

2nd National Research Symposium on Computing - RSC 2017

Jointly organized by
WCE ACM Student Chapter,
Department of Computer Science & Engineering and Department of Information Technology
Walchand College of Engineering, Sangli.



Collection of Abstracts
Of
2nd National Research Symposium on Computing
(RSC- 2017)
15th and 16th December, 2017

Editor

Dr. P. J. Kulkarni

Deputy Director & Chair RSC- 2017



Jointly organized by

WCE ACM student chapter

Department of Computer Science and Engineering

&

Department of Information Technology

Walchand College of Engineering

(A Government Aided Autonomous Institute)

Vishrambag, Sangli-416415, Maharashtra, India

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PREFACE



Dr. G. V. Parishwad
Director, WCE Sangli



Dr. P. J. Kulkarni
Dy. Director, WCE Sangli

In Higher and Technical Education system, faculty members with higher research qualifications, especially in Information Communication and Technology (ICT) area, have to accept an important challenge of producing more number of researchers who in long run will take up responsibility of educating masses on design and use of modern technological gadgets for betterment of mankind. Over the last two decades, the growth of ICT products has been phenomenal. Rate of obsolescence of these ICT products is also significant. In order to cope with advancement of Engineering and Technology, researchers in the educational institutes need to brain storm, exchange their ideas with peer groups and make their research more fruitful. In line with this theme, Computer Science & Engineering Department and Information Technology Department of Walchand College of Engineering (WCE) proposed for holding of symposium in Computing. With constant proactive efforts of faculty members of these departments, the symposium scheduled in December 2017 has taken up a good shape for its organization. WCE has also been recognized to conduct Ph.D. research programme under Quality Improvement Programme (QIP) of AICTE. Along with this, Technical Education Quality Improvement Programme (TEQIP), being implemented in its phase II at WCE has one of the important components of promoting research culture among the budding engineers and faculty members. Therefore the organization of the symposium attracted a very good support from TEQIP. With very good response received from researchers for their paper presentations and with confirm availability of very good practicing researchers for delivery of key note speeches at the symposium, we are confident that the organization of the symposium will be a grand success. We would like to encourage all the participants of this symposium to take positive and active part in the deliberations at the symposium. On behalf of the college management, we wish them bright and fruitful career ahead.

Director

Deputy Director

Walchand College of Engineering, Sangli

WALCHAND COLLEGE OF ENGINEERING

(A Government Aided Autonomous Institute)

Walchand College of Engineering is situated midway between Sangli and Miraj cities at Vishrambag, Sangli. The WCE campus is located on about 90 acres of land on southern side of Sangli – Miraj road.

In 1947, the college made a modest beginning as New Engineering College, with a single program leading to B.E. (Civil) degree. In the year 1955, the College was renamed as Walchand College of Engineering as part of the new arrangements and pursuant to the Rehabilitation and Development Program mainly funded by Seth Walchand Hirachand Memorial Trust and the Government. The Government appointed an Ad Hoc Committee for conducting the college from May 1955, later replaced by the Administrative Council in 1956. The Ad Hoc Committee added two more degree programs in B.E. (Mechanical) and B.E. (Electrical) in 1955 with the intake of 20 each. Three Diploma programs also started in 1955 – Civil (40 intake), Mechanical (20) and Electrical (20).

Post Graduate programs in Civil, Mechanical and Electrical Engineering and Diploma program in Industrial Electronics were introduced in 1971. In 1986 the UG and PG programs in Electronics Engineering and UG program in Computer Science and Engineering were introduced.

PG program in CSE was introduced in 1997. In 2001, added B.E. program in Information Technology with an intake of 60 students. An additional intake of 30 students was also sanctioned for Computer Science & Engineering program, resulting in total intake of 390 students for all branches at UG level and 106 at PG level. As part of strategic planning, PG section is being strengthened and PG intake has now steadily risen to 240 across 10 programs. The College has a QIP scheme for full-time doctoral programs and also offers Ph. D. programs of Shivaji University in various branches of engineering.

