange of innovative scientific information between researchers, developers, engineers, students, and practitioners. Another goal is to promote the transformation of fundamental research into institutional and industrialized research and to convert applied exploration into real time application.

We seek your support and good wishes for the two day conference at VSB-Technical University of Ostrava, Czech Republic and one day Pre-Conference Symposium at Guru Nanak Institute of Management, New Delhi, India to be a grand success. We thank our sponsors and publishing partners for their support in the organizing of this conference.

Warm Regards,

Dr. Deepak Gupta

Organizer and Convener

Dr. Ashish Khanna

Organizer and Convener

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DATA ANALYSIS AND CLASSIFICATION OF CARDIOVASCULAR DISEASE AND RISK FACTORS ASSOCIATED WITH IT IN INDIA

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Abstract: Cardiovascular disease (CVD) is one of the genuine reasons behind mortality in India and around the globe. A high measure of sodium, high circulatory strain, extend, smoking, family parentage and a few different variables are related to heart illnesses. Air and Noise Pollution is also worst in India and is likely to cause more deaths, amongst the top five causes of deaths worldwide, are the heart, COPD, lower respiratory infections, and lung cancer. In India absence of information, and treatment facilities in that of rural and urban zones are the critical issue of concern. Youths have more chances of getting impacted with CVD, due to alcohol usage, smoking, and unfortunate eating routine. In the future, in India by 2030, the prevalence rate might rise to two-fold than 2018. This overview goes for researching progressing propels in understanding the investigation of infection transmission of CVD, causes and the hazard factors related to it.

Keywords: India, Ordinariness, Rate, Mortality, CVD, Smoking, Hypertension, Medicines, Diet and Nutrients, Air pollution, Data Analysis.

Implementation of Square-odd scanning technique in WBAN for energy conservation

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Abstract: The increasing population needs large medical staff for the excellent healthcare services. By introduce wireless sensor network in the field of medical we solve the problem of shortage of medical staff across the world. The WBAN gives an excellent opportunity to improve the quality of medical healthcare system.

Establishing a wireless network in the field of medical is a very difficult issue as the protocol used for the adhoc network doesn't perform efficiently in the mobile WBAN. This needs a scanning policy for the WBAN to be added in routing to improve the results and to reduce the findings of existing protocol for WBAN. The nodes of the sensor network remains active at all times whereas the utilization period of the sensor nodes is only 20% of the total time. This results in high energy consumption. This results in need of an efficient scanning technique for WBAN with dynamic active period. Wireless sensing network uses very light sensors which have very low power backup. So power saving is very significant in such type of network. Square-Odd scanning is used to saves significant power in wireless sensors. It periodically switches the sensors between sleeping and awake mode. Square-Odd scanning is an improved method for scan the object. It focuses on reduction in energy consumption and it improves the life time of sensor. The performance of the Square-Odd approach is better than all other previous scanning algorithms in terms of network lifetime. In this paper first we introduce the WBAN and in second part of this paper we describe the proposed algorithm for power saving in WBAN.

Keywords: WSN; WBAN; network lifetime; SO;

AN ANALYTICAL INTROSPECTION OF RISK DRIVEN TESTING, MANAGING RISKS AND QUALITY ASSURANCE

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Abstract: The paper aims to critically analyze perspectives on Project Risk Management; Quality Assurance, Risk driven Testing and various computing environment possibilities in the field of risk driven testing. The research also makes a deep focus on methodologies, models and tools used in risk management, quality assurance and risk based testing. The findings are an output of an intense survey which concludes how much it is crucial to implement risk oriented testing in software projects for quality enhancement. All the software projects imbibe risk in great measurements. Therefore, risk identification and mitigation in initial stages is really crucial for overall quality improvement. Various computing environments for risk driven testing have been explored to identify the gaps from the past. This research puts up a strong foundation for the basic and advanced concepts related to risk driven testing, risk management and Quality Assurance.

Keywords: Risk, Software Risk Management, Risk driven Testing, Quality Assurance, Smart Computing, Cloud Computing.

IMPROVING THE ACCURACY OF COLLABORATIVE FILTERING BASED RECOMMENDATIONS BY CONSIDERING THE TEMPORAL VARIANCE OF TOP-N NEIGHBORS

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Abstract: The accuracy of the recommender system using neighborhood based collaborative filtering tends to diverge because the interests/preferences of the neighbors are likely to change along with time. The traditional recommendation methods do not consider the shifted likings of the neighbors; hence the calculated set of neighbors does not always reflect the optimal neighborhood at any given point of time. In this paper, we propose a novel approach to compute the similarity between users and find the set of top-n similar neighbors of the target user in different time period to improve the accuracy in personalized recommendation. The comparative results of the proposed and the traditional algorithms is tested on the MovieLens dataset using different performance metrics viz. MAE, RMSE, Precision, Recall, F-score, and Accuracy.

Keywords: Recommender Systems, Collaborative Filtering, Similarity Metrics, Prediction Approach, Rating, Top-n Neighbor, Time-Period, Cluster, MAE, RMSE, Precision, Recall, F-Score, Accuracy.

COMPARATIVE ANALYSIS OF CHATBOTS

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Abstract: A chatbot is computer software that employs Natural Language Processing and Pattern Recognition techniques to provide appropriate answers to questions posed by humans. In this paper, we are analyzing and comparing the total accuracy score of the following chatbots: Rose, Google Assistant, Siri, Machine Comprehension Chatbot, Mitsuku, Jabberwacky, ALICE and Eliza on the basis of the answers provided by them to a set of predefined questions. The chatbots were broadly analyzed on three focal parameters: 1. Assessment of Factual Questions, 2. Assessment of Conversational Attributes, and 3. Assessment of Exceptional queries. The paper produces conclusive comparisons and conclusions, and then ranks these chatbots according to their performance in the above-mentioned focal points. These focal points help in assessing the chatbots according to their responses by assigning a rank to each chatbot with respect to others. The final rank is evaluated by averaging the ranks attained in the three aforementioned parameters.

Keywords: Rose, Google Assistant, Siri, Machine Comprehension, Mitsuku, Jabberwacky, ALICE, ELIZA, Natural Language Processing, ChatBot, Pattern Recognition.

EXPLORING THE EFFECT OF TASKS DIFFICULTY ON USABILITY SCORES OF ACADEMIC WEBSITES COMPUTED USING SUS

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Abstract: The prime objective of this study is to empirically determine the effect of tasks difficulty on usability scores computed using the System Usability Scale (SUS). Usability dataset is created by involving twelve end-users that evaluate the usability of fifteen academic websites in a laboratory. Each end-user performs three subsets of six tasks whose difficulty is varying from easy to impossible under six different categories. Results are obtained after applying two statistical techniques, one is ANOVA and other is the correlation with regression. Results show that the SUS scores vary from higher to lower values when end-users conduct usability assessment with a list of easy, moderate, and impossible tasks on academic websites. The results also indicate the effect of tasks difficulty on the correlation between the SUS scores and task success rate. Though, the strength of the correlation is strong with each subset of tasks but it varies that depends on the nature of the tasks.

Keywords: Usability Evaluation, System Usability Scale, Quantitative Assessment, Academic Websites, Usability Metric, Tasks Difficulty.

EXPERIMENTAL ANALYSIS OF OPENSTACK EFFECT ON HOST RESOURCES UTILIZATION

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Abstract: Cloud computing is one of the frontier technologies, which over the last decade has gained a widespread commercial and educational user base. OpenStack is one of the popular open source cloud management platforms for establishing a private or public Infrastructure-as-a-Service (IAAS) cloud. Although OpenStack started with very few core modules, it now houses nearly 38 modules and is quite complex. Such a complex software bundle is bound to have an impact on the underlying hardware utilization of the host system. This paper analyzes the effect of OpenStack on the host machine's hardware. For this purpose, an extensive empirical evaluation has been done on different types of hardware, different virtualization levels and with different flavors of operating systems comparing the CPU utilization, and memory consumption. OpenStack was deployed using Devstack on a single node. From the results we observe that standalone machine with Ubuntu server operating system is the least affected by OpenStack and thereby has more available resources for computation of user workloads.

Keywords: Cloud computing, openstack, resource utilization, devstack.

EFFECT OF DROPOUT AND BATCH NORMALIZATION IN SIAMESE NETWORK FOR FACE RECOGNITION

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Abstract: The paper focuses on maximizing feature extraction and classification using one-shot learning (meta learning). The present work discusses how to maximize the performance of the Siamese Neural Network using various regularization and normalization techniques for very low epochs. In this paper we perform multi-class Face Recognition. A unique pairing of face images helps us to understand the generalization capacity of our network which is scrutinized on AT&T and ORL face databases. We performed experiments to see how learning can be made to converge within a few epochs, and the approach has also made a telling performance on unseen test data which is about 96.01 %. Besides, we discuss the ways to speed up learning particularly for a Siamese network and achieve convergence within 5 epochs. We found one of the better regularization techniques for fast reduction of the loss function. It is apparent from our findings that only normalization is the effective approach while working within less epochs. Also, Dropout After Batch Normalization configuration results in smooth loss reduction.

Keywords: Regularization □ Siamese network □ Deep learning □ Face recognition □ Meta-learning.

A Flag Shaped Microstrip Patch Antenna for Multiband Operation

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Abstract: A high-gain multiband flag shaped micro strip patch antenna is proposed and developed in this paper. The shape of antenna is very simple to design with dimensions 2.3x1.9 cm on FR4 substrate leading to high gain and good bandwidth. The designed antenna works at multiple frequencies lying in C-band, X-band and Ku-band. The simple structure of this antenna design allows for an easy fabrication process, covers many applications such as radar, satellite and wireless communication. The experiment results indicates that the proposed antenna design, having 7.3 GHz, 8.7 GHz and wide band at 13.9 GHz for different applications. The proposed antenna is designed and successfully simulated using HFSS. Simulation

results are compared and presented to demonstrate the performance of the designed antenna.

Keywords: HFSS, FR4 substrate, Return Loss, C, X and Ku band, VSWR.

Prediction of Tuberculosis using Supervised Learning Techniques under Pakistani Patients

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Abstract: Tuberculosis is a chronic disease, spreaded by humans, cattle, birds etc., it affects almost all the part of the human body but most of the incidences are found in lungs disorder. Tuberculosis caused by a bacterium namely mycobacterium. For the identification of Tuberculosis patient, mycobacterium must be found in phlegm .For this purpose, a special culture is prepared where the mycobacterium tuberculosis bacteria are be reproduced and the whole process takes up a time of at least 4 to 5 weeks. Further, the completion of the course of tuberculosis is crucial for the patient due to its prolonged duration. It further expected that the disease is under control but in developing countries, it is still a big problem. There is a need for the automated early prediction of the disease which subsequently requires more datasets of the corresponding disease and more comparative studies on these datasets. In our study, we propose a new dataset in an underdeveloped community like Pakistan and a demonstration how this dataset can be used for the early automatic classification of Tuberculosis.

Keywords: Data mining, Tuberculosis, Weka, Supervised learning, Decision Tree.

Automatic Retail Invoicing and Recommendations

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Abstract: The goal of this research paper is to make today's computing systems to sense the presence of users at some place and their current states. This research paper further may exploit present context information of users and helps people to get current context services as per the preferences and current needs like giving current discounted product details (they wish to buy) and giving personal recommendations like movie, trending clothes in the market, significant particulars in a warehouse about product purchases. The realized implementation of suggesting particular services by warehouse server is done by studying user profile, analyzing user behavior and user purchase history. It was found out after taking Zadeh's fuzzification equation in the process that clothes should be taken extra large for a person and probability is found out to be 78% true in all cases except some conditions of person

having weight less than 76.5 kg (middle clothes preferred) and also age less than 11 years (small clothes preferred in this case).

Keywords: Retail, users, presence, Contexts, Activity, Recommendations, Person etc.

Design of Low Power and High Frequency Operational Transconductance Amplifier for Filter Applications

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Abstract: In this work, a two stage operational transconductance amplifier (OTA) has been designed and is used to design various active filters as an application. The main contribution of this work is in the direction of achieving high gain, high bandwidth, high PSRR and low noise for the proposed OTA. Over the years different methodologies have been proposed by researchers to enhance the performance of OTA. In this work the proposed results have been analytically verified with theory and compared with the related work. In this work, 90 nm technology is used for simulations which are carried out using Tanner EDA 16.0 tool and these results are compared with related work performed using 180 nm technology. With the help of this work, a two stage OTA can be designed having high gain, high bandwidth, high PSRR etc. and various active filters can also be designed with the help of this OTA, for filtering purposes.

Keywords: Active filters, Channel length, Bandwidth, Operational amplifier, Scaling MOSFET, Slew rate and Transconductance.

Design of Low Power Operational Amplifier for ECG Recording

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Abstract: In this work, a folded cascode topology has been used to design an op-amp in order to optimize biopotential amplifier. This paper aims to design a fully differential amplifier in the direction of achieving high gain, high CMRR, high PSRR and low noise. In this work, 90nm technology is used for simulations which are

carried out using Tanner EDA 16.0 tool and these results are compared with related work performed using 180nm and 350nm technology. With the help of this work, an instrumentation amplifier can be designed which has low noise, low common mode gain, higher stability with supply variation etc. and biopotential amplifier can also be designed for ECG machine, neural recording etc. In this work the proposed results have been analytically verified with theory and compared with the related work.

Keywords: Biopotential Signals, Channel length, Bandwidth, Operational amplifier, Scaling MOSFET, Slew rate and Transconductance.

Modeling Open Data Usage: Decision Tree Approach

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Abstract: Predicting quality of datasets is important for the individuals, private or public organizations regardless of their intent, especially in today's expeditious and competitive environment. If data are considered as valuable, then data need to have a stronghold in their quality or rather in indicators from which the quality consists of. Although, there are several data mining methods which can be used for this issue, the regression tree method is used because of its advantages in comparison with other methods. Some of the pros are that tree is very easy to understand or explain, it is a collection of if-then rules, it can be used for investigating relationship between predictors and target attribute without understanding the form of the relationships. In this paper, open data usage predicting task were performed on the data collected from open data portal Data.gov.uk. Results show that it is possible to build a model of high accuracy.

Keywords: Open Data, Regression Tree, Metadata.

Technology Driven Smart Support System for Tourist Destination Management Organizations

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Abstract: As economic sector tourism has become one of the fastest-growing and largest sectors in the world. However, that growth does not come without problems and overcrowding in tourist destinations is starting to be a big one, affecting all stakeholders – government, residents and tourists. Overtourism problem is not going to be solved overnight, but it cannot be solved without a system that will measure, examine and predict tourism at the destination – a Destination Management System (DMS). Even though there is a great need for DMS, there is still no globally adopted concept. Technology advancements, especially Big Data and Internet of Things, are making possible innovations in decision-making management that could also be

introduced in tourism and used as a tool for creating DMS. The scope of this research was to examine some options of using technological advancements and available data to build our version of data-driven DMS that we called eDestination.

Keywords: Overtourism, Destination Management System, Big Data, IoT, Smart Tourism, Data Visualization, Decision Support.

Ortho-Expert: A Fuzzy Rule Based Medical Expert System for Diagnosing Inflammatory Diseases of the Knee

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Abstract: The proposed work is for the diagnosis of the inflammatory diseases of the knee joint. The main diseases which are discussed in this research under inflammatory diseases are Osteoarthritis, Rheumatoid Arthritis and Osteonecrosis of the knee joint. The software used for this research is MATLAB and fuzzy logic method is employed in it. Mamdani Inference Engine is used. All the Input parameters required are consulted with the expert of Orthopedic during the phase of knowledge acquisition. Survey method is used for the data collection and various defuzzification methods are used to check the accuracy of the proposed system.

Keywords: Fuzzy logic, inference engine, osteoarthritis, Osteonecrosis, rheumatoid, defuzzification.