Walchand College of Engineering became autonomous in 2007. The college revamped its academic structure and contents, in consultation with few US and IIT academic experts. Accordingly nomenclature of B.E and M.E programs has been changed to B Tech and M Tech programs. After completion of the first term of six years, the College has now received extension of autonomous status for the second term of six years till 2019-20. It participated in the World Bank funded, Government of India scheme, namely, Technical Education Quality Improvement Program (TEQIP) in Phase I from 2005-2009, wherein it stood all-India 2nd out of 127 participating institutions in terms of program impact performance. The college is presently participating in Phase II of TEQIP with outstanding performance.

From the desk of the Chair RSC 2017

Dr. P. J. Kulkarni

Dy. Director and Professor in CSE
Chair RSC 2017



Search and Research are continuous activities. Research culture in Computer Science and Engineering (CSE) at Walchand College of engineering (WCE), over last decade has seen significant positive growth. Year after year, more research outcomes are being strengthened. Quality Improvement Programme (QIP) of AICTE has instituted Ph D research center in CSE at WCE. Along with this, Shivaji University Kolhapur has already recognized the CSE department to conduct Ph D research programme. Association of Computing Machinery (ACM) also identified the CSE department to institute student chapter of ACM. The chapter activities are well progressing.

To further encourage CSE research activities, it is envisaged to create a platform to enable researchers in the field of CSE and allied to come together to provide critique on the ongoing research activities to enable shape these activities in a better way. In this direction, CSE Department and Information Technology (IT) department at WCE decided to jointly organize a “2nd National Research Symposium on Computing, RSC-2017”. The student chapter of ACM at WCE came forward to support the organization. At WCE, this is first of its kind of organization of the research symposium. Right from the day of its announcement, few months back, the organizing team of the conference started receiving very good responses from research community in CSE and IT. The research papers selected for the symposium are duly peer reviewed by outside research experts in the respective domains. The paper reviewing experts have technically well contributed by providing prompt and critical inputs to the authors of the papers. In order to provide good mentoring to the young researchers and attendees, the organizers of RSC-2016 are fortunate to attract good number of practicing researchers to deliver key note addresses. A pool of expert panel members will provide to the attendees of the

symposium a very good exposure to state-of-art in CSE, IT and allied fields. The entire focus of the symposium is to facilitate budding researchers to bring in innovations in their on-going research and make the research fruitful. Many of the participating researchers in the symposium are believed to have come from academic institutes, therefore various issues related to good practices in research methodologies, peer-to-peer sharing, widening contacts of like-minded researchers, presentations of research work, Intellectual Property Rights (IPR) etc. will be well deliberated.

I am very much confident that the symposium will mark significant achievement for all attendees of the symposium in practicing quality research work. I wish each one of them excellent prospective research career in future.

Dr. P. J. Kulkarni

ORGANIZING COMMITTEE

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Program Schedule

Day 1: Friday, December 15, 2017

9.30 am to 10.00 am	Registration and Welcome Tea, Breakfast		
10.00 am to 10.20 am	Inauguration : Dr R. Venkateswaran SVP, IoT Solutions Pune		
10.20 am to 11.40 am	Keynote address -1 Dr. R. Venkateswaran Pune (ACM)		
11.15 am to 11.30 am	Tea Break		
11.40 am to 12.20 pm	Key note address -2: Dr. V C V Rao C DAC Pune		
12.30 pm to 1.00 pm	Inauguration (Tilak Hall)		
1.00 pm to 1.40 pm	Lunch break		
1.40 pm to 1.45 pm	Photo Session		
1.45 pm to 2.30 pm	Keynote Address – 3 Dr. Parag Kulkarni		
SESSION-1 BIG DATA/MACHINE LEARNING/DEEP LEARNING/WEB/DATA MINING/HIGH PERFORMANCE COMPUTING Chair : Dr. Parag Kulkarni Co-chair : Dr. R.R. Rathod			
2.30 pm to 2.50 pm	Paper ID	Paper	Author
Presentation – 01	08	Improved Genetic Particle Swarm Optimization and Feature Subset Selection for Extreme Learning Machine	Archana Kale and Shefali Sonavane
2.50 pm to 3.10 pm	07	Requirements for an M-learning Software Framework for Smart Learning	Sudhindra Deshpande, Shrinivas Mangalwede and Padmavati Dandannavar
Presentation – 02	34	Factored Language Modeling	Arun Babhulgaonkar and Shefali Sonavane
3.10 pm to 3.30 pm	20	Architecture for Personalized Meta Search Engine	Nutan Borkar and Shrikant Kulkarni
Presentation – 03	06	Handling of Class Imbalanced Problem in Big Data Sets: An Experimental Evaluation(UCPMOT)	Sachin Patil, Shefali Sonavane
3.30 pm to 3.50 pm			
Presentation – 04			
3.50 pm to 4.10 pm			
Presentation – 05			