Farmers Assistant Innovation and Resolution (FAIR): A System for Monitoring Plant Growth through Automatic Irrigation

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Abstract: The appropriation of keen innovation approaches incorporating sensors, robots, frameworks of control, and self-dependent programmers in the field of agriculture is proposed in the present work using a hardware model design. This system of monitoring and control of the different components in soil for controlled farming using innovation and robotics is termed as FAIR. In the present scenario smart agriculture implementing user driven models using IoT tools and sensors offers agriculturists ecologically suitable means to use viable resources like pesticides and water in a regulated manner in the farming land. Furthermore, the presentation of innovation into agriculture empowers legitimate innovation and resolution of normal variables to identify environmental change, soil health conditions and climate change. The proposed FAIR system monitors the environmental factors such as the soil

temperature, moisture, amount of light the plant is exposed to, pH of soil using IoT tools and then formulates the different resolution techniques for soil health monitoring and innovation approaches in plant growth. This system is more competent as an automatic irrigation system also plays its role in irrigation of field. The system is also capable of removing pests if and when necessary with the help of image processing technique. The methodology that is applied in this system has not been used in the current space as this project not only depends on the sensors which are monitoring the plant's growth but also maintaining the environment around it.

Keywords: Internet of Things (IoT), agriculture, moisture, automatic irrigation, the moisture sensor, temperature sensor, PH sensor, light intensity sensor.

Evasion Attack for Fingerprint Biometric System and Countermeasure

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Abstract: Currently, biometrics is being widely used for authentication and identification of an individual. The biometric systems itself needs to be more secured and reliable so it they can provide secure authentication in various applications. To optimize the security, it is vital that biometric authentication frameworks are intended to withstand various sources of attack. In security sensitive applications, there is a shrewd adversary component which intends to deceive the detection system. In well-motivated attack scenario, in which there exists an attacker who may try to evade a well-established system at test time by cautiously altering attack samples i.e. Evasion Attack. The aim of this work is to demonstrate that machine learning can be utilized to enhance system security, if one utilizes an adversary-aware approach that proactively intercept the attacker. Also, we present a basic but credible gradient based approach of evasion attack that can be exploited to methodically acquires the security of a Fingerprint Biometric Database.

Keywords: Adversarial Machine Learning, Evasion Attacks, Convolution Neural Networks, Biometrics, Biometrics Security, Fingerprint, Classifier.

GA with k-medoid approach for optimal seed selection to maximize social influence

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Abstract: In this rapidly rising field of web, volume of online social networks has increased exponentially. Social network is an interactive platform where, zillions of users interact with any other users in many ways and produce the enormous information. This control of social network on web inspires the researchers to work in the area of information diffusion i.e. spread of information through “world of mouth” effect. Information maximization is an important research problem of information diffusion i.e. selection of k seeds that are most influential nodes in the network such that they can maximize the information spread in the network. In this paper, we proposed an influence maximization model that identifies optimal seeds to maximize the influence spread in the network. Our proposed algorithm is a hybrid approach i.e. GA with k -medoid approach using dynamic edge strength. To analyze the efficiency of the proposed algorithm, experiments are performed on two large-scale datasets using fitness score measure. Experimental outcome illustrated the 8% to 16% increment in influence propagation by proposed algorithm as compared to existing seed selection methods i.e. general greedy, random, discounted degree and high degree.

Keywords: k -medoid, Genetic Algorithm, Social Influence, Seed Selection, Topical Affinity Propagation.

Current-Phase Synthesis of Linear Antenna Arrays using Particle Swarm Optimization Variants

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Abstract: In this work, the problem of low sidelobe phased array synthesis is taken up, and variants of Particle Swarm Optimization (PSO) like, Grey PSO and Novel PSO, are adopted for dealing with this problem. For simplicity, periodic linear array geometries are considered. Effect of position regulation and inertia control strategies on the convergence of PSO variants are studied in this regard. Results reflect the impacts of position regulation and inertia control strategies on the convergence of the algorithms for the problem instance considered. Without the influence of position regulation Grey PSO and Novel PSO have been able to suppress interference levels for a 20-element linear array to -21:31 dB and -31:23 dB, respectively. Under the influence of the position regulation, their respective values got improved to -27:90 dB and -43:35 dB.

Keywords: PSO, Grey PSO, Novel PSO.

Fair Channel Distribution-based Congestion Control in Vehicular Ad Hoc Networks

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Abstract: Vehicular Ad-hoc Network (VANET) serves as one of the significant enabling technology in Intelligent Transportation System (ITS). Accurate and upto-date information received by vehicle-to-vehicle (V2V) communication prevents road accidents. The most critical matter in IEEE 802.11p-based V2V communications is channel congestion, as it results in unreliable safety applications. In this paper, two type of safety messages: beacon and event-driven are used to increase the safety. Beacon is disseminated periodically, providing the necessary information about their neighboring vehicle status. Event-driven is sent by the vehicle whenever a danger has been detected. As the number of vehicle increases, the number of safety messages disseminated by vehicle also increases, which results in congestion in the communication channel. As a countermeasure, we have proposed the most prominent Decentralized Congestion Control (DCC) algorithm based on Transmit Rate known as Fair Channel Distributed-based DCC (FCD-DCC) algorithm. With the help of FCD-DCC algorithm, the effects of congestion on vehicular safety can be controlled by designing an algorithm including priority model and transmission rate of the messages, which provides more reliable and timely reception of safety messages. Proposed DCC algorithm controls the congestion by fairly distribution of channel to each vehicle. A novel approach is proposed regarding congestion control and performance is analyzed with respect to some indexes such as Packet-Delivery- Rate (PDR), End-to-End (E2E) delay, throughput, and transmit frequency.

Keywords: DCC, FCD-DCC, VANET, ITS, V2V

Comparative Study of TDMA based MAC Protocols in VANET: A Mirror Review

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Abstract: In recent years, Vehicular ad-hoc networks emerges as the promising applications of Mobile ad-hoc network. It is specially designed for road safety and comforts to people. It assists vehicles to communicate among themselves and to perceive the road situation such as accidents or traffic jams in their vicinity. This goal can be achieved by using safety applications which can broadcast the warning messages wirelessly between neighboring vehicles informing drivers of any dangerous situation nearby. Vehicles use transmission channels, which is a shared medium and neighboring nodes are not allowed to transmit simultaneously because a transmission collision may occur. Therefore, Medium Access Control (MAC) protocols are required to proficiently share the medium and dependable conveyance of messages. Sharing the medium efficiently in VANET is a difficult task due to the special characteristics like high node mobility, frequently changing topology, etc. Various Time Division Multiple Access (TDMA) based MAC protocols have been

proposed as it provides bounded delay with less packet loss ratio than other multiple access schemes and experiences no interference from concurrent transmission. In this paper, the comparative analysis of different classification of TDMA-based protocols has presented. The protocols are compared on the basis of different performance metrics such as access collision, merging collision, synchronization, safety services, scalability, etc. Some of the execution measurements are highlighted in the introduction section. In addition to, comparative analysis their design issues, advantages and drawbacks are also discussed.

Keywords: MAC, DSRC, V2V, V2I, TDV, TCBT, TCT.

Square-odd scanning for WBAN with reduce detection time

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Abstract: System Lifetime is a standout amongst the most critical measurements in Wireless Body Area Networks (WBANs). The increasing population needs large medical staff for the excellent healthcare services. Using WSN in healthcare might help to overcome the shortage of the medical staff in medical institutions around the world. The WBAN provides an excellent opportunity to enhance the quality of healthcare. Wireless sensing network uses very light sensors which have very low power backup. So power saving is very significant in such type of network. Square-Odd scanning is used to detect any object efficiently, effectively and it also saves significant power in wireless sensors. It periodically switches the sensors between sleeping and awake mode. Square-Odd scanning is an improved method for scan the object. It focuses on reduction in energy consumption and it improves the life time of sensor. The performance of the Square-Odd approach is better than all other previous scanning algorithms in terms of network lifetime.

Keywords: WSN, WBAN, detection time, SO.

Node authentication in wireless sensor networks, based on the Internet of Things using Middleware

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Abstract: Some of the current IoT devices are not even able to use current authentication methods because of heterogeneous nature. To design or improve a light weight secure framework for authentication, identity management, and a flexible trust management for secure and compatible communication channel among IoT devices.

In this paper, a light weight secure framework for authentication, identity management, and a flexible trust management for secure and compatible communication channel among IoT devices is proposed. By executing proposed framework, interoperability issue between IoT networks could be resolved.

Keywords: Wireless sensor network, Authentication, Security, Internet of things, Network.

Sentiment Analysis on Kerala Floods

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Abstract: In 21st century twitter has been a very influential social media platform; be it in election or gathering aids for a disaster. In this work we propose to study about the effect of natural calamities like the recent Kerala flood, their effect on the people and reactions of people from different stratus of society. The direction of our research will be towards sentimental analysis using R studio and the Twitter app. This research highlights the reactions of people on a public platform during the calamity. Word cloud and other data visualization techniques are used for our study. The research also highlights on how the government reacts and how aid is provided in the dire time of need. We predict that our research will be useful to human society as it showcases a lot about human behaviour, its goodness and short-comings. The paper also throws light on the Hurricane, Michael calamity and gives a comparative study on relations like the differences of opinion among the people as well as their similarities during and after a calamity.

Keywords: Sentiment Analysis, Twitter, # tags, flood.

Recommendation System Using Community Identification

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Abstract: Community Detection has garnered a lot of attention in the years following the introduction of social media applications like Facebook, Twitter, Instagram, and WhatsApp etc. Community refers to a group of closely-knit people who share common ideas, thoughts and likes. They may bond over topics ranging from politics to religion, sports to music and movies, or from educational to holidaying. Researchers have proposed various Algorithms for identifying people who may fit

into a particular community. These algorithms are being used by social media giants in form of “suggestions”. In this paper we propose an algorithm that can be used to identify people who share common interests on so-cial network therefore forming community with same interest. Detailed analysis of the result shows that a person can be recommended to a community if more than 50 percent of his interests matches with the other members belonging to that community.

Keywords: Community detection, Social media, Recommendation system, Data frame.

An Efficient Data Aggregation Approach for Prolonging Lifetime of Wireless Sensor Network

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Abstract: In today’s environment the aim of wireless sensor network is not restricted to data gathering. But also focus on extraction of useful information. Data aggregation is the term used for extraction of useful information. Data aggregation helps in gathering and aggregating data in energy efficient way so that so that network lifetime is heightened. This paper presents a data aggregation approach MESA2DA (Mutual Exclusive Sleep Awake Distributed Data Aggregation). This approach merges with our previous work MESADC (Mutual Exclusive Sleep Awake Distributed Clustering). MESA2DA approach selects cluster head on the basis of MESADC protocol. After that data aggregation is done by cluster head on its cluster members to remove redundancy, so that the packets delivered to base station are reduced which helps in prolonging lifetime of wireless sensor network. The results obtained with MESA2DA approach are compared with HEED protocols in terms of average energy, delay, throughput and packet delivery ratio and one finds that the proposed approach is efficient in prolonging lifetime of wireless sensor network.

Keywords: Sleep Awake, Distributive, Clustering, Sensor, Network.

Comparison of Deep Learning and Random Forest for Rumor Identification in Social Networks

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Abstract: The societal lifetime of each individual has created with online social media. These locations have made the outrageous improvements in the socialize environment. The world’s targetable and fashionable Online Social Network (OSN) is

Facebook, and it has brilliantly having more than a billion clients. It is a household to numerous kinds of antagonistic objects who misuse the sites by posting harmful or wrong messages. In few years, the Twitter and other blogging sites have been around multimillion energetic users. It converted a novel means of rumor-spreading stage. The problem of detecting rumors is now more important especially in OSNs. In this paper, we proposed rumor a different machine learning approaches as Naïve Bayes, Decision tree, Deep learning and Random forest algorithm for identifying rumors. The experiment can be done with Rapid miner tool on everyday data from Facebook. The schemes of rumor identification are verified by smearing fifteen sorts based on user's performances in Facebook data set to forecast whether a microblog post is a rumor or not. From the experiments, precision, recall, f-score value is calculated for all the four machine learning algorithms, further values are compared to find the accuracy (%) in all the four algorithms. And our experimental results show that, the overall average of precision for a Random forest provides 97% than the other comparative methods.

Keywords: Rumor identification, Machine learning, Online social network, Microblog.

A COMPREHENSIVE REVIEW OF KEYSTROKE DYNAMICSBASED AUTHENTICATION MECHANISM

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Abstract: Keystroke dynamics, also called keystroke biometrics or typing dynamics, is a biometric based on typing style. Typists have unique typing patterns that can be analyzed to confirm the authenticity of the user. Keystroke dynamics is most often applied in situations where the authenticity of a user must be ascertained with extreme confidence. It could be used as an additional degree of security for password-protected applications. If user's password is compromised, and the keystroke dynamics of the real user are known, the application may be able to reject the impostor despite having received valid credentials. Different type of keyboards and remote access are major problems of keystroke dynamics authentication technique. In this paper, a comprehensive analysis of contemporary work on keystroke dynamic authentication mechanisms is summarized to analyze the effectiveness of various methodologies in present. Also, various statistical based and machine learning based algorithms are analyzed with their strengths and weaknesses. From this survey, it was observed that there is a need to strengthen the keystroke dynamics dataset which has all essential features. Also an efficient algorithm is required to obtain high accuracy to make authentication effective, as the performance of biometric keystroke authentication is still an open research.

Keywords: Keystroke dynamics, Machine learning, template update, Feature extraction, and Classification.

Ontological Approach to Analyze Traveler's Interest towards Adventures Club

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Abstract: Now tourism has become an industry and many adventure clubs offer different adventure trips for the travellers. So there is need of a system for travellers which prefer their choices and give them all needed information in one place. We proposed a new travel recommended system for adventurers, which provides a defined solution to user demands. It is a Knowledge Base system a smart recommender system with domain-specific ontology. Queries can be constructed in natural language and a related query management strategy is developed. The solution space is searched from two perspectives: user demand and offers relevance. Many systems working on this perspective but in Pakistan not such systems present which preference user choices. Pakistan is a country which is rich in adventure tourism and a good choice for international adventurers. So there is need such a system for based on user interest and their desired information. In the following system, we will deal with the main problems that adventurer presents in terms of information search and decision-making processes according to the domain ontology.

Keywords: System for Travel recommendation, Knowledge Base system, ontology, similarity computation, queries matching.

Performance Analysis of off-line signature verification

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Abstract: To reduce fraud in financial transaction, signature verification is important for security purpose. In this paper, an attempt has been made to analysis the performance of off-line handwritten signature verification using image based features. Photocopies and scanned document are considered as the best possible evidences in the situations when the original documents are either lost or damaged. Although, the photocopies are the filtered images of original information and does not reproduce details as in the original documents. In this paper, combinations of four features i.e. Average object area, mean, Euler no. and area of signature image are used to verify the signature. Publically available database BHsig260 is used. In this database, two types of signature are available i.e. Bengali and Hindi. Proposed work shows that accuracy of Hindi off-line signature verification is 78.5 % with sample size of 15 and accuracy of Bengali off-line signature verification is 69.1 with sample size of 20.

Keywords: K-nearest neighbor (KNN), Support Vector Machine (SVM), and Graphics Processing Unit(GPU), Forensic Handwriting Expert (FHE),Neural Network(NN)

Fibroid Detection in Ultrasound Uterus Images using Image Processing

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Abstract: The unnatural growth present in the uterus wall is uterus fibroids. Presence of fibroid in uterus leads to infertility. Ultrasound images are significant tool to detect the uterus disorders. Extraction of fibroid from ultra-sound scanned images is a challenging task on account of its size, less distinguishable boundaries and position. Segmentation of ultrasound images is not an easy task because of speckle noise. This paper endows a method to segment uterus fibroid from ultrasound scanned images. This method utilizes many mathematical morphology concepts to detect fibroid region. The method segmented the fibroid and extracts some shape based features.

Keywords: Fibroid, Uterus, Ultrasonic Imaging, Segmentation, Morphological operations.

Performance Analysis of Routing Protocols in Wireless Sensor Networks

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Abstract: Wireless Sensor Networks (WSNs) are interconnected sensor devices that can detect process and communicate data over large distances in large geographical areas. Today sensor devices have found their use in defense services, notably military services, disaster management, medical services, wildlife monitoring and precision agriculture, and in habitat monitoring and logistics. Since the sensor devices are small, they have limited energy resources that reduce their service life. Because of this restriction, energy management is the primary research area in these networks. This study determines the performance of five routing protocols: Ad hoc On-Demand Distance Vector (AODV), Temporally Ordered Routing Algorithm (TORA), Optimized Link State Routing Protocol (OLSR), Geographical Routing Protocol (GRP), Distance Routing Effect Algorithm for Mobility (DREAM) and their comparison. The results are shown in three scenarios whereby DREAM is considered as one of the best routing protocols based on four performance metrics.

Keywords: Routing Protocols, AODV, DREAM, TORA, OLSR, GRP.

Progressive Generative Adversarial Binary Networks for Music Generation

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Abstract: Recent improvements in generative adversarial network (GAN) training techniques prove that progressively training a GAN drastically stabilizes the training and improves the quality of outputs produced. Adding layers after the previous ones have converged has proven to help in better overall convergence and stability of the model as well as reducing the training time by a sufficient amount. Thus we use this training technique to train the model progressively in the time and pitch domain i.e. starting from a very small time value and pitch range we gradually expand the matrix sizes until the end result is a completely trained model giving outputs having tensor sizes [4 (bar) \times 96 (time steps) \times 84 (pitch values) \times 8 (tracks)]. As proven in previously proposed models deterministic binary neurons also help in improving the results. Thus we make use of a layer of deterministic binary neurons at the end of the generator to get binary valued outputs instead of fractional values existing between 0 and 1.

Keywords: Generative Adversarial Networks, progressive GAN, music generation, binary neurons.

Machine Learning Approach for Diagnosis of Autism Spectrum Disorders

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ABSTRACT: Currently affecting around 1 in 68 children, Autism Spectrum Disorder (ASD) is a psychological disorder that is mostly diagnosed by the age of five or later. However, the catch lies in the fact, that increased delay in the diagnosis leads to increase in complexities and cost of the treatment. ASD inhibits the patient from interacting with the society. Reduced social interaction and aberrant behavior are the cardinal symptoms of ASD and is usually detected in children by the age of two, when they are still in their developing phase. Thus, ASD is included in the list of Developmental Disorders which comprises Attachment Disorder, Attention Deficit/Hyperactivity Disorder, etc. Referred to as Autism Spectrum Disorder, this umbrella term includes various types such as Autistic Disorder, Asperger's Syndrome and Pervasive Developmental Disorder. These three categories are based on the severity of Autism Spectrum. Autistic Disorder, commonly referred to as Autism, itself affects around 2 million people in India. Apart from this, while staggering statistic shows that ASD affects at least 70 million of the individuals worldwide, its diagnosis still remains an abstruse task. To ameliorate this detection process, the

paper aims at finding the best Machine Learning Algorithm for classification of the dataset into whether the person is suffering from autism or not. Besides, if the person does not show symptoms of Autism, then the target is to detect whether the patient is vulnerable to any other type of ASD as discussed before. The intention of the proposed methodology is not to replace the presence of medical personnel in the process of diagnosis, but only to provide assistance and corroborate with the opinion of the concerned doctor.

KEYWORDS: Autism, ASD Detection, Classification, Random Forest, Extra Trees Classifier

Methodologies for Epilepsy Detection: Survey and Review

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ABSTRACT: Till date, according to the World Health Organization (WHO), more than 50 million people around the globe are suffering from epilepsy. Epilepsy is a neurological disorder characterized by the onset of intractable seizures. Seizures are the aberrant behaviour of cerebral signals which leaves the patient debilitated. EEG (Electroencephalogram) which measures the brain wave activity and Neuroimaging like CT scan, MRI are usually used for diagnosing epilepsy. Despite the fact that around 12 million Indian citizens suffer from chronic disease, there still exists a huge stigma associated with epilepsy. Social stigma so grave, that in India, there are a considerable number of marriages which are annulled or called off because either of the partners suffers from epilepsy. Compared to a healthy human being, the chances of survival for a person with epilepsy is 1.6 to 3 times lower. Hence, it calls for more attention to the detection of epilepsy. This paper gives the comparative study of different methodologies implemented so far for epilepsy detection and identifies the existing gaps in these methods.

KEYWORDS: Epilepsy, Neural Network, Wavelet-transform, Electroencephalogram (EEG)

Scene Understanding using DeepNeural NetworksObjects, Actions and Events: A Review

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Abstract: Scene understanding plays an important role in various fields of applications like autonomous driving, robotic navigation etc. Scene could be considered to be an association of a large number of objects, their actions, the events they relate in a relevant and valid combination. Sceneunderstanding aims at providing human like ability for machines and completely analyze the visual scenes. Understanding the context of a complex scene and providing an accurate visual

information from the basic level of objects to a relation between them forms the major objective. Deep learning neural networks which can learn features from a massive data has excel over conventional machine learning algorithms.

Keywords: Scene understanding, semantic segmentation, instance segmentation, deep learning.

Scene Text Recognition: A Preliminary Investigation on various techniques and implementation using Deep Learning Classifiers

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Abstract: Task recognition of text in Scene images hold an important position in computer vision especially for applications dealing with environmental interactions. The system is expected to recognize the environment and textual regions hold a great part in informing about system's environment. But the text recognition task in scene images are complicated. In this work the various methodologies that have been proposed for scene text detection, extraction of text edge and recognition of text in scenes are reviewed

Keywords: Scene Text Recognition, Scene Text Detection, Machine Learning, Deep Learning.

Computer Aided Diagnosis System for Investigation and detection of Epilepsy using Machine Learning Techniques

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Abstract: Epilepsy, a Neurological disorder seems to be very chronic and affects a large number of people. Epilepsy is the third most common disease among all other mental disorders whose identification and cure is very hard. In the proposed work a thorough investigation on the various techniques employed in various papers pertaining to Epilepsy detection and cure using Machine Learning have been taken and analysed. Various EEG signal preprocessing techniques and machine learning classifiers used in many papers were analysed with samples and conclusion on preprocessing techniques combined with classifiers gives the most accurate prediction of the disorder for preliminary investigation. Various classifiers namely SVM, Random Forest, Neural Network, Logistic Regression were used on the dataset. The Random Forest Classifier gave the most accurate result. The accuracy was 58.9%.

Keywords: EEG Signal, Seizure , Classifiers , Signal Preprocessing , Epilepsy

CONTROLLED ACCESS ENERGY CODING (CAEC) FOR WIRELESS ADHOC NETWORK

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Abstract: Currently, the mobile ad-hoc network is outstanding and developing in an outstanding manner and the research on this topic is rigorous research area globally. The evolving wireless networking has an incorporation of cellular technology, personal computing internet;, etc. is due to the global communication and computing interactions. Ad- hoc networks are very beneficial to the circumstances where an arrangement is unobtainable. Power -Protocols is required to assign separately to multiple terminals. Where this a problem in the minor networks, it becomes a dominative among bigger networks , where the number of terminals to have power and the reuse of powers. This paper discusses the issues of power allocation in communication in MAI in wireless network . It discusses the MAImultiple access interference and the limiting near-far problems. It will be addressing the decreasing of throughput performance of mobile ad-hoc network. This paper will discuss the communication minimizing MAI impact with the power assignment scheme for the proper utilization of power in MANET.

Keywords: mobile adhoc network, multiple access interference-MAI, RTS-CTS.

IoT based HelpAgeSensor Device for Senior Citizens

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Abstract: Recent trends and reports show the cases of undetected death of senior citizens in India due to negligence of family member and society. This issue became a major social issue and also pulls back the development of any country and nation. The phenomenal growth in terms of science and technology can play a key role in the direction of safety of the senior citizens. Technology like, IoT can be utilized in order to keep safe and secure to senior citizens. The purpose of this work is to develop a IoT based HelpAgeSensor device which is in a ring form and easily wearable. This device would sense the pulse rate and send alert messages along with location information of the device holder to connected entity. These entities could help device holder by providing medical treatment or dignified cremation ceremony in case of death. The main components of this device are Pulse Monitor, GPS System and Threshold Generator. This device is based on threshold values of pulse rate. This HelpAgeSensor device would be able to help the society to combat unnoticed death of people behind the closed doors.

Keywords: IoT, Threshold, Sensor, Senior Citizens, Pulse Rate

Moments Based Feature Vector Extraction for Iris Recognition

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Abstract: Biometric recognition is a personal identification system which serves as a prime authentication method for a number of applications. Finding a unique biometric trait that can support classification across a large dataset is always a problem in biometric recognition system. Iris is one such biometric trait which is unique over a large dataset. Mathematical moments are used to extract features from the iris region surrounding the pupil. These moments help to capture a large information on the distribution of texture on the iris region. Based on this moment features we perform iris recognition using nearest neighbour classifier. This proposed method with hard threshold achieves an overall recognition rate 84% of and shows scope for improvement.

Keywords: iris recognition, mathematical moments

Optimization of LEACH for developing effective energy efficient protocol in WSN

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Abstract: In present research paper author is trying to improve LEACH for increasing energy efficiency of protocol within Wireless Sensor Network by optimizing Low Energy Adaptive Clustering Hierarchy (LEACH). Optimizing LEACH protocol has certain limitations like routing, aggregation, selection of cluster head (CH) and transmission of data to cluster head which tends to uneven distribution of Energy. Taking this problem into consideration we are focusing to enhance energy efficiency protocol. We have proposed a solution to Improve LEACH by implementing new scheme for selection of Cluster Head and changing the routing techniques.

Keywords: Cluster Head, Hopfield Neural Network, LEACH, Mobile Sink, Rendezvous Node, Residual Energy, WSN.

A Novel Approach to improve Website Ranking using Digital Marketing

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Abstract: In the present age of information search using digital platforms, people use various search engines to look for best suitable information across a large pool of ever increasing websites. Therefore, concerns about website ranking have gained prime importance. So, there is a need to make a website visible by search engines in its top most priority search results and thus, gain audience to the website. Search Engine Marketing (SEM) and Search Engine Optimization (SEO), aims at providing the strategies and prove to be an effective way to grow business by attracting potential customers in an extremely competitive marketplace. This paper first revisits the existing marketing strategies. Second, it includes various types of Search Engines and factors affecting website ranking. Third, a report generated by net market share monthly trend analysis has been illustrated. Fourth, SEM techniques have been discussed followed by a proposed approach for improving website ranking in search results.

Keywords: Digital Marketing; Search Engine Marketing; Search Engine Optimization; Website ranking.

A comparative study on different Skull Stripping techniques from Brain Magnetic Resonance Imaging

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Abstract: Magnetic Resonance Imaging (MRI) is a popular tool for detection of diseases, as it can provide the details about physiological and chemical components of the tissues, for which the investigation needs to be carried out. The advantage of MRI over other medical imaging techniques is that, sectional image of same resolution can be produced without moving the patients. However, the pixel intensity of the grey matter and non- grey matter, which are present in the brain, is almost similar. Hence it creates difficulty in identification and diagnosis of brain diseases. Therefore, identifying and removing the non-brain tissue like skull is very vital for accurate diagnosis of brain related diseases. This removal of skeletal structure from a brain MRI is called skull stripping. In this paper, different brain MRI skull stripping techniques are discussed and performance analysis is presented with respect to their ground truth images.

Keywords: Magnetic Resonance Image, Noise, Segmentation, Skull Stripping, Region growing, Histogram based Thresholding, K Means, Region Slitting and Merging, Fuzzy C Means

Automated Vehicle Management System using Wireless Technology

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Abstract: The research is focused on the intelligent traffic system which is roughly based on the concepts of Wireless transmission using radio frequency (RF) transmission and Image processing. In the proposed system, FM receivers are fitted on traffic signals and FM transmitters are fixed on high-priority vehicles. The transmitter transmits the GPS location of a vehicle at a constant interval. On receiving the RF signal from the high- priority vehicle, the traffic signal, closest on its route, gets activated. From the received GPS location which is nearly 2 KM away from the signal, the system finds out the direction and speed of the oncoming vehicle and releases the traffic on that route. The directions found by RF antenna situated in the receiver. If no FM signals are received from any high priority vehicle, then the system uses image processing to find the vehicle-density on each side. This is done by counting the number of vehicles in the four videos taken by a closedcircuit camera pre-installed in the traffic signal. The cameras have a range of 100m each. An intense signal would make that side having the highest vehicular density green if and only if the vehicle number exceeds a threshold. Otherwise, the system mimics an ordinary traffic system. The system gives an accuracy of more than 91 percent while calculating the number of vehicles and in the other cases the error is as low as zero. The novel system simulation is achieved through Circuit Maker-2000 and MATLAB software.

Keywords: RF transmission, RF antenna, Image Processing, MATLAB, and Circuit Maker-2000 software.

Predicting academic performance of international students using machine learning techniques and human interpretable explanations using LIME – case study of an Indian university

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Abstract: With the increasing globalization in higher education, universities are giving importance to attract international students to achieve diversity and good ratings from accreditation bodies. Machine learning techniques have the potential to

predict class of a dependent variable and can thus enable educational institutes to predict academic performance of students and improve related learning processes. The purpose of this study is to predict the academic performance of international students studying at a university in North India. This study has explored the predictive potential of attributes like their attendance percentage, pending re-appears, economy level, geographical region etc. in developing a statistical model that can predict the likely performance of a student as satisfactory or poor. Machine learning algorithms like logistic regression, naïve Bayes, CART and random forests have been used. Classification accuracy, sensitivity, specificity and area under the ROC curve have been used for evaluation purpose. Interpretable explanations for model outcomes have also been obtained. Classification accuracy of above 90% was observed during experiments. Features like attendance percentage and pending reappears were observed to be contributing most towards prediction outcomes.

Keywords: academic performance; binary classification; educational data mining; human interpretability; machine learning; predictive models

Improved Feature Matching Approach for Copy-Move Tamper Detection and Localization of Digital Images

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Abstract: Nowadays, with the availability of many open source tools which helps to modify digital images, in order to make misuse of or to make false publicity. Copy-Move forgery (CMF) is most common type of forgery technique. The methods available for detecting CMF are mainly classified as Keypoint-based methods (KBM) and Block-based methods (BBM). KBM found better than BBM in terms of computational complexity and sturdiness against affine transformation, but still, forgery in the flat region cannot be detected by these methods, which is detected by block-based methods. As a result, many researchers proposed a fusion of both. But these methods suffer from a high false positive rate (FPR). This paper aims to propose a new integrated approach by combining best features of Mirror Invariant Feature Transform (MIFT) and Zernike moment. Additionally, to reduce FPR a new improved window feature matching technique is proposed which in turn improves detection accuracy.

Keywords: Digital Forensics; Multimedia Forensics; Digital Image Forensics; Copy-Move Digital Image Forgery; MIFT; SIFT; Zernike Moments.

A Supply Chain Replenishment Inflationary Inventory Model with Trade Credit

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Abstract: This research work considers a problem of obtaining the optimal replenishment schedule in a supply chain with a parameter of credit period rate. The model is designed for time-dependent quadratic demand and deterioration. The model is generalized considering partially backlogged shortages under inflation. However, as a peculiar case, an example is aimed for a model without lost sales. Sensitivity analysis is performed to analyze the mathematical formulation and numerical examples are examined to study the effect of inflation and the time value of money on the economic order quantity model. The model evaluates the optimal replenishment schedules for the single retailer and single supplier for single product in the supply chain subject to inflation. AMS Subject Classification: 90B05, 90B99

Keywords: Inflation Supply chain Credit term Inventory

Sentiment Analysis using Gini Index Feature Selection, N-gram and Ensemble Learners

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Abstract: Sentiment analysis is becoming increasingly popular due to its wide variety of applications. The use of machine learning is paving a way to sophisticated algorithms so as to have better performance. In this paper, the sentiment analysis is performed on a dataset containing movie reviews. Firstly, the n-grams technique is used to analyse more than one word in a text document. Second, we introduce the Gini Index method for feature selection. Then we use the ensemble learning technique for classification. Finally, the results are procured from the confusion matrix.