Day 2: Saturday, December 16, 2017

9.30 am to 10.00 am	Welcome Tea and breakfast		
10.00 am to 10.50 am	Keynote address 4: Dr R K Kamat SU Kolhapur		
10.50 am to 11.40 pm	Keynote Address 5: Dr Harish Kenchennawar GIT		
SESSION - 2 BIG DATA/MACHINE LEARNING/NETWORKS Chair : Dr. R. K. Kamat Co-Chair : Dr. S.V. Kulkarni			
	Paper ID	Paper	Author
11.40am to 12.00pm Presentation – 11	13	Navigator for Bus Passengers	Rohan Patil and Vikas Honmane
12.00 pm to 12.20 pm Presentation – 12	25	Review of Open-Source BCI approach using OpenViBE	Nilkanth Jadhav and Bashirahamad Momin
12.20 pm to 12.40 pm Presentation – 13	16	Exploiting Social Relations for Efficient Routing in Delay Tolerant Network Environment	Ajit Patil and Prakash Kulkarni
SESSION 2 (Parallel) (POST GRADUATE LABORATORY 1 CSE DEPARTYMENT) Chair: Dr. Harish Kenchennawar Co-Chair: Dr. S. P. Sonavane			
11.40am to 12.00pm Presentation – 14	36	Outdoor Natural Scene Object Classification Using Probabilistic Neural Network	Chitali Laukar and Prakash Kulkarni
12.00 pm to 12.20 pm Presentation – 15	15	Construction f Basis Matrices for (k,n) and Progressive Visual Cryptography Schemes.	Suhas Bhagate and Prakash Kulkarni
12.20 pm to 12.40 pm Presentation – 16	21	Contextualized System for Active-Learning Using Mobile Computing	Vikesh Tonpe and Prakash Kulkarni
12.40 pm to 1.20 pm	Poster presentation Chair : Dr. Meghshyam Prasad		
1.20 pm to 2.00 pm	Lunch break		
2.00 pm to 2.40 pm	Keynote Address – 6 Mr. Suhas Desai, Pune		
2.40 pm to 3.20pm	Keynote Address – 7 Ms. Minal Chougule, Mumbai		
3.20 pm to 3.30 pm	Tea Break		
3.30 pm to 4.30 pm	PANEL DISCUSSION <ul style="list-style-type: none"> • Dr R K Kamat • Dr Harish Kenchennawar • Dr. Meghshyam Prasad • Shri Suhas Desai, • Ms Minal Chougule 		
4.30 pm to 5 pm	Project Show Case Chair : Shri Suhas Desai Pune , Minal Chaugule		
5 pm to 5.30 pm	Valedictory		

Key Note Speech – 1

Recent Trends in Computer Networks

Dr. R. Venkateswaran, Senior Vice President, IoT Solutions,
Persistent Systems Limited, Pune



This talk provides a perspective on the advances and trends in the area of Computer Communication Networks. Using example and insights from the Internet architecture that has led to its phenomenal growth, the talk highlights some of the key design decisions made by the researchers over the past 40 years to address imminent challenges to the speed and scale of the Internet.

The Internet has continued to scale and grow at a phenomenal rate since the last 40 years. There have been specific milestones during these growth years that have fundamentally challenged the architectural decisions. Researchers have managed to find the right balance between technically superior and easy acceptability to overcome these challenges.

Using this historical context as the basis, the talk presents the challenges for addressing the newer challenges facing the Internet today. Covering diverse challenges including Routing, Multiprotocol support, Mobility, Advances in wireless technologies and Security, this talk focuses on the ways of overcoming some of these challenges.

The significant value of Software Defined Networks (SDN) and Network Function Virtualizations (NFV) is the key highlight of this talk. The talk also provides a simulated demonstration of some of the concepts - blending in the theoretical and implementation aspects of these technologies.

About Speaker: Dr. R. Venkateswaran

As the Senior Vice President of IoT Solutions at Persistent Systems, Dr. Venkateswaran (Venki) is responsible for the strategy and development of industry-specific transformation solutions leveraging IoT (Internet of Things) technologies. He joined Persistent Systems in 2002 and has undertaken various roles over the years, including that of SVP of Engineering for Persistent's Products Business, Chief Technology Officer, Head of Strategic Initiatives as well as Business Head for Telecom Business. Prior to Persistent, he worked for 7 years as a researcher at Bell Laboratories and also at the CTO office at Lucent Technologies.

He earned his B.Tech (1988) and M.Tech (1992) in Computer Science from IIT Bombay and has a PhD in Computer Science from Washington State University (1997). His PhD Research focus was on Multicast Routing Protocols. He holds multiple patents in the area of ATM Multicasting, and has authored numerous research papers that have been published in reputed journals and conferences. He has presented several technical talks in various educational institutions across India as part of the ACM India Eminent Speaker Program. He is recognized by the Savitribai Phule Pune University as a PhD Guide in the area of Computer Information and Technology.

Key Note Speech – 2

Going Beyond Patterns...

Parag Kulkarni, CEO and Chief Scientist,
Iknowlation Research Labs Private Limited, Pune

www.iknowlation.com



Patterns are haunting machine learning over years. We have been assimilating, classifying and associating patterns over years. Is it pattern based learning that is probably limiting our thought process and confined machine learning. In this talk let us take a fresh look to break pattern shackles and go beyond patterns, Human has ability to learn from uncertainties and learning from the events those did not take place at all. Can we take a look at these abilities to learn?

Can we learn for uncertainties? Reverse Hypothesis Machine Learning – tries to do exactly the same. There are many applications where we need to go beyond pattern-based paradigm. In this discourse let us take a closer look at these approaches and find more about new paradigm of Revers hypothesis machine learning...

About Speaker: Parag Kulkarni

Parag is an entrepreneur, Machine Learning researcher and author of best selling Innovation Strategy and Data science books. An avid reader, Parag is founding CEO and Chief Scientist of iknowlation Research Labs – a vibrant Machine Learning Product, research and Consulting Company. Parag has published over 300 research papers, invented over a dozen patents and he authored 15 books. Parag's machine learning ideas resulted in pioneering products those became commercially successful and produced unprecedented impact. As a consultant Parag has contributed to success of over two-dozen organizations including start-ups and established companies. He is pioneer of concepts Systemic Machine Learning, Context Vector Machines and Deep Explorative Machine Learning. He delivered over 300+ keynote addresses and 200+ tutorials across the globe.

An alumnus of WCE Sangli, Parag holds PhD from IIT, management education from IIM and was conferred higher doctorate DSc by UGSM monarch, Switzerland. His work on Systemic Machine Learning published by IEEE is widely cited. His areas of interest include Machine learning and allied areas with focus on optimal and systemic learning.

Key Note Speech – 3

Securing Internet of Things - Top 6 Risks and Mitigation Strategy

Suhas Desai, Vice President – Digital Security at Aujas



The number of smart devices is expected to jump 5 X from 5 Billion in 2015 to 25 Billion in 2020. Internet of Things is becoming a favorite target for cyber attackers, and it is a no-brainer to predict that it will only become worse. Gartner predicated that by 2020, more than 25% of identified attacks will involve more IOT devices.

More Smart Devices = More (Sensitive) Data = Higher Risk

In this session, focus is on 6 basic security concerns with Internet of Things that enterprises need to pay attention to, in order to enjoy the ride without falling off the roller coaster.

This session is to discuss on security initiatives in Industry 4.0 era, what are the current security trends, enterprise risk management strategies in Robots, AI, Chatbot's, telematics, connected cars & Industrial IOT and how IOT enthusiasts can apply these mitigation strategies & security best practices to secure devices, platforms & communication channels.

In this session, we will discuss case study on OpenHab – open Source IOT platform and its feasibility with connected home appliances. An IOT Enthusiast can apply the security principles for this integration and experience the power of connected world!