Keywords: classification; ensemble learners; gini index; machine learning; sentiment analysis

Customer Churn Prediction In Telecommunications Using Gradient Boosted Trees

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Abstract: Customer churn is a critical problem faced by many industries these days. It is 5 to 10 times more valuable to keep a long term customer than acquiring a new one. This paper addresses the problem of customer churn with respect to telecommunication industry as churn rate is quite high in this industry (ranging from 10-60%) in comparison to others. Predicting customer churn in advance can help

these companies in retaining their customers. The paper proposes XGBoost algorithm as a model with best performance amongst other state of art algorithms. The previously used models focus more on the accurate prediction of churners as compared to non churners whereas the proposed model classifies churners among the total churners correctly and is able to achieve the highest True Positive rate of 81% and AUC score of 0.85. Also, concepts of data transformation, feature selection and data balancing using oversampling are applied for the same.

Keywords: Boosting, Churn prediction, Telecommunications, XGBoost

Text summarization by hybridization of hypergraphs and hill climbing technique

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Abstract: Extractive Summarization is a type of Automatic Text Summarization (ATS), which chooses important sentences of the original text to create the summary. In general, there exist n-ary relationships among the sentences of the text and these relationships have been used by the authors to constitute the hyperedges of a hypergraph, which is called the Sentence hypergraph. The authors have attempted and succeeded to summarize text by hybridizing sentence hypergraphs with Hill climbing optimization. The authors have used Hill climbing to construct the sentence hypergraph and the Helly property to select the significant sentences as summary. They have successfully created the summary out of the selected significant sentences. The performance of the system has been evaluated against Gold summary using the ROUGE evaluation system.

Keywords: Automatic text summarization, Extractive Summarization, Hypergraph, Hill Climbing, Helly Property, ROUGE

Comparing Machine Learning Algorithms to Predict Diabetes in Women and Visualize Factors Affecting it the Most- A Step Towards Better Healthcare for Women

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Abstract: Diabetes affects millions of people throughout the world, and more than half of the people suffering from it are women. Creating a better diagnosis and study tool will enable us to take a step forward in better healthcare. We use sklearn to create a model for the Pima Indians Diabetes Dataset. The main goal is to compare the different algorithms to obtain the best accuracy. Prediction of diabetes in women is crucial as it not only ensures an early start of treatment, but also helps in prevention in cases of high probability of the disease occurring. We have not only focused on the detection part, but also tried to study and visualize the factors that were most correlated to a diabetic person. By studying the most common algorithms, we can figure out which area needs to be worked upon to develop better ways of healthcare.

Machine learning has been actively used in healthcare, and by implementing this in conditions like diabetes which affects a major population in the world, including almost 100 million Americans, and more than 62 million Indians. The idea behind choosing the dataset was to get parameters and features, which are not determined by geography or region, but the overall physiology of women, so that most women throughout the world can be benefitted. The algorithms compared are Decision Trees, Logistic Regression, Naïve Bayes, SVM and KNN. The final result got us an accuracy of 81.1% with the help of KFold and Cross Validation.

Keywords: Diabetes, sklearn, Pima Indians, Decision trees, logistic regression, KNN, Naïve Bayes, SVM, diagnosis

Evolution of mHealth using Hadoop Eco System: A step towards personalized medicine

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Abstract: Mobile phones have become an indispensable part of our daily lives. This small device has impact on life of approximately 7.2 billion users round the globe. As more and more population adapt to this technology, making it quite convenient to monitor the health and health related issues in real time. This would contribute to huge amount of unstructured data in healthcare industry referred to as Big Data. This bottle-neck in evaluating bigdata will be to procure faster real-time inferences from these enormous and highdimensional observations. Reduced cost of sensors has contributed towards effective monitoring of patient's health in real time. Various sensory devices such as Fitbit are linked to mHealth apps monitoring the real time data benefiting many users. The continuous reduction in cost of genome sequencing due to advancements in technology will soon transform the healthcare industry from traditional symptom based to customizable personalized treatment. In this article we have highlighted various aspects of mHealth, it's market potential, comparative analysis on the basis of operating systems and the role of Big Data in mHealth architecture.

Keywords: Health; Healthcare; Big Data; mHealth; mHealth Architecture; Mobile Phones; Apps.

Genetic Variance Study in Human on the basis of skin/eye/hair pigmentation using Apache Spark.

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Abstract: Heredity and variation are the basis of genetics. Human beings show variation on the basis of skin/hair/eye color. The diversity in the phenotypes is originated due to variations at the genetic level. It has been observed that specific populations across the globe share similar shades of color. It has been reported that pigment melanin is responsible for skin/eye/hair color. Six major genes have identified which are responsible to produce variation in coloration ; HERC2, OCA2, TYR, MC1R, SLC45A2, and SLC24A2. In this paper, Apache spark and Python on a Virtual Machine running Ubuntu have been used to analyze the variation considering the genomic regions associated with these genes. The study included different populations which have been categorized into three groups. First group is the 'Sample Population' that includes 5 subpopulations, Mexican, Han Chinese, Yoruba, British, and Japanese. People from these populations can be easily distinguished on the basis of skin/eye/hair color. The second group includes 5 super populations of the world from different continents viz. African, American, European, East Asian, and South Asian. This will provide the intercontinent analysis. The third group is 'South Asian Population' that includes 5 subpopulations from South-Asian sub-continent viz. Punjabi, Gujarati, Tamil, Telugu, and Bengali, for the study in geographically closer populations. These populations are expected to show some degree of variation in the genomic regions in these six genes. Our results indicated that three different populations showed variations in different genes. First group of population depicted the maximum diversity in “TYR” gene followed by SLC45A2. This SLC45A2 gene was most diverse in continental population whereas the third group showed similar diversity across all the six genes. This implicates that the specific population shows diversity in specific genes and also proves that apache spark has great potential in assessing nucleotide diversity.

Keywords: Genomic data analysis; Apache Spark; Human pigmentation; Genetic variation; Matplotlib;

Efficient Evolutionary Approach for Virtual Machine Placement in Cloud Data Center

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Abstract: Administering energy and resource management are two vital managing components of cloud data centers. From last two decades most of cloud data centers (CDC), are suffering from these two; the former has become a serious issue now-a-days. In this paper, we focused on effective virtual machine placement (VMP). Evolutionary approach is applied to place the virtual machine in an effective way which properly utilizes the underutilized resources and reduced the active physical servers. After experiencing the performance of particle swarm optimization (PSO) algorithm for combinatorial problems, a distributed PSO approach is modeled to minimize energy consumption of CDCs. The proposed PSO and DPSO algorithms are applied on VMP over large distributed cloud data centers. Experimental results of PSO and distributed PSO algorithms are presented. The model is applied with variety

of placement problems with varying data center network topology. The performance of the model outperforms the traditional heuristic and several optimizations approaches.

Keywords: Virtual Machine Placement, PSO, Distributed PSO, Energy Efficient, Cloud Computing, Evolutionary approach.

SCiJP : Solving Computing issues by Java Design Pattern

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Abstract: The types, needs, advantages and disadvantages of Java design patterns have been explained and Java Cryptography Architecture (JCA) case study has been discussed. The broad survey cross the spectrum of high end programming language shows Java is the only programming language that offers concept and features which can be used extensively to design applications and software to harness the advantages of exascale computing.

Permissioned Blockchain Based Agriculture Network in Rootnet Protocol

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Abstract: The agriculture sector has seen considerate changes in its framework and working methodologies since its inception. Current trend in supply chain management includes the interception of prejudiced middlemen taking advantage of the anonymity in relationships existing between the actual producers and ultimate consumers. This trend puts two main areas in the supply chain at risk, the profit factor of the cultivators and quality of the final product delivered to the consumers. This paper aims at enhancing the supply chain performance by incorporating Blockchain technology to solve the aforementioned problems. It includes the creation of a blockchain network encompassing the producers and consumers, and an automated Distributed Digital Ledger mechanism that effectuates two way product traceability. It will consequently reduce the gap between the market price and the farmers selling price to a great extent. The consumers on the other hand will receive better and healthier agro products, that will eventually eradicate deadly ailments from the ecosystem.

Keywords: Blockchain, Agriculture, Supply chain management, DHT

Load Balancing and Fault Tolerance based Routing in Wireless Sensor Networks

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Abstract: Energy efficient data collection from the environment is a critical operation in many applications areas of Wireless Sensor Networks (WSNs). Unprecedented techniques which help in ameliorating the energy efficiency are highly required to elongate the lifetime of the network. In WSNs, sensed data needs to be forwarded to the sink node in an energy efficient manner. Multi-hop communication helps a lot in reducing the energy consumption if the parent node through which data needs to be transmitted is selected in an efficient manner. Some nodes get overloaded while others are having very less load when parent nodes are selected in a random manner. In this paper, we have proposed a linear optimization based formulation to balance the load of the nodes by selecting the parent node in an efficient manner. Moreover, when after some interval of sensing, some parent nodes start to get dying, the child nodes change their parent node to avoid the packet loss. So, a fault tolerance strategy is also proposed. Simulation results verify that proposed work is outperforming in terms of packet delivery ratio, network lifetime and count of dead nodes.

Keywords: Load, Linear Programming Problem, Next Hop (Parent), Network Lifetime, Dead Nodes, Wireless Sensor Networks

A Novel Context Migration Model for Fog-enabled Cross-Vertical IoT Applications

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Abstract: With the maturity of Internet of Things (IoT) paradigm, many innovative services are being conceived by integration of existing IoT services. Such services are termed as cross-vertical or cross-domain services. However, catering to real-time response requirement of such services is challenging and resource constrained Fog nodes provides an alternative to cloud computing to realize end services. In this paper, we present a novel Fog resource aware forecast-based context migration model to address this delay requirement of such unified IoT applications by employing a Fog resource and forecast based mechanism among Fog nodes for minimizing system delay. Algorithms for context migration and required conditions for migrations been presented and simulation results carried out demonstrate the efficacy of the proposed methodology.

Keywords: Internet of Things, Cross-Vertical IoT applications, Fog Computing, Context Sharing, Service delay, Resource Aware

Equity Data Distribution on Identical Routers Algorithms

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Abstract: This paper focuses on the problem related to assigning several big data packages on different routers when seeking equity of sending time. It is challenging to find a good algorithm that can distribute big data on routers before sending them. We assume that all routers share the same technical characteristics. The problem is as follows. Given a set of big data, represented by its size in MB, the objective is to plan the assignment so that the minimum time sending gap exists between the routers. The objective function of the optimizing problem is the minimization of the size gap. This optimization problem is very NP-hard. We propose a new summarized network architecture, based on adding a new component: a “Scheduler”. The scheduler applies several algorithms to search for a resolution to the studied problem. Four heuristics were developed and experimental results are provided to allow a comparison between heuristics. Two classes of instances are provided. The results given by generated instances show that the performance of heuristics.

Keywords: Big Data, routers, equity distribution, heuristics, scheduling.

Automatic Text Summarization Using Fuzzy Extraction

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Abstract: Text summarization is an approach to summarize the original document with better efficiency than human. Mining prominent words from the original document and connecting those to make a semantically correct sentence in the best way is the ultimate goal. This paper focuses on making the summary more reliable and understandable with the techniques of Fuzzy logic. The extractive method of text summarization and the fuzzy logic method along with algorithms has enhanced the power of unsupervised learning which is proved by comparison with the algorithms working alone.

Keywords: Fuzzy Logic; Extractive Method; Term Frequency-Inverse Sentence Frequency

A Comparison of Machine Learning Approaches for Classifying Flood-Hit Areas in Aerial Images

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Abstract: Floods caused due to climatic changes have become one amongst the most devastating natural hazards. Immediate relief operations play an important role in saving numerous lives during flood hit time. Various technologies are used for quick response, one being the use of drones. As drones take the aerial images of the floodhit areas, we have proposed a method of classifying aerial images to identify floodhit areas using various classifiers such as SVM, Fine Tree, KNN, and Neural Networks. Their performances are compared and it is observed that SVM classifier outperforms the remaining classifiers with almost 93.1% due to its simplicity though Neural Networks minimize the amount of training to a larger extent. This classification of images is then used to identify the flood-affected areas to spot the extent of floods.

Keywords: SVM, Fine Tree, KNN, Neural Networks, Classification, Disaster Response

Cure Of Huntington's Disease By Using Crispr/Cas And Machine Learning

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Abstract: Huntington's disease (HD) is associate genetic abnormality that results in death of brain cells. HD affects regarding four to fifteen in ten thousand people of European descent. It's a rare condition in Japan, whereas the prevalence rate in countries like Africa is unknown. The CRISPR-Cas9 system, an adaptive or immune system of microorganism was recently explored for editing polymer sequences at intervals in many organisms. This technique has emerged for order redaction with promising therapeutic and analysis advancements. Also, Machine learning might be an invasive trend at intervals the health care business, significantly at intervals the sector of biology. The technology will even facilitate doctors analyze info to identify trends or red flags which is able to cause improved diagnoses and treatment of assorted genetic disorders. Every of these fields have seen outstanding advances at intervals the 2010's and so the pace of research is continuous to settle on up speed as we've got an inclination to approach the 2020's. CRISTA is a novel methodology which supports the machine learning paradigm and predicts the sites for cleavage in genome and the propensity is computed by a given single guide RNA (sgRNA) with the help of machine learning. It is typically used for coming up with treatment against Huntington's sickness.

Keywords: Huntington's disease, CRISPR/CAS9, Machine Learning, CRISTA.

Cognitive Services Applied as Student Support Service Chatbot for Educational Institution

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Abstract: Many software companies try to build at least simple FAQ / Q&A based chatbot recently. Recent works shows that it is really easy to build a bot while to build intelligent one could be an extremely hard. Domain specific bots like AI driven Support Center Automation Bots should consider to be interoperable on many levels and with every new level, level of complexity grows exponentially. In recent years, messaging apps overtaken social networks and become the dominant platforms on smart phones. That enormous potential should be considered to solve one of the issues that any organization larger than 10 participants has. Combining various existing and external data sources company already have access to, most of the first-and second-line helpdesk questions could be resolved before they came to support service staff. Robotic Process Automation (RPA) is one of hottest topics among business process experts while one of the fastest growing fields of RPA is Knowledge Mining which is especially applicable in Educational (EDU) environment like any kind of EDU Support System. This paper cover experience in building Chatbot as the effective interface for student support.

Keywords: Software Robots, Chatbots, Knowledge Mining, Cognitive Services, Artificial Intelligence.

Improved leakage current performance in Domino Logic using Negative Differential Resistance keeper

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Abstract: In this article, a new improved domino logic based topology is proposed for achieving improved leakage current performance using negative differential resistance (NDR) keeper circuit. The NDR keeper is used to preserve the correct output level and reduced the power consumption with negative resistance. The proposed domino circuit is verified using Synopsys HSPICE simulator with 45 nm and 16 nm technology parameter provided by PTM model library. The simulation outcomes validate the improved performance of the proposed circuit in terms of leakage power consumption and power delay product.

Keywords: Domino logic, Negative differential resistance, Leakage current, Power consumption, MOSFET.

An Efficient Parking Solution for Shopping Malls Using Hybrid Fog Architecture

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Abstract: The abundant use of personal vehicles has raised the challenge of parking the vehicle in a crowded place such as shopping malls. This paper proposes an efficient parking system for shopping malls. To process the IoT generated parking data, a hybrid Fog architecture is adopted, to reduce the latency, where the Fog nodes are connected across the hierarchy. An algorithm is defined to support the proposed architecture and is simulated on a real-world use-case having requirements of identifying the nearest free car parking slot. The implementation is simulated for a shopping mall with a multilevel parking space. The simulation results have proved that our proposed architecture shows lower latency as compared to the traditional cloud architecture.