About Speaker: Suhas Desai

Suhas Desai is the Vice President of Digital Security Services at Aujas. Prior to Aujas, he was an Associate Director in the Cyber Security Advisory of PwC (PricewaterhouseCoopers). He started his career with Tech Mahindra.

He has delivered noted sessions at many global conferences and summits including RSA Singapore; INTEROP Mumbai; Communic Asia Singapore; OWASP Malaysia and ISACA, Dubai.

He was invited speaker at 'Universiti Sains Malaysia', Penang and 'The Institute for Infocomm Research (I2R)', Singapore. He has contributed technical features at 'Linux Journal' & 'Linux For You' magazines.

Key Note Speech – 4

Challenges in computing

Dr. Harish H. Kenchannavar, Professor, Department of Computer Science and Engineering, KLS Gogte Institute of Technology, Belagavi
harishhk@git.edu



In recent days, Wireless sensor networks have been deployed in many applications such as agriculture, water monitoring, medical applications, etc. Such applications are integrated with data collections, storing, computing and performances which need to be considered as research challenges. Wireless sensor network (WSN) and Internet of Things (IoT) are tiny devices which are resource constrained and connected to next level of cloud computing algorithms and technology where it should take less time and complexity. Computing mainly depends on data format, storage and processing efficient ways considering minimal resources such as energy, memory utilization, processing time and lifetime of deployed sensor devices. Hence, there is a need to devise efficient, less computing and simple algorithms which are used to improve the performance of the system. Challenges in devising algorithm may deal with deployment of nodes, routing, architectures and application model.

About Speaker: Dr. Harish H. Kenchannavar

Dr. Harish Kenchannavar finished his B.E from Basaveshwar Engineering College, Bagalkot in Computer Science and Engineering. He further pursued M.E in Computer Science and Engineering, Walchand College of Engineering, Sangli. He was awarded Ph.D degree in the year 2014 in the area of Quality of Service in WSN. His areas of interests are Wireless Sensor Network (WSN), Internet of Thing (IoT), Computer Networks, Simulation and Modeling to name a few. He is currently working in K.L.S.G.I.T College, Belagavi. He has published his works in various IEEE /Springer/ACM conferences and National and International Journals. He has conducted workshops on WSN and IOT for the faculty and PG students. He is a reviewer for many national and international journals and has chaired many international and national conference sessions. He is a professional member of IEEE, CSI and ISTE bodies.

An encrypted neural network learning to build safe trained model

S. S. Sayyad¹, D. B. Kulkarni²

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Abstract— Neural network learning is a technique that is used to solve problems of classification, prediction, clustering, modelling based on variety of data inputs in the form of structured, semi-structured and unstructured data. Learning accuracy is considered as key performance index in these neural network based learning algorithms. Many organizations that involves huge amount of data would want to outsource it to cloud for artificial intelligence based services. Various organizations who wish to train neural network model on their complex and huge data usually outsource the learning model on cloud. Outsourcing of learning model on cloud creates security concerns for input data and the learned model. In this paper, we propose

a practical system that will train a neural network model that is encrypted during training process. The training is performed on the unencrypted data. The output of the system is a neural network model that possesses two properties. First, neural network model is protected from the malicious users, hence allows the users to train the model in insecure environments at no cost of risk. Second, the neural network model can make only encrypted predictions. We make use of homomorphic encryption techniques to fulfill the objectives and test our results on sentiment analysis dataset.

Keywords—Homomorphic encryption, neural network

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MPI performance guidelines for scalability

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Abstract—MPI (Message Passing Interface) is most widely used parallel programming paradigm. It is used for application development on small as well as large high-performance computing systems. MPI standard provides a specification for different functions but it does not specify any performance guarantee for implementations. Nowadays, its various implementations from both vendors and research groups are available. Users are expecting consistent performance from all implementations and on all platforms. In literature, performance guidelines are defined for MPI communication, IO functions and derived data types. By using these guidelines as a base we have defined guidelines for scalability of MPI communication functions. Also, we have verified these guidelines by using benchmark application. We have conducted experiments on different MPI implementations such as MPICH, open MPI. The experimental results show that point to point communication functions are scalable. It is quite obvious as in point to point communication, the communication takes place pair of process. Hence these guidelines are defined as performance requirement by considering the semantics of these operations. All processes are involved in collective communication functions; therefore defining performance guidelines for collective communication is difficult. In this paper, we have defined the performance guidelines by considering the amount of data transferred in the function. Also, we have verified our defined guidelines and reasons for violations of these guidelines are elaborated.