Keywords: Cloud computing, Fog computing, Inter-Fog communication, IoT, Fog architecture, Latency, Smart building, Smart city, Mall parking, Smart Parking

Feature Extraction and Detection of Obstructive Sleep Apnea from Raw EEG Signal

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Abstract: Electrocardiogram (EEG) signal detects the electrical activity of the brain. It records all the physiological changes occur in the brain. These signals are useful for detecting different types of sleep disorders. This paper aims in detecting Obstructive Sleep Apnea (OSA) using SVM classifier and DWT technique. The EEG signal is extracted from the Polysomnographic data base removing the other artifacts namely Electrocardiogram (ECG), Blood Pressure (BP), respiratory signal at abdominal, respiratory signal at nasal, oxygen saturation are removed. Then the EEG signal is segmented into four sub-bands as Delta (δ), Theta(θ), Alpha (α) and Beta (β). The approximation coefficients and detailed coefficients are extracted from these sub-bands using wavelet decomposition technique with Daubechies order 2 (db2) transform. All these coefficients are given to SVM classifier for detection of OSA. The accuracy of classifier is tested in three cases, in case one, 90% of data is given for testing, in case two, 70% of given and in third case only 50% of data is given for testing. It is observed, case 1 has 98% of accuracy in detecting the obstructive sleep apnea. In this paper 16 healthy subjects and 8 unhealthy subjects are considered. The detailed and approximation coefficients are extracted for all 2500 samples.

Keywords: Electrocardiogram (EEG), Obstructive Sleep Apnea (OSA), Discrete Wavelet Transform (DWT) and Support Vector Machine (SVM) classifier.

AIRUYA-A Personal Shopping Assistant

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Abstract: The rapid growth of internet technology is a key driver in shaping the Ecommerce business to its full potential. People these days prefer online shopping instead of traditional in-person shopping experience as it tend to save significant amount of effort and time. This has led to an exponential growth in the number of online shopping portals where people can purchase desired products even at cheaper price owing to the attractive offers offered by the online sellers. However, this increase in the number of online shopping portals with each having a variety of similar products often tend to confuse the customers in deciding the right product for them. Moreover, different shopping portals offering different price for the same product further elevates the problem for the customers. This paper proposes a personal shopping assistant, AIRUYA, for the customers with the aim of optimizing their online shopping experience. The proposed system facilitates the searching of the desired product from different shopping portals. Results are obtained from different sites and price-wise sorted list of products is presented to the customer. The customer preferences are stored and utilized to share recommendations to the other customers bearing the similar profile.

Keywords: E-commerce, Recommendation, Shopping Assistant, Online Shopping, Price Comparator

Adapting Machine Learning Techniques for Credit Card Fraud Detection

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Abstract: Credit card fraud is a form of financial frauds growing every year and causing losses to financial multinationals as well as government sector. Traditional methods like manually detecting credit card frauds are feasible only for small datasets, but with the rise of Big data, these methods are of no worth, hence has been proved as an unrealistic and time-consuming solution. Therefore the finance industry is looking for help from data mining and machine learning methodologies in order to

handle problems. But constructing rule for fraud detection algorithms are difficult because of imbalance nature of credit card dataset. Several challenges while mining credit card dataset with the experimental solution is presented through this paper. Under-sampling and SMOTE over-sampling technique is applied to balance the real time credit card transaction dataset and then several supervised machine learning algorithms are compared to classify credit card frauds precisely. Credit card fraud detection model using logisticRegression is pragmatic as the best classifier when compare to Decision Tree, Support Vector Machine and K-Nearest Neighbor. Confusion matrix and several other matrices are used during experiments to evaluate the performances of the credit card fraud detection model.

Keywords: Machine Learning, Data Mining, Credit card fraud, Big Data, Finance Industry

Ensemble feature selection method based on recently developed Nature-inspired algorithms

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Abstract: Nature-inspired algorithms focus on many real-life applications, majority of which address different types of optimisation problems at a basic level. Feature selection, a type of optimisation problem, is an extremely important aspect of machine learning. This paper proposes an Ensemble algorithm for feature selection using four recently developed evolutionary algorithms which are: OCSA, OCFA, OBBA & MGWO. An ensemble-set is created by combining the reduced feature-set(s) obtained from the abovementioned algorithms. The ensemble-set so obtained represents a subset of features that are more robust and stable in nature. Ensemble creates a better composite global model by integrating various “differently biased” classifiers and thus reduces variance-error by ensuring diverse “biasing”. The performance of this approach is validated using four classifiers, Decision Tree, LogisticRegression, K-nearest neighbours (KNN) & Random Forest. The application of the proposed method has been demonstrated using ten publicly available datasets. The suggested method shows promising results by either reducing the number of features with not much loss of accuracy or by including more relevant features and thereby increasing accuracy of predictions. Theoretical and empirical results presented in this paper validate the hypothesis that this method can help in finding a better feature subset.

Keywords: Optimisation, Ensemble, Classification, Evolutionary algorithm, Nature inspired, Feature selection.

Sensor’s Energy and Performance Enhancement using LIBP in Contiki with Cooja

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Abstract: There are various sparing protocols that help to gather the information from various sensors and broadcast via network as represented in this paper. The protocol known as LIBP, it is a lightweight pathway helps to build a spanning routing tree with minimum distance. The distance between the routing tree to root node that based upon the scatter information via sporadic beaconing process. The information can be gathered through sensors via LIBP. The matching traffic record can flow from note to sink in a network. The simulation is done on the Contiki OS under a Cooja simulator. The LIBP outperforms the special version of RPL in the term of power consumption, scalability and throughput in the CTP protocols.

Keywords: IoT; LIBP; CTP; RPL; efficiency; security

Analysis and Mitigation of DDoS Flooding Attacks in Software Defined Networks

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Abstract: To analyze and evaluate the security of latest network architectures like Software Defined Network (SDN) architectures is a significant step in protecting these against various security threats. The security of SDN assumes greater significance as this dynamic network paradigm, in addition to its great future potential, experiences various design complexities and common Open-flow shortcomings, such as the issues related to a centralized controller. There is no doubt that SDN has been perceived as a standout among the most common ideal models for the networks because of its property of isolation of control and information planes. However, various malicious activities have managed to affect the network performance. Distributed Denial of Service (DDoS) attack has been one of the most crucial issues as far as the dependability on the Internet is concerned. This attack makes the service of any host or hub connected to the network difficult due to a wide variety of its approaches by hampering the normal functioning of the network. The inherent simplicity of SDN makes it easily vulnerable to DDoS attacks. This paper presents the techniques to detect the presence of flooding DDoS attacks in SDN. Three types of techniques have been shown to be implemented for mitigation of these attacks in SDN. Besides, a comparison of the performance of traditional networks and

SDN under this type of DDoS attack has been illustrated in terms of throughput and Round-Trip-Time. It has been shown through experimentation that performance of SDN's degrades drastically as compared to that of traditional networks under DDoS attacks.

Keywords: Software Defined Network, Flooding DDoS attack, ICMP packets, RARP packets, Detection techniques, Botnet, Mitigation techniques, throughput, Round-Trip-Time

Analysis of Impact of Network Topologies on Network Performance in SDN

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Abstract: As compared to traditional networks, Software Defined Networks (SDNs) have made the communication process more flexible, dynamic and agile; employing its unique features such as centralized control, direct programmability, and physical separation of the network control plane from the forwarding plane or data plane. As the control plane has control over several devices, the process of separation and controlling different devices has made SDN different from the traditional networks. Communication is a vital part of any network. To obtain the best communication results in an SDN, it is essential to analyze and evaluate the performance of different topologies being used. It would be interesting to find out which of these topologies can be used in SDN environment to establish the best communication and to obtain better results if not the best. In this paper, we propose to find out the best topology among four possible topologies in SDN through simulation in Mininet. This selection of best topology is based upon the evaluation and analysis of various network parameters such as throughput, Round-Trip-Time, end-to-end delay, bandwidth, and packet loss with/without link down. Based on the values of these parameters through our limited experiments for this paper, we identify the topologies that provide the best and the worst communication results in SDN. Four different types of topologies have been shown to be simulated through Mininet and Wireshark for SDN for the purpose of comparison of this performance analysis.

Keywords: Software Defined Network, OpenFlow, Mininet, Wireshark, Control plane, Throughput, Round-Trip-Time.

Diagnosis of Parkinson's Disease using a Neural Network based on qPSO

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Abstract: Disease diagnosis and analysis can be a strenuous task as there are a number of reports and test results that need to be considered and analyzed to detect the patterns of the said disease. The presented paper offers an effective solution for the same with the help of a Neural Network trained using the concepts of Quantum Computing and Evolutionary Algorithms. To the best of our knowledge, neural networks trained using a combination of quantum and evolutionary principles are introduced for the first time for the diagnosis of any disease. The proposed neural network is a three-layered network that outputs the probability of disease presence which is then used to classify the patient as diseased or healthy. The resulting solution is an amalgam of the said technologies and inherits their positives such as robustness, time and space efficiency, and noise immunity. The performance of the model is tested against a voice defect analysis data-set which is often used for the diagnosis of Parkinson's Disease. The results show that qPSO is a powerful model with an accuracy of 93.75% and can be used for early detection of a variety of diseases.

Keywords: Parkinson's Disease, Quantum-Inspired Algorithms, Particle Swarm Optimization, Feature Selection, Neural Networks.

Proposing a Framework for Citizen's Adoption of Public-Sector Open IoT Data (OIoTD) Platform in Disaster Management

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Deepak Gupta and Yunis Ali Ahmed**

Abstract: Disaster management revolves around preparing, mitigating, responding, and recovering from a sudden disruption that has catastrophic effects on human lives, economy, and infrastructure. Data of internet-connected things (termed as Internet of Things) openly available in big quantities digitally by the government leverages data-driven innovations and efficient decisionmaking in Disaster Management. However, research on exploring the predictors affecting the usability and benefits of such platforms (i.e. Open IoT Data (OIoTD) platform) from the perspective of individual unit of adoption is currently lacking. Therefore, lack of research on predictors affecting the adoption of OIoTD platform from the citizen perspective stimulated us to conduct this research. A better understanding of these predictors can help policy-makers to determine the policy instrument to increase adoption of OIoTD platform for a wider community. In order to evaluate its adoption from citizen perspective in disaster management scenario, a framework has been proposed in this study.

Keywords: Internet of Things, Open Data, Big Data, Public-Sector, Open Internet of Things Data, Disaster Management, Technology Adoption

Traffic Congestion Visualization by Traffic Parameters in India

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Abstract: This study focuses on traffic flow analysis in developing country (India) based on a month period. The data is collected by traffic monitoring cameras in a city and summarized as major traffic flow parameters such as traffic density, traffic volume, vehicle velocity, occupancy, headway. In general, traffic negative impact becomes big issues in developing countries. The main purpose of the study is visualization traffic condition by using those traffic parameters and finding out relationship between the parameters and traffic congestion. And we analyze one month traffic big data by time zone categorization for the detail traffic condition compared with traffic occupancy parameter which is used for defining traffic congestion level. These analysis becomes important to understand real traffic condition especially in developing countries. The reason is that traffic congestion becomes big issues in terms of economical loss, environment destruction, and traffic fatality growth these days. This study helps to analyze traffic condition and find out solution for Indian traffic congestion.

Keywords: traffic flow, traffic congestion, basic traffic diagram, developing country traffic.

Optimization of External Stimulus Features for Hybrid Visual Brain Computer Interface

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Abstract: To make brain computer interface (BCI) systems effective, complex cortical processing algorithms gets attention in past few years rather than optimizing different external stimulus properties. Work on finding optimal stimulus properties is still incomplete. The objective of this study is to find stimulus properties that evoke stronger cortical responses. Stimulus parameters like different size, color and frequency are analyzed for Hybrid Visual BCI based on steady state visual evoked potentials (SSVEP) and Event related potentials (P300) (Hybrid SSVEP+P300 BCI) . Study revealed that stimulus with frequency - 15 Hz, color - red and size (in angular degree) 7.960 evoked stronger cortical potentials and higher signal to noise ratio (SNR). Further green and yellow color are found comfortable as compared to red which generates more fatigue. Maximum cortical mean SSVEP amplitude calculated is 5.1 μ V and for P300 is 4.9 μ V.

Keywords: Hybrid Brain Computer Interface, Stimulus Features, Visual Evoked Potential's Amplitude, Optimization

Predicting The Outcome Of An Election Results Using Sentiment Analysis Of Machine Learning

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Abstract: In present era intellectuals and common people use social networking sites to express their views (political, economic, governance), moods, thoughts on various topics of interest. Twitter is one such happening thing which allows sharing of short messages called “Tweets”. Amount of traffic on twitter amounts to millions of tweets per day which comprises personal, business or academic purpose. In this paper we convey the forecasting of state election results (MP, Chhattisgarh, and Rajasthan). For this we analyzed 20 million tweets regarding this election using combination of machine learning techniques. We devised novel technique of sentiment analysis called “TWEEL”ZER” – (TWEE) TS + ANA (LYZER). Sample data is taken from above mentioned states and analyze it to show the mood and support for different political parties. Our results confirmed that twitter is one of the famous social networking sites which provide a huge scope of predicting results of future events like election. The process includes various presuppositions before classification. Experimental results shows the proposed technique overcome the limitation of previous techniques and achieved higher levels of accuracy with respect to counter parts.

Keywords: Twitter, Sentiment Analysis, Big Data, Machine Learning, Classification, Social Network Analysis.

A Wide-ResNet based approach for Age and Gender estimation in Face images

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Abstract: Age and gender prediction from facial images with high accuracy is of immense importance in various fields viz. social media, retail business and academic research. In this paper, we make age prediction with an optimized model for efficient training by wide residual networks (ResNet) and efficient gradient optimization on loss function for better test accuracy. Our model has been evaluated and tested on IMDb-WIKI and APPA-REAL dataset and it performed well in evaluation compared to traditional deep Convolutional Neural Networks such as VGG-16, naive SVM classifiers with feature edge parameters etc. The final accuracy achieved for our model is 96.269% with the wide ResNet architecture along with augmentation and erasing techniques on images. Significant reduction in the Mean Apparent Error

(1.73) on apparent images and Mean Apparent Error (1.65) on Real images of the APPA-REAL dataset has been achieved with respect to traditional VGG-16 model.

Keywords: Age and Gender detection, Residual Networks, Feature Extraction, mixup generator, Random Erasing, Regularization.

Bio-Inspired Algorithms For Diagnosis Of Heart Disease

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Abstract: Around 1 in every 4 deaths occur due to heart diseases in the United States every year (610,000 people approximately). One of the main reasons of fatality is due to a heart disease which also depends on various factors like obesity, diabetes, and aging. The deaths due to heart disease reduced by an indicative 41 percent in the United States between 1990 and 2016, whereas in our India it increased by approximately 34 percent from 155 to 209. The aim of this study is to aid the diagnosis of heart disease using Bio-Inspired algorithms. In this paper, a probabilistic approach for the diagnosis of heart disease is inspected with the use of Bio-Inspired Algorithms on Statlog Heart Database from the UCI Database. Bio-Inspired Algorithms used were Binary Ant Colony Optimization (ACO), Binary Firefly Algorithm (FA), Binary Particle Swarm Optimization (PSO), and Binary Artificial Bee Colony (ABC) for feature selection. Bio-Inspired Algorithms targets to decrease the dimensions of the dataset by defining the attributes which are most discerning. This helps us to successfully and efficiently classify whether a person is suffering from any heart disease or not. Out of the four algorithms, using the Binary Particle Swarm Optimization we have got the maximum accuracy of 90.09% and the classifier used was Decision Tree Classifier. The results show that the algorithm is adequately quick and definite to be used in the analysis.