Keywords— Performance guidelines for MPI functions, Scalability of MPI functions, High-performance computing

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Handling of Class Imbalanced Problem in Big Data Sets: An Experimental Evaluation (UCPMOT)

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Abstract—The huge amount of NoSQL data has acknowledged a new provision of context for processing. A new trail of data handling technologies with massive resources assists to store and process these gigantic data sets. The current attention is to determine the undisclosed information by assimilating this data bulks & handling it as per use. Further they are pre-processed and converted for needful analysis. The volume and variety of these data sets endure rising relentlessly. Moreover, imbalanced in many real-worlds vast data sets have elevated a point of concern in the research domain. The skewed distribution of classes in the data sets poses a difficulty to learn using traditional classifiers. They tend more towards majority classes. In recent years, numerous solutions have been proposed to address imbalanced classification. However, they fail to address the various data characteristics such as overlapping, redundancy involving classification performance. A rational oversampling technique i.e. Updated Class Purity Maximization Oversampling Technique using Safe-Level based synthetic sample creation is proposed to efficiently handle imbalanced data sets. The newly suggested Lowest versus Highest method addresses the handling of multi-class data sets. The data sets from the UCI repository are processed using the map-reduce based programming on Hadoop framework. The evaluation parameters viz. F-measure and AUC are used to authenticate the performance of proposed technique over benchmarking techniques. The results attained evidently quote the dominance of the proposed technique.

Keywords— Imbalanced datasets, Big Data, Over-sampling techniques, Multi-class, Safe-Level based Synthetic Samples

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Analysis of Software Requirements for an M-Learning Framework

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Abstract—In this paper, we propose a software framework for an m-learning environment. Here, we attempt the software requirement analysis for a software tool to be developed for m-learning. As the definition goes ‘m-learning is learning while move’. Our aim is to use android supportive smart devices on which this m-learning software will execute.

Developing software for m-learning application is a complex process which requires judicious handling of prioritization, specification, delivering and finally application development. In this paper we try to establish four major and vital requirements such as human-smart device interaction, infrastructure of mobile-computing, packaging and presenting of the learning content, instructional and learning design. Much m-learning software may fail to meet the objective because of non-appropriate handling of above mentioned requirements. These requirements are mutually supporting and affecting each other. For example, limited screen size and Internet connectivity limit the size of learning content and user interface. Hence these kinds of requirements are very important to consider during software development of m-learning. Our framework would constitute of smart mobile devices, interacting with cloud using mobile software agents. We are proposing the use of mobile agents for communication between smart devices and cloud.

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Improved Genetic Particle Swarm Optimization and Feature Subset Selection for Extreme Learning Machine

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Abstract—Particle Swarm Optimization (PSO) is a heuristic global optimization method, which is most commonly used for feature subset selection problem. However, PSO requires the fixed number of optimal features as an input. It is a very critical task to analyze initially that how many features are relevant and non-redundant present in the given dataset. To solve the said problem this paper has proposed Improved Genetic – PSO (IG-PSO) algorithm for Extreme Learning Machine (ELM) which returns optimal features as well as an optimal number of features. The IG-PSO algorithm is experimented on six benchmarked dataset for handling medical dataset classification which improves the classification accuracy by using optimal features. Also, the simulation results demonstrate that IG-PSO algorithm has the capability to handle optimization, dimensionality reduction and supervised binary classification problems. The effectiveness of this algorithm is verified by using statistical tests.

Keywords—Feature Subset Selection Problem, Particle Swarm Optimization, Extreme Learning Machine, Classification Problem

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Analysis of various Neural Network Techniques for handling multimodal Heterogeneous data

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Abstract— The process of considering two or more different forms of input parameters and performing various processes in it to retrieve the relevant information is known as multiple heterogeneity. By doing so, the dimensionality of the data will be reduced and hence the processing time can be reduced. To attain this, several processes have to be encompassed in the proposed research approach. The goal of this research is to compare various deep learning techniques such as Artificial Neural Network (ANN), Deep Neural Network (DNN), and Convolutional Neural Network (CNN) for handling multimodal heterogeneous data. The major issue in CNN is the variation of weight factor. In this current research, the weight factor of DNN is integrated with CNN and the optimization method, Particle Swarm Optimization (PSO) is deployed in order to improve the efficiency of the learning technique. Dicom image and the EEG signal are considered as heterogeneous data for experimentation. The experimentation is carried out using MATLAB/SIMULINK tool and the performance metrics are evaluated.