Keywords: Binary Ant Colony Optimization (ACO), Binary Firefly Algorithm (FA), Binary Particle Swarm Optimization (PSO), Binary Artificial Bee Colony (ABC), Optimization, Bio-Inspired, feature selection.

Emotion Detection through EEG Signals using FFT and Machine learning techniques

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Abstract: Detecting human emotions using various verbal and non-verbal communicating means such as facial, speech, textual and physiological signals are in use

from past long time. However, verbal and facial methods are prone to deception. Therefore, emotion recognition through physiological signals has become an active area of research nowadays. Further, Brain-Computer Interaction (BCI) and Emotion detection through Electroencephalographic (EEG) signals are popular domains for the detection of emotional states. Whereas, the accurate processing of the EEG signals is still a major challenge due to noise and different bands of frequencies present in the signals. In the presented exposition, a methodology using the combination of Fourier Fast Transform (FFT), Principal Component Analysis (PCA) and k Nearest Neighbor (k-NN) has been proposed for emotion detection. To the best of our knowledge the above mentioned combination is first time introduced in the presented paper. Fourier Fast Transform (FFT) converts a signal from a time or space domain into frequency domain and thus eases the analysis of a given signal. PCA was used for feature selection and further, the selected features were categorized into given emotional states using k-NN classifier. The presented analysis carried out using FFT outperformed the previous experiments, with an accuracy of 96.22%.

Keywords: EEG signals, Statistical features, Fast Fourier Transform (FFT), Principal Component Analysis (PCA), k-Nearest Neighbor (k-NN).

Secure MODIFIED AES Algorithm for Static and Mobile Networks

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Abstract: Security has been a primary concern for each type of network to provide a secure communication among the users of different types of network. Presently, many techniques are present for providing security in networks but Advanced Encryption Standard (AES) has been proved to be the most prominent, keeping the data security as the major factor in data transmission. In the presented exposition, a modified variant of AES algorithm named as Modified Advanced Encryption Standard (MAES) has been introduced for secure data transmission in wired and various wireless networks namely, MANET, VANET and FANET. The proposed technique focuses on both prevention and detection of the security attacks on the network. Theoretically, it is difficult to break the security or crack the key in the assumed network. The proposed protocol takes 2256 computations as compared to the basic AES standard which take 232 in case of differential fault analysis. The simulation results show that the proposed MAES outperformed AES in terms of security against attacks such as side channel attacks.

Keywords: AES, MANET, FANET, VANET, Security.

Modified Ant- Lion Optimization algorithm for improved diagnosis of Thyroid disease

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Abstract: Thyroid is one of the most common disease affecting millions of individuals across the world. According to the findings from numerous studies and surveys on thyroid disease, it is estimated that about 42 million people in India and around 20 million people in America, are suffering from some form of thyroid diseases and women make up the majority of thyroid patients among them. It is caused due to the under (Hypothyroidism) or over (Hyperthyroidism) functionality of thyroid gland, which is responsible for maintaining the metabolism of the body and it is imperative to diagnose its effects as early as possible so that a possible cure or treatment can be performed at the earliest. This paper aims to propose a Modified Ant-Lion optimization algorithm (MALO) for improving the diagnostic accuracy of thyroid disease. The proposed MALO is employed as a feature selection method to identify the most significant set of attributes from a large pool of available attributes to improve the classification accuracy and to reduce the computational time. Feature selection is one of the most significant aspect of machine learning which is used to remove the insignificant features from a given dataset to improve the accuracy of machine learning classifiers. Three different classifiers namely, Random Forest, k-Nearest Neighbor (kNN) and Decision Tree are used for diagnosing the thyroid disease. The experimental results indicate that MALO eliminates 71.5% insignificant features out of the total number of features. The best accuracy achieved on the reduced set of features is 95.94% with Random Forest classifier. Also, a notable accuracy of 95.66% and 92.51% has been achieved by Decision Tree classifier and k-Nearest Neighbor classifier respectively. Additionally, MALO has been compared with other optimized variants of evolutionary algorithms to show the effectiveness and superiority of the proposed algorithm. Hence, the experimental results indicate that the MALO significantly outperforms the other algorithms present in the literature.

Keywords: Thyroid disease, Ant-Lion optimization algorithm, Modified Ant-Lion optimization algorithm, Evolutionary algorithm, Feature selection, Machine Learning.

A New Efficient and Secure Architecture Model for Internet of Things

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ABSTRACT: Internet of Things (IoT) considered as one of the latest intelligent communication technologies in the world. IoT has been growing in different architectural designs which contributes to the connection between heterogeneous IoT devices. Although, there are many different IoT architectures have been proposed, but they are still suffering from many challenges such as standardization, security, and privacy. This paper will focus on reviewing some existing IoT architectures used to provide security and privacy for IoT networks. Moreover, this paper will introduce a novel IoT security architecture model named IoT-EAA. IoT-EAA tends to satisfy different requirements of IoT security. Hence, the novelty of the proposed IoT-EAA architecture model comes from an important layer called the security layer. This layer employs an external and internal security service against different attacks for each layer within the IoT-EAA architecture model. The proposed architecture model is compared to existing IoT architectures by using some criteria such as security, power and time consumption. Therefore, the proposed IoT-EAA increases security and decrease the power and time consumption, which consider a good contribution to enhance the performance of IoT architecture.

Keywords: Internet of Things (IoT); IoT Architecture; IoT Security; privacy.

Desmogging Of Smog Affected Images Using Illumination Channel Prior

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Abstract: Visibility restoration of smoggy images plays a significant role in various computer vision applications. However, desmogging designing an efficient prior is still a challenging issue. The majority of existing researchers have designed restoration models for rainy, dusty, foggy, hazy etc. images only. Therefore, these approaches perform poorly with smoggy images. In this paper, a novel illumination channel prior is proposed to restore smoggy images in a significant way. A gradient magnitude based filter is also utilized to refine the transmission map. The proposed desmogging approach is compared with the existing visibility restoration approaches over ten real-time smoggy images. The subjective and quantitative analysis reveal that the proposed desmogging approach outperforms others.

Text Summarization with Different Encoders for Pointer Generator Network

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Abstract: The ever growing increase of documents have compelled the need of text summarization. In the past, deep learning models have shown state-of-the-art results for text summarization. In this paper, a comparison is conducted between different encoders for pointer generator network. The two different encoders used for comparison are bi-directional GRU encoder and bi-directional LSTM encoder. The decoder used with both the encoders is unidirectional LSTM decoder. The results are evaluated using ROUGE value. The experiments show that the bi-directional LSTM gives better result in comparison to GRU encoder.

Keywords: Text Summarization, Abstractive, Deep Learning, RNN.

Performance Evaluation of Meta-Heuristic Algorithms in Social Media using Twitter

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Abstract: Internet has opened avenues for social presence ubiquitously. Resulting in sharing of opinions, sentiments and reviews across various social media platforms such as Twitter, Facebook, Instagram creating practical demands and research challenges. This paper presents a review on performance evaluation of meta-heuristic algorithms in social media using opinion tweeted data set. We begin with generalized view of meta-heuristic algorithms. And then, we investigate the differences among cuckoo search, KNN and other meta-heuristic algorithms. Followed by comparative analysis of performance when applied on Twitter dataset. Finally, we conclude by discussing some challenges and open problems related to application of meta-heuristic algorithms in social network analysis.

Keywords: Cuckoo Search, KNN, Meta-Heuristic algorithms, Twitter.

Heuristic Coordination for Multi-Agent Motion Planning

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Abstract. Fuzzy logic and potential field method are competent techniques for autonomous mobile robot navigation. In this paper, a conventional potential field based scheme for multi-agent motion planning has been presented along with a genetic-fuzzy based navigation scheme for offline performance comparison. They are used to generate decision against collision in the best possible manner. The potential field method (PFM) relies on its potential function and GA-Fuzzy works based on its knowledge base. Initially, the number of robots is taken as eight; later on, it is increased to 12. The necessity of the coordination scheme is more for a larger number of robots. Finally, the performances of those two approaches are compared to solve 100 test cases. GA-Fuzzy based motion planner shown adaptive in comparison to the PFM.

Keywords: Fuzzy Logic, Multi-Robot Navigation, Coordination, Potential Field Method, Genetic Algorithm (GA).

Optimization of Click through Rate Prediction of an Advertisement

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Abstract. Online advertising is one of the most effective ways for businesses of all sizes to expand their reach. Advertisers are only charged when a user actually clicks on their ad, hence the name “pay-per-click.” Algorithms for prediction of advertisement clicking like Multi-Criteria linear regression(MCLR), Kernel-based multiple criteria regression(KMCR), Multi-Criteria linear programming(MCLP) have been proposed for click-through rate(CTR) prediction analysis. Behavioural targeting chooses the right ads for the query and the order in which they are displayed .This greatly affects the probability that a user will see and click on each ad. This paper deals with effectiveness in accuracy of the frequently clicked advertisements, we used FIREFLY algorithm to serve the purpose. This is tested on the KDD cup 2012 datasets and on a data collected from a popular website of US and UK market. The results were optimised to 0.99 accuracy proving that the proposed algorithm is better than the existing methods.

KeyWords: CTR, Online Advertisement, Behavioural Targeting, Firefly Algorithm

PREDICTION OF CERVICAL CANCER USING CHICKEN SWARM OPTIMISATION

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ABSTRACT: Chicken Swarm Optimization algorithm for feature selection is proposed in this paper, which can be used for the prediction of cervical cancer. Cervical Cancer is the type of cancer that occurs at the cells of the cervix – the lower part of the uterus, which connects the vagina. This kind of cancer is generally caused by several strains of the human papillomavirus (HPV), a sexually transmitted infection. Feature Selection is a tool of optimization algorithm and plays an active role in the area of Machine Learning. The amount of data available for processing in Machine Learning problems has increased rapidly in recent years. So, the Feature Selection was introduced to solve this problem. Feature Selection is used when there is a need to eliminate such redundant features so that a better subset of features can be obtained by which dimensionality of dataset is reduced considerably. The Chicken Swarm Optimization is an algorithm method inspired by nature, which is used for optimization techniques, proposed for feature selection for prediction of cervical cancer. Impersonating the hierarchical order in the chicken swarm, which includes hens, roosters, and chicks. CSO can productively extricate the chickens' swarm intelligence to optimize problems. CSO has the ability to attain exceptional optimisation results in terms of optimisation correctness. In CSO the chicken swarm is divided into various sets or groups, which consists of a single rooster and a number of hens and chicks. Different chickens follow various kinds of motion. There exists competition amongst various chickens under specific hierarchical order. We hope that with the help of this project cervical cancer can be predicted early and proper treatment can be provided on time. The proposed Chicken Swarm Optimisation shows the best accuracy in the feature selection from the Cervical Cancer dataset with a very fast computational time of a few seconds.

Keywords: Cervical Cancer, Chicken Swarm Optimization, Feature Selection, Machine Learning, Evolutionary Algorithms, Classification, Nature Inspired;

Construing Attacks of Internet of Things (IoT) and A Prehensile Intrusion Detection System for Anomaly Detection Using Deep Learning Approach

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Abstract: An abundance of physical instruments around a group of countries which are now associated to the hyperspace, collecting or sharing data known as the internet of things (IOT). As the statistic of IoT devices increases, new security and privacy dare will be confronted for both home and office devices. An intrusion detection system (IDS) helps to detect the malicious system to get notified when any malicious flurry or anomaly occurred in the system. In this paper, we dispute 4 types of attacks of IoT ambiance. We have proposed such a model that recuperates from attacks like

DoS (Denial of Services), DDoS (Distributed Denial of Services), R2L (Remote 2 Local), U2R (User to Root) and probe at-tack. Our model mainly focused on the security of home-based appliances like air-condition, fan, light, television, oven, refrigerator, printer, heater, washing machine, gey-sers, electric stove and others electronic devices. We have developed an algorithm by us-ing deep learning approach to dispute attacks and give security to the user. Deep learning is divergent from regular machine learning approach which has self- taught techniques (STL) that represents data such as images, video or text, without using human domain knowledge. They have more ductile architectures that comprehends from raw data and can increase their accuracy level when acquires more data. Our model analyses 6 features a server to identify whether it is malicious or not. Self-taught technique of deep learning has been approached in our paper. We have used NSL-KDD dataset for training and test-ing.

Keywords. Internet of Things · Intrusion Detection · Attacks · Deep learning

Describing Image Using Neural Networks

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Abstract: Automatic generation of textual description of an image is a challenging problem of the Computer Vision domain. This can be at-tributed to the fact that generating textual description of an image re-quires the application of image processing techniques in conjunction with natural language processing methods. This paper proposes a model to automate the process of generating textual description of an image us-ing the concepts of neural networks. The proposed model can generate human-like sentence for expressing an image. The proposed model is vali-dated using the MS COCO dataset. The obtained results clearly indicate that the performance of the proposed system increases with an increase in Convolution layers as well as increase in depth.

Keywords: CNN RNN LSTM.

An Efficient Expert System for Proactive Fire Detection

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Abstract: Earlier there were many fire detection systems, which depended on re-active approach, that implies they actuate after the fire happened. The fundamental reason of fire being dangerous is that people don't get aware of it at the proper instance of the time. In this paper, an Expert system is proposed to access the fire risk and give an outcome in the form of the impact range of fire. The core content of this

research is dependent on Rule-Based System which works on proactive approach. By observing the values of the environment and fire metrics, fire range can be detected. For this expert system temperature, flaming front rate of spread, heat flux etc. have been used. The experimental results have proved to be very promising regarding efficiency. The time taken for result generation of proposed system is 7ms which is very less than existing systems. The performance of proposed fire detection system has been tested over the benchmark values of the fire metrics and its outcomes demonstrate the severity of the fire.

Keywords: Fire detection, Expert System, Rule-Based System, Reactive and Proactive Approach.

Computational Intelligence for Technology and Services Computing Analysis of Sentiment Analysis Techniques

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Abstract: Emergence towards valuing customer reviews and their opinions is the prime propelling factor for any exploring business. Electronic Commerce has clinched the world, and the majority preferring to buy products through these web-sites online. Due to the increase in demand for e-commerce with customer's preference towards online purchasing of products over physically moving from shop to shop (offline purchasing), there is the huge amount of information being shared to and fro. The e-commerce websites are loaded with immense volume of data and customer reviews thus being generated. This huge volume of data is in its diversity and its structural randomness. The customers face difficulty in precisely finding the review for a particular feature of a product that they intend to buy. Also, there are mixtures of positive and negative reviews thereby increasing the complexity for customers to find a cogent response. So to avoid this confusion and make this review base more transparent and user friendly, a technique to extract feature based opinion from a diverse pool of reviews and processing it further to segregate it with respect to the aspects of the product and further classifying it into positive and negative reviews using machine learning based approach. The analysis of the data generated in huge amount holds the prime centered topic, underlying Data Analytics. This paper proposes the study and analysis of obtaining the best methodologies on sentiment analysis of consumer reviews in context to the features of a product. The system aims at providing a summary that represents the extent to which the consumers who had already bought the particular product were or were not satisfied with the specific feature of the product. Due to this sentiment analysis, there is a feedback environment being generated for helping customers buy the right product and guiding companies to enhance the features of product suiting consumer's demand.

Study of Application Layer Protocol for Real-time monitoring and maneuvering

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Abstract. The motes in the sensor network with having low processing capability and limited storage space combined to form a tiny smart sensor with the restricted power source cannot be directly used as things in the present network of an Internet of Things. Millions of different devices placed anywhere at any time performing any job can be connected and transfer data can be established in the internet of things. In a network of billions of devices connected together security of data transmitted can only be provided if the protocol at the application layer is lightweight to be accessible by tiny motes. Application layer comes at the top of the TCP/IP heap. In this article, two major protocols of application layer HTTP and MQTT have been discussed and tested with a real-time operated hardware module with the capability to internet connectivity. The arena for testing both the protocols consist of the transmission and reception of data in the network of tiny motes connected with the network of the internet.