Keywords— Deep learning techniques, Dicom image, EEG signal, multiple heterogeneity

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Image Annotation Methods: A Brief Survey

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Abstract: Automatic image annotation is providing smart service to the users of photo-sharing site. The image annotation methods fall in various categories such as image segmentation, feature extraction and machine learning. Image annotation efficiency and scalability are most important objectives while designing any image annotation technique. Recently, automatic sentence generation to describe each image increases the interest of researchers. The primary problem of current techniques of automatic image annotation (AIA) are low scalability and effectiveness performance using large datasets. Additionally, AIA is a promising approach to achieve the efficient image classification, retrieval and management. By considering different objectives such as image classification, image description and image retrieval along with image annotation, there is some scope of improvement in the existing methods. This paper presents the brief survey of recent image annotation methods based on image segmentation, feature extraction and classifiers. The analysis is presented in comparative form with respect to different parameters of recent techniques.

Keywords— Image Annotation Image Classification, Image Retrieval, Machine Learning, Feature Extraction.

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Navigator for Bus Passengers

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Abstract: Transportation is very important in today's world. People depend on public transportation to move from place to place. Buses contribute a major part in public transportation. But often the bus journey is inconvenient and people avoid buses due to their unpredictable arrival time and over-crowdedness. In this paper, we propose a system which can make the bus journey convenient and enjoyable. The system we propose is called Navigator for Bus passengers. This system provides arrival time, crowd information and many other features directly to the user's smart phone.

Keywords— — Smart ticketing machine, smart bus journey, Internet of Things (IoT), smart city, bus transportation.

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Construction of Basis Matrices for (k, n) and Progressive Visual Cryptography Schemes

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Abstract: Security of digital information plays important role to keep the integrity of original media. A secret is something which is kept away from the knowledge of any but those who are privileged to access it. Secret sharing scheme provides a mechanism for sharing secrets among different users securely, where each user receives his part of encoded secret information called as a share. Sufficient number of shares need to be combined together to reconstruct secret information. Text, images, audio and video can be used for sharing secret information in secret sharing scheme. Secret sharing scheme in which secret information is encoded in form of concealed images is called as Visual Cryptography. There are various Visual Cryptography Schemes. Visual Cryptography Scheme's functionality is dependent on their basis matrices. Constructions of basis matrices for various OR-based and XOR-based Visual Cryptography Schemes are elaborated in this paper.

Keywords— Secret sharing scheme, Visual Cryptography, Data hiding

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Exploiting Social Relations for Efficient Routing in Delay Tolerant Network Environment

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Abstract: DTN is subclass of mobile ad hoc network (MANET) where instantaneous end-to-end connectivity is not available in source and destination nodes. Nodes in DTN are sparsely distributed. Frequent disconnections along with limited resources make routing in DTN more challenging. This paper proposes two routing protocols. One is Buddy Router with Time Window, which exploits social relations to maximize delivery probability. Another variant presented is Buddy Router with Replication, where controlled replication approach is used along with social metric for message forwarding. Detailed formulation of proposed work, along with comparative analysis, based on simulations is presented. The paper also presents impact of buffer size variation and TTL variation on routing performance of different routing protocols.

Keywords— Delay Tolerant Network (DTN), Routing, Opportunistic Routing and Pocket Switched Networks (PSN)

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On Applying Document Similarity Measures for Template based Clustering of Web Documents

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Abstract: World Wide Web is the useful and easy way to get the source of information on the Internet. In order to reduce the content generation and publishing time, templates are used to populate the contents in web documents. Template provides easy access to the web document contents through their layout and structures. However, for search engines, due to its irrelevant terms, the templates degrade search engines accuracy and performance. Also the templates are used by wrapper induction tools used in information extractor to extract and integrate information from various E-commerce sites. Thus it has received a lot of attention to improve the search engines performance and content integration. In this paper we have discussed how heterogeneous web documents i.e web documents generated from different templates, can be clustered. We have applied document similarity measures to cluster the heterogeneous web documents generated from templates. Our experimental results on real data sets show that cosine distance similarity measure is more suitable for template based clustering of heterogeneous web documents.