Keywords: HTTP, MQTT, IoT, TCP/IP, ESP

Detection of Parkinson Disease using Machine learning techniques for Voice and Handwriting features

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Abstract: The present paper proposes a new approach to implement the supervised and unsupervised learning methods for the detection of Parkinson's Disease. This paper also shows the comparison of performance in terms of accuracy when feature selection has been done using Principal Component Analysis (PCA) and Linear Discriminant Analysis (LDA). Parkinson's adversely affects the central nervous system and it is incurable, ultimately leading to the death of the sufferer. Therefore, early detection of Parkinson's disease is of utmost importance and this work is primarily focussed on it. For early diagnosis of the disease it is vital to determine a path through which our daily activities can help us predict the disease and considering this the features for detection were extracted from multiple voice recordings and the handwriting patterns shown while drawing, meanders and spirals, by the Parkinson's patients. Four machine learning classifiers, namely, Support Vector Machines(SVM), K Nearest Neighbours (KNN), Decision Trees and Random Forest for the detection of Parkinson's, are used in this paper. The highest accuracy obtained considering Voice features is 99.67% with specificity and sensitivity equals 1. Hand Meander pattern features gives the highest accuracy of 87.36% with specificity 0.9453 and Hand Spiral pattern features yielded the highest accuracy of 84.73% and specificity 0.9609. The

experimental results have revealed that these features can be considered for early detection of the Parkinson's Disease(PD), leading to the longer life of the patient.

Keywords: Parkinson disease, Principal Component Analysis, Linear Discriminant Analysis, Feature selection, Machine Learning.

Audio video aid generator for multisensory learning

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Abstract: Advancement in technology has given a different dimension to the conventional teaching techniques. Such efforts try to stimulate different senses for increasing the retainability and understandability of the information shared. The content created to serve this need is highly non-reusable and can't be easily extended moreover, some skills for this content generation are highly specific like knowledge of creating animation etc which just increases the overall cost of the content. We focused on using the present text material which has been evolved finely since centuries. We propose a system for the creation of multimedia content using related image illustrations from the existing text. The system proposed is been deployed as a web application, and each component is individually validated for soundness. We also share results for the precision of the developed classifiers that were used and a demo clip generated for a complex test case. We ended with a highly modular architecture for the system which can be easily extended as well as tweaked for other complex use cases.

Keywords: Multisensory learning, Multimedia Generator, Artificial Intelligence

e-Labharthi - Information Management for Sustainable Rural Development

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Abstract: The use of ICT technology as a building block for e-governance has been proved to be a critical strategy for efficient and effective delivery of services to the

citizens of a nation. However, these services are usually limited to the urban areas of the country and the citizens residing in rural areas often fail to receive these services and benefits. This paper proposes a framework 'e-Labharthi' for information management for sustainable rural development. The proposed framework facilitates the delivery of e-services to the users residing in rural areas. The proposed framework incorporates advanced technologies in conjunction with the legacy requirements for providing value added services to the rural citizens. The methodology proposed in this paper attempts to incorporate transparency and time-efficient processes in the system in order to provide citizen oriented services to the people. It is to be established through research study that Information and Communication Technologies (ICT) initiatives for rural areas can easily be enabled through e-governance in order to achieve sustainable rural development.

Keywords: E-governance, Information Management System, Database, Rural Development, Web Portal

Prediction of celiac disease using machine-learning techniques

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Abstract: In the 21st century, there has been remarkable progress in the integration of technology into the world of medicine. Further, advancements in medicine and technology have produced a surge of data related to various fields. Data Mining is an effort to not let this huge amount of data go wasted and use it to reveal better and precise targeted decisions instead. Data mining and Machine Learning hold great potential for the healthcare sector as they can be used to remove the inefficiencies as well as greatly reduce healthcare costs. Celiac Disease is one of the most common diseases found in the current population. Patients suffering from Celiac disease cannot consume gluten without having an adverse effect on their health. Less awareness also usually results in late detection of the disease. The presented exposition explores the prediction of Celiac Disease through a medical dataset. Computer based prediction could help in early detection of Celiac Disease in patients and give them a better chance at having a normal life. It also scrutinizes the possible effects that the presence of Type 1 Diabetes, Type 2 Diabetes (T2D), Autoimmune thyroid disease (AITD) and Non Autoimmune thyroid disease (NAITD) have on the occurrence of Celiac disease. On the available data set, selective machine learning techniques have been applied to achieve an optimal accuracy.

Keywords: Celiac Disease, Data Mining, Machine Learning, Diabetes

Review of WSN and Its Quality of Service Parameters Using Nature Inspired Algorithm

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Abstract: Wireless sensor networks have become the focus of many recent researches focusing on topics like energy optimization, compression schemes, self-organizing network algorithms, routing protocols, quality of service management, security, energy harvesting and many more. The three major concern revolves around efficient energy usage, service quality and security management. To achieve success in these domains, it is imperative to have WSN optimization. Also, in applications like vehicular ad hoc networks and body area sensor networks, there can be conflict between these concerns and hence requires some trade-off. Because of these heavy energy expenditure and data processing needs, there is a requirement to review which WSN based research done for optimizing the same through the use of bio-mimetic strategy-based optimization techniques which encompass numerous optimization algorithms. Thus this paper reviews the various researches done to optimize quality of service parameters of wireless sensor networks and hence also aims to classify the challenges which are faced by these nature inspired algorithms in WSN environment and thus identify future scope to consider a more comprehensive approach towards the subject matter.

Keywords: Wireless sensor networks, nature inspired algorithms, challenges, QoS, Optimization

Adjacency Cloud-oriented Storage Overlay Topology using Self-organizing M-way Tree

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Abstract: This paper proposes a self-organizing and scalable storage approach named Adjacency COS Overlay Topology (ACOT). This topology is based on balanced multi-way tree organization. ACOT removes the traditional static and centralized storage management and adopts the dynamic and highly scalable data accessibility for the cloud-oriented storage system. A Hadoop test-bed has been created for experimental review and result analysis on various aspects like dynamicity, scalability, effectiveness and bandwidth evaluation of proposed topology. Our experiments have proven that the ACOT topology offers the dynamic and highly scalable for cloud-oriented storage systems.

Keywords: Cloud computing, Self-organizing, Cloud storage, Multi-way tree

HCI using Gestural Recognition for symbol based communication methodologies

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Abstract: Sign language in itself is the only tool of communication for the society which is not able to hear voices and speak words. Using sign language, they can express their emotions and thoughts and can convey what they want to say. But not everyone understands sign language, only the people who require it do. So people with such kinds of handicaps need a translator with them in order to convert their language to a common tongue and that's the main reason of sign language recognition becoming such a crucial task. Since sign language consists of different movement and position of the hand, therefore, the accuracy of sign language depends on how accurately the machine could recognize the gesture. We are trying to develop such a system what we call translating HCI for sign language. In this system, the user has to place their hand in front of the webcam performing sign gestures and in real-time, the system will read your hand gesture and will return the respective character/alphabet on the screen. Utilizing the proposed system normal people can understand sign language and can easily communicate with hearing impaired people.

Keywords: Deep Learning, Image Processing, HCI, Machine learning, Convolutional Neural Network.

Detection of Devanagari Text from Wild Images through Image Processing Techniques

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Abstract: Multilingual society makes it difficult for a common man to understand the text written in various languages. Being the national language of India, Hindi is widely understood by the masses. Detecting text from randomly available images and translating it into a local choice of language is one of the peculiar and less explored research areas in image processing and is very popular amongst the scientific community. Moreover, it is useful for removing the language barrier present on earth. In this paper, we propose a complete solution to detect text from natural scene images as in wild images, and converting it into a textual format. The proposed work follows a combined approach of Stroke Width Transform (SWT) and Maximally Stable Extremal Regions (MSER) to reduce the computational time. There are 3 steps involved in our proposed approach. In the first step, we are first segmenting out the

text by using the binarization and SWT algorithm. Then, the second step implements the MSER to detect the text regions and bounding boxes. The regions detected in the second step acts as letter candidates, which are then recognized in the third step using the Optical Character Recognition Approach (OCR). The experimental results show that the characters are being recognized at an accuracy of 77% approximately, outperforming the existing approaches in the literature.

Keywords: Stroke Width Transform, Maximally Stable Extremal Regions, Tesseract, Optical Character Recognition

A Capacitated Facility Allocation Approach Based on Residue for Constrained Regions

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Abstract: Allocation of services has observed widespread applications in real life. Therefore, it has gained comprehensive interest of researchers in location modeling. In this paper, the authors aim to allocate capacitated facilities to demand nodes in constrained demand plane. The allocation is aimed to minimize the total transportation cost. The authors consider continuous demand plane, which is constrained by the presence of barriers. Here, the authors present a Residue Based Capacitated Facilities Allocation (RBCFA) approach for allocation of capacitated facilities. Finally, an illustration of RBCFA is presented in order to demonstrate its execution. Authors also perform tests to validate the solution and the tests yield that suggested approach outperforms traditional approach of allocation. It is observed that although the achievement by RBCFA is not significant for few resources, achievement is significant as the number of resources rise and may be represented by a linear function where is the input size.

Keywords: Facility location; Barriers; Visibility Graph; Constrained demand plane; Convex Hull

DYNAMIC WEB WITH AUTOMATIC CODE GENERATION USING DEEP LEARNING

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Abstract: The typical task assigned to a developer for any design created by a designer is very crucial when it comes to building any software. The process involves

tedious and repetitive steps of adapting to rapidly changing client requirements and thus, accommodating those changes in the prototype. This poses a barrier in the software development process. As a solution to this problem, we introduce a model that can be used to automate the process of generating front-end code from hand-drawn wireframes by leveraging deep learning techniques. The image features of the GUI mock-up which is fed to the model as input are extracted to generate markup tags as tokens and rendered in the form of reusable components achieving an overall BLEU score of 0.92.

Detection of Illegal Garbage Disposal from a moving car using Image Processing

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Abstract: One of the major environmental crime is littering. It is one of the most significant and visible signs of pollution and waste of resources. According to the Victorian Litter Action Alliance, in 2009-10 around 41,875 tonnes of litter was collected through litter bins, representing a 46.8% increase from 2008-09 figures. Approximately 95% of resources are allocated to litter management and 5% to litter prevention. Therefore, it is of an utmost importance to develop strategies and models to prevent littering. The present paper focusses on real time detection of roadside littering done by passengers in moving vehicles. The proposed model consists of three major steps, namely, Detection of Vehicle, Frame extraction and its analysis and Detection of garbage. In the first step, the vehicle is detected using the Haar-cascade classifier method, then the processing is done to find out motion near the car using background subtraction and frame differencing method. Finally, the garbage is detected by calculating and analyzing nature of the curve obtained in the final output. The experimental results indicate that if a parabolic or linear curve is observed in the motion near the detected car, then it is considered to be the motion caused due to the garbage. A very high recognition rate is observed in the results. The proposed approach can be further implemented by the government to detect littering in real time.

Keywords: Garbage detection, Video analysis, Image processing, Haar Cascade, Machine Learning.

Using Neural Network to identify forgery in offline signatures

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Abstract. This paper proposes an efficient method for the identification of forged signatures from offline handmade signatures. Signatures are majorly used as personal

verification that can be abused by any unauthorized third party who would feign the identification of an individual which signifies the need for an automatic forgery identification system. Over a past few decades, there are significant attempts for the identification of forgery of signatures. Identification can be done either Online or Offline based mode. Offline mode works on the input image of a sign. We aim to propose a technique for offline identification by using a simple shaped based on geometrical features including Area, Centre of gravity, Eccentricity, Kurtosis. Database of signatures is trained for two classes genuine and forged. Two different classifiers, one based on SVM and other on Artificial Neural Network (ANN) was used to identify and classify the signatures as genuine and forged.

Keywords: Offline Signature, Classification SVM, Artificial Neural Network Contour.

Analyzing the impact of age and gender on user interaction in gaming environment

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Abstract: The age and gender are the significant demographic characteristics in the context of usability. The different age and gender groups may have a different perception of the aesthetics of user interfaces. The primary objective of this study is to analyze the influence of these factors on user performance in a gaming environment. To investigate the performance of users on commonly used tasks (Clicking, Pointing and Typing), 360 participants participated in controlled lab experiments through gaming prototype. The performance of the participants was analyzed through different statistical methods. It is observed that there were significant differences between males and females during interaction with the computer. Such differences were also found in the spectrum of age groups. This study may pave new research directions to explore the impact of these factors in multiple different contexts.

Keywords: User Performance, Aging Factor in usability, Automated User Profiling, Usability in gaming environment, Impact of age and gender on usability

Transfer Learning Model for detecting early stage of Prurigo Nodularis

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Abstract. Skin diseases are becoming increasingly prevalent all over the world due to a multitude of factors including disparity in income groups, lack of access to primary health care, poor levels of hygiene, var-ied climate and di erent cultural factors. The ratio of dermatologists to the number of people a ected is very low and hence there is a need for expedited and accurate diagnosis of skin diseases. Prurigo Nodularis can be a bothersome-to-enervating disease and its treatment requires a mul-tifaceted approach depending on the severity and underlying etiology of the disease. Often, once patients are diagnosed with Prurigo Nodularis, they are also advised a complete work-up to rule out any underlying sys-temic disease. Knowing the advantages of early detection of the disease to facilitate quick and suitable treatment, this paper proposes the use of Deep Learning for accurate and early detection of prurigo nodularis. Di erent architectures of convolutional neural networks were used on the dataset of diseased skin images and the results were compared to ascer-tain the best method. Thus, with a combination of Transfer Learning on the image dataset and applying the extra tree classi er on the symp-toms dataset, we were able to correctly predict the occurrence of prurigo nodularis with an accuracy of around 96%.

Keywords: Transfer Learning, Machine Learning, Feature Extraction

Analysis of Prediction Techniques for Temporal data based on Non Linear Regression model

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Abstract: This paper depicts algorithms FIPM (Frequent Item Prediction Method) and FTPDS (Frequent Temporal Pattern Data Stream) based on linear & non-linear regression, which are used to predict the trends in sequence in stream data. Sliding window is used for gathering and preprocesses real-time stream data. FIPM and FTPDS algorithms compute Support(y) for appointed sequence and describe linear & nonlinear equations to forecast sequence trends in the future. In this paper we assess the MSE (mean square error) during prediction by using linear & nonlinear regression based algorithms.

Keywords: Data Mining, Prediction, Frequent Data sets, Linear Regression, Non Linear Regression.

Routing and Security Issues in Cognitive Radio Ad Hoc Networks (CRAHNS) – A comprehensive survey

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Abstract. Cognitive Radio has been considered as a potential contender to interpret the problems of limited availability of spectrum and inefficiency of spectrum usage. Cognitive radio ad-hoc networks (CRAHNS) are integrated with both cognitive and spectrum properties therefore routing is the most important parameter that needs to be addressed. Due to higher mobility of nodes, cooperative communication amongst nodes and multiplicity in the available channels makes the routing protocols for CRAHNS more vulnerable to security attacks. Hence, routing and security are important considerations that need to be addressed individually. It is essential to design a secured spectrum aware routing protocols to offer healthier stable routing performance and enhanced security. In this paper, the challenges and solutions for routing and security of CRAHNS are outlined. Fundamentally, CRAHNS are more susceptible to security threats because of its intrinsic nature. Hence in order to validate it, an algorithm has been proposed in the paper to check the vulnerability of multi channel CRAHNS.

Keywords: Cognitive radio, cognitive radio ad-hoc network, routing protocols, spectrum awareness, security

High Data Rate Audio Steganography

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Abstract: Steganography is an art to hide information without affecting perceptual transparency of digital media files. Media files include audio, video, image, text, software and so on. Hiding information is required for secure transmission of data. In general, media files are known as cover file which wrap the data to be transmitted. The media file must be imperceptible before and after embedding of data. But when we embed data, we do some modification at different bit plane that introduces error or noisy media. Motivation of this work is based on the property of Human Auditory System (HAS) which is discernible towards any kind of modification or distortion in audio file. Keeping in mind this HAS property, in this work, we concentrate on hiding large amount of data in a small size cover file considering reduced noise and minimized bit error rate.

Cognitive Fatigue Detection in Vehicular Drivers using K-Means Algorithm

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Abstract: In vehicular drivers the cognitive fatigue has been one of the major factors that leads to loss of lives or disabilities due to vehicular accidents [3]. The factors governing driver fatigue such as monotonous driving, traffic conditions on road, road conditions, insufficient sleep, anxiety, health conditions, work environment, type of vehicle, driving comfort etc. does affect largely the driving behavior. Many researchers across the world are working finding best suitable methods to minimize vehicular accidents. In this paper our proposed approach is an alternative solution to detect cognitive fatigue in vehicular drivers to decrease the number of incidence of vehicular accidents specially those occurred due to cognitive fatigue [1]. The objective of this work has been to provide simple classification technique using K-means algorithms. The basic K-means and two modified versions has been proposed and validated to reliably detect cognitive fatigue while driving. It is of paramount importance that the sensory parameters are chosen such that they could be used without causing discomfort to the driver and without creating obstruction while driving. The data for simple physiological signals such as Skin Conductance (SC), Oximetry Pulse (OP) and Respiration (RSP) for Pre and Post driving state of drivers has been used for sensing change in fatigue level of the drivers [6]. All features of Statistical and Wavelet were extracted and analyzed [9]. Selected features were used as input to the classifiers designed and implemented using Basic K-means and two modified versions. Finally comparative performance analysis of classifiers and the features is discussed. This paper discusses prominent results obtained during experimentation. Further investigated which of the features could fetch maximum classification accuracy, so as to reduce the computational complexity [3]. It could be found that a smaller set of features could provide the correctness of fatigue detection.

Keyword: Vehicular Driver; Skin Conductance; Oximetry Pulse Signal; Respiration; Cognitive Fatigue; Wavelet Features; K-Means Classifier;

Optimal Route Selection for Error Localization in Real Time Wireless Sensor Networks (ORSEL)

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Abstract. Wireless sensor networks provide a wide array of applications. They have crucial application areas of intrusion detection, fire detection or several other critical information reporting applications. In such condition any information delayed is information of no use. Thus real time data delivery is essential. An optimal route for fast data delivery and fault tolerant, error free operations are keys to such a real time wireless sensor networks. In this paper, we propose an Optimal Route selection for Error localization in Real Time Wireless Sensor Networks (ORSEL) scheme. It can

guarantee soft reliability in real time data delivery and provides improved miss ratio of data packets. It considers the fact that there are a number of reasons that increase the end to end delay in data delivery in WSN. A packet en-route can be lost due to channel contention, interference, link break, dead nodes in the path, malicious/compromised node/s in path or simply die in a queue of re-transmission in a node on the route. ORSEL uses a communication link trust (CLT) value of a link between two nodes which acts as the factor of deciding the minimum end to end delay in delivery of packet while avoiding the interference and malfunctioning nodes in the network, if any. As the results received, it is verified that the number of packets successfully delivered to the sink have increased and the miss ratio, cumulative packets consumption have improved.

Keywords: Localization, Fault Tolerant, Optimal route selection, Real time data delivery, Real time wireless sensor networks.

A MOBILE-CLOUD FRAMEWORK WITH ACTIVE MONITORING ON CLUSTER OF CLOUD SERVICE PROVIDERS

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ABSTRACT: Openstack software is used to achieve huge groups of compute, networking assets and storage. Openstack services are organized following the Shared Nothing principle. Each instance of a service (i.e., service worker) is exposed through an API available through a Remote RPC. Openstack exposes a precisegorgeous API which can be functionalto manage every characteristic of your cloud.One of themethods of work together with an Openstack cloud is programmatically. There is a Ruby Gem named Fog that allows such interaction.The planned work targets to realize by letting every mobile node to allocate the scalar data and multimedia data among cloud providers, in order to increase packet transfer rate and to decrease the end-to-end delay by estimating buffer usage of bottleneck cloud providers. Our proposal will greatly alleviate the packet loss problem, thereby achieving significant improvement in end-to-end packet sending performance

Keywords: Remote Procedure Call, Application Program Interface, Internet Group Management Protocol, User Datagram Protocol, Data Integrity, Turnaround Time

Robust Denoising Technique for Ultrasound Images based on Weighted Nuclear Norm Minimization

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Abstract: Image denoising is an efficacious pre-processing requisite procedure of ultrasound image investigation. In this study two denoising techniques adopted and evaluated to compare their performance. The widespread use of ultrasound images facilitates the diagnosis of various diseases. They pose several challenges and hence efficient pre-processing pipelines are essential to extract useful diagnostic information from the images. Much light is thrown on the Common carotid artery (CCA) images in this study. Two approaches are endorsed for image denoising involving and converting to grayscale for effective diagnosis. Weighted nuclear norm minimization (WNNM) approach is found to be more impressive and better. This also bolstered the validation methods computed in the work. It pretends that the study is useful in extracting diagnostic information. The experimental results impart authenticity to the proposed technique in the adequate analysis of ultrasound images. The principle objective of this work is to aid and accentuate the succeeding processing stages such as segmentation and object recognition to facilitate accurate and exact diagnosis.

Keywords: Image denoising, Ultrasound image, Weighted Nuclear Norm Minimization (WNNM), Common Carotid Artery (CCA), Structural Symmetry Index Measure (SSIM) and Feature Similarity (FSIM)

Comparison of Machine Learning models for Airfoil Sound Pressure Prediction and Denoising for Airbots

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Abstract. Unmanned Aircraft Systems (UAS) has now been used in various fields including emergency services to army drones in the present day. Hence there exists a requisite for developing an automation to avoid any obstacle that it encounters. Since these aircrafts are almost present in most places, there is also a need for noise reduction for public health consideration and as well as keeping the target clueless while vigilance in enemy's scope. In this paper, we implement different types of machine learning algorithm mainly different re-gressors to predict the airfoil sound pressure which can be further integrated and used for avoiding obstacles on the way of UAS with denoising. The proposed work dishes out one of the simple and fairly accurate model for the prediction of the sound pressure generated by UAS, using which any mechanical methods can be applied for its reduction. The algorithms are experimented with a sample data set and the comparison between these algorithms has been made on the same data. Random Forest algorithm performs better than the other specified algorithms with an accuracy of around 83%.

Keywords: Machine Learning, Supervised Learning, Random Forest Algorithm, Unmanned Aircraft Systems (UAS), Airfoil sound Pressure

Local Texture Features for Content Based Image Retrieval of Interstitial Lung Disease Patterns on HRCT Lung Images

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Abstract: Content-based image retrieval (CBIR) is a technique that may help radiologists in their daily clinical practice by providing reference images against a given subject in hand for diagnosis. Several special purposes medical CBIR systems are built for the diagnosis of Interstitial Lung Diseases (ILDs). Texture is used as a primitive feature to build such systems due the texture like appearance of ILDs patterns. Therefore, it is necessary to evaluate the efficacy of promising texture feature descriptors proposed recently for building the CBIR system for ILDs. This paper presents an effective and exhaustive evaluation of five such recently proposed texture feature descriptors (viz. Local Binary Pattern (LBP), Orthogonal Combination-Local Binary Pattern (OC-LBP), Centre Symmetric-Local Binary Pattern (CS-LBP), Local Neighbourhood Difference Pattern (LNDP), and combination of LNDP and LBP) for the design and development of CBIR system for ILDs. The performance of each methods is compared using the most used performance metrics such as precision, recall and F-Score. The LNDP descriptor is found to be the best performer and therefore, can be considered as a descriptor for ILD patterns for the design and development of CBIR system.

Estimation of Optimum Number of Clusters in WSN

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Abstract. Grouping of sensor nodes in clusters has several advantages including energy efficiency, network scalability and efficient data aggregation. Many clustering protocols have been developed till date promising better energy efficiency in comparison to others. In this paper, we have surveyed important clustering techniques with a focus on estimation of optimum number of clusters. We have also presented a case study on LEACH protocol, suggesting that under certain conditions clustering is not a wise solution, a non-clustered network or a network with mixed approach can give better result. Simulation results show significant improvement in lifetime and throughput.

Keywords: Optimum cluster size Energy efficiency Lifetime Wireless sensor network.

Multilevel Quantum Sperm Whale Metaheuristic for Gray Level Image Thresholding

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Abstract: Image thresholding is a fundamental step in image segmentation. A clever selection of thresholds is a vital step to achieve effective segmentation of images. In this article, we present a new quantum metaheuristic algorithm inspired by the behavior of sperm whales for optimal thresholding of gray level images. The algorithm is built using many-valued quantum computing principles which offer greater computational advantages. Results are demonstrated on four test images with three threshold levels. The performance of the proposed algorithm has been compared with the encoded quantum inspired simulated annealing algorithm and the classical sperm whale algorithm with respect to the optimal fitness values and the computational time. Friedman test has been carried out with the competing algorithms to establish the supremacy of the proposed technique. Experimental results indicate the superiority of the proposed method in comparison with the competing methods.

Keywords: image thresholding, sperm whale optimization algorithm, multilevel quantum systems, qudits

Decision Support System of Temporary Landfill Using Fuzzy Multiple Attribute

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ABSTRACT: It is realized that the selection of temporary landfill (TPS) is very complicated in view of many factors that need to be considered. Therefore it is needed the criteria that can be used to determine the location of landfill that is feasible and meets the requirements. The requirements are stated in the Indonesian National Standard (SNI) 03-3241-1994 about procedures for selecting landfill sites. In this study, it was arranged based on regional stages, where the stages in resulting map contain the area within the planning area divided into several feasibility zones. By using the method of Simple Additive Weighting (SAW) it makes easy to perform data analysis to results e very good, good and bad decisions for selected location.

KEYWORDS: DSS , Landfill , SAW, Pagelaran.

Fuzzy Logic Prediction of Dengue Hemorrhagic Fever Distribution in Pringsewu Region

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ABSTRACT: DHF has been a public health problem in Indonesia for the past 47 years. Dengue hemorrhagic fever or dengue fever is an infection caused by the dengue virus, which is transmitted by the bite of the female Aedes aegypti or female Aedes albopictus. This study was conducted to predict the distribution of dengue hemorrhagic fever in Pringsewu areas using fuzzy logic method. Fuzzy logic method was selected because it is able to select the best alternative from all available alternatives. In this study seven criteria were used as reference in predicting the distribution of dengue hemorrhagic fever in pre-pregnancy area such criteria as Population Density, air humidity, water sources, health facilities, SPAL, sanitation, and trash cans. In addition to the criteria also used the weighting criteria to determine the best alternative and from the calculation obtained the highest score found in column d which means that the area or village with Indication as in column d was an area prone to the distribution of dengue fever, while the lowest score was in the column y which means that the area with Indication column y was the area with the least chance of risk of dengue hemorrhagic fever distribution. .

Keywords: Prediction, Dengue Hemorrhagic Fever, Fuzzy Logic, Pringsewu Area

Analysis of data aggregation techniques in WSN

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Abstract. Wireless Sensor Networks (WSNs) produce huge amount of application specific data. These data needs to be processed and transmitted to base station, which is a costly affair. Since WSN nodes are resource constrained, efficient data processing and conserving energy is a prime challenge. It has been observed that most of the data sensed by the sensors are redundant in nature. If data redundancy can be reduced, then it will lead to increased lifetime of the network and reduced latency. In this paper, we surveyed different techniques for reducing redundancy in data, and in particular through aggregation. We also discussed data aggregation taxonomy, challenges and critically analysed aggregation techniques proposed in last 10 years.

Keywords: Data redundancy Data aggregation Data compression Life-time Wireless sensor network.

Malaria Detection on Giema-stained blood smears using Deep Learning and Feature Extraction

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ABSTRACT: Malaria is a severe and fatal disease leading to exacerbation of a person's health and even death. Thus identifying whether a person is suffering from malaria is much preponderant. A general and famous practice for the identification of malaria is usually the analysis done by microscope on the thin and thick stained blood smears. The identification of the parasitized blood cells is a laborious and challenging task as it involves the very convoluted methods such as spotting the parasite in the blood, counting the number of the parasites, pretending its type etc. The fidelity for the stated task depends a lot on the experience of individual technician performance and relies a lot on him/her. The Convolution Neural Network models are famous for the automatic selection of these features. In this paper, 128 features from a custom-build Convolution Neural Model (CNN) were extracted and fed to the Support Vector Machine (SVM) classifier. The results were then compared with the custom-build, 17 layer deep CNN model and also with various Transfer Learning (TL) models, both as feature extractors and fine tuned. After feeding the right features, the Support Vector Machine resulted in an accuracy of 98.8% on the dataset containing a total of 27,558 labeled red-blood cell (RBC) images which were re-sampled to 40*40*3. Other performance matrices were also evaluated and are as sensitivity being 98.3%, specificity 97.6% and f1 score resulting in 97.95%. Comparing with the state-of-literature, transfer learning models and custom-build model, CNN based SVM classifier model performed the best.

Keywords: Malaria, Convolution Neural Networks, Microscopy, Transfer Learning, Deep Learning, Support Vector Machine, Machine Learning, Blood Smears, Neural Networks.

Modified Genetic Algorithm with Sorting Process for Wireless Sensor Network

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Abstract: The genetic algorithm is widely used in optimization problems, in which, a population of candidate solutions is mutated and altered toward better solutions. Usually, genetic algorithm works in optimization problem with a fitness function which is used to evaluate the feasibility and quality of a solution. However, sometimes it is hard to define the fitness function when there are several optimization

objectives especially only one solution can be selected from a population. In this paper, we modified genetic algorithms with a novel sorting process to solve the above problem. Two algorithms, the classic genetic algorithm and newly proposed recently M-Genetic algorithm, are simulated and altered by embedding the novel sorting process. Besides, both two algorithms and their alteration versions are applied into wireless sensor network for locating Relay nodes. The sensor node loss and package loss number are reduced in genetic algorithms with our sorting process compared to the original ones.

Load balanced fuzzy based clustering for WSNs

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Abstract. The Wireless sensor networks form an integral part of the Internet of Things (IoT). The prospective use of WSNs in various applications has grown interest in WSNs. Since it's impossible to replace or recharge the battery of sensor nodes once they are deployed. Hence, energy consumption should be carefully monitored. Minimizing the consumption of the energy of the sensor nodes leads to the prolongation of network lifetime. In this paper, a fuzzy-based clustering protocol is proposed which not only prolongs the network lifetime but also balances the load among nodes. The protocol proposed so far doesn't consider load balancing. Fuzzy logic is employed with four inputs. The proposed protocol is evaluated with many protocols. The results obtained proved that the proposed protocol outperforms over the state-of-the-art protocols.

Keywords: wireless sensor networks, clustering, fuzzy logic, network lifetime, energy efficiency.

Find Better Accuracy for Breast Cancer Detection Using Neural Network

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Abstract. Breast cancer is one of the most critical types of cancer for women. About the terms of mortality test, it is the second highest. There has been many research explored in this area. In this paper, we have determined the better accuracy for breast cancer detection using the most complementary technique called ANN (Artificial neural network). In various fields it is widely used tool of medical and engineering applications. Particularly in medical sector applications like diagnosis of breast cancer and in engineering sector classification of cancer datasets. In this research work, we have made a comparison of detection accuracy between MATLAB and PYTHON platform. For nonlinear statistical data modeling tools the ANN is considered where the model is designed for complex relationship between input and output. Neural

network can learn from the observing dataset and this is the main advantage of neural network. In our work, we have focused on the accuracy for training and testing using same dataset and the performance is obtained by MATLAB and Python using ANN. And the result we obtained in MATLAB training accuracy 90 % and testing accuracy 76 % similarly in Python training accuracy 96 % and testing accuracy 85 %.

Keywords: Breast cancer, Benign, Malignant, Artificial Neural Network, Wisconsin breast cancer database.