Keywords— Template, Clustering, Cosine, Jaccard, Agglomerative Hierarchical Clustering

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Architecture for Personalized Meta Search Engine

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Abstract: Information available on the web is growing rapidly. A major problem in web search is that the interactions between the users and search engines are limited by the factors like unknown capabilities of search engines adopted, and ill-constructed query by the user. Hence the user has to repeatedly apply the several queries till he reaches the pages of most interest.

Any search engine can give its best performance if well-constructed and detailed queries are used. As a result, the users tend to submit shorter/ insufficient/ ambiguous queries yielding unwanted search lists. In order to return highly relevant results to the users, search engines must be able to profile the users' interests and personalize the search results according to the users' profiles. This paper discusses the need and specific requirements of personalized search engine, its architecture, the prototype model developed and the results obtained. Also sample sessions performed on the designed model have been given for selected user profile.

Keywords— Web Search Engines, Personalized Web Searching, Meta Search Engines.

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Contextualized System for Active-Learning Using Mobile Computing

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Abstract: In response to a query, providing a reliable and relevant answer has been considered as a challenging task. Contextualized satisfaction of a query is equally challenging. In order to design contextualized system, various dimensions like profile of object, location, time etc. are taken into consideration. To deal with these dimensions effectively in a query processing, different types of layered strategies have been designed that focus on the object query, expansion of that query with semantic analysis. Dimensions help to deliver content efficiently and effectively. This paper mainly focuses on context aware effective query processing for active learning with the help of different layers, namely: presentation, context management and knowledgebase in a mobile computing environment.

Keywords— Semantic analysis, Context aware system, Natural language processing.

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Review of Open-Source BCI approach using OpenViBE

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Abstract: Brain-Computer Interface (BCI) is a communication method that allows users to pass on information to computers by means of human brain activity. This paper reviews the analysis and measurement of Electroencephalography (EEG) signal using a BCI software system – OpenViBE. This software allows neurological researchers to construct, experiment and simulate Brain-Computer Interface. Although, there exists various hardware equipment in the market for recording brain activity and software platforms for analyzing those signals. Here, Neurosky Mindwave EEG headband is used for measuring EEG signals for certain human brain activity and OpenViBE is used for analysis of these signals. The OpenViBE software is offered for free and can be distributed under an open-source license. Primarily, connecting EEG devices with OpenViBE BCI software and storing the recorded values in the form of files requires certain procedures to be followed which are highlighted here. OpenViBE software comprises an Acquisition Server, which takes care of establishing a connection with various types of EEG devices and Designer part is essentially required to simulate scenarios using various EEG processing modules. OpenViBE uses an integrated approach for online as well as offline analysis of EEG data. Secondly, simple processing modules of OpenViBE and the techniques to adjust parameters of these modules are reviewed here. Learning to analyze and measure signals from EEG sensors using OpenViBE, allow researchers and BCI enthusiast to explore in a numerous areas of BCI.

Keywords— Bio-signals, BCI, EEG, OpenViBE, Neurosky Mindwave

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Factored Language Modeling

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Abstract: Language modeling is a technique for finding the next most probable word in a sentence. It is first and essential task for successful implementation of some natural language processing applications like machine translation and speech recognition. It ensures for correctness and fluency of the target output in these applications. N-gram is a traditional way to implement language model in which only previous words in the sentence are used to predict the probable next word in the sentence. Factored language modeling is a method to utilize linguistic knowledge of the word along with the word itself for constructing the language model. The paper describes the factored language modeling technique and compares the results obtained against the traditional n-gram technique using perplexity as a measure.

Keywords — Language model, Perplexity, Factored language model, Backoff

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Outdoor Natural Scene Object Classification Using Probabilistic Neural Network

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Abstract: Region labeling for outdoor scenes to identify sky, green land, water, snow etc. facilitates content-based image retrieval systems. This paper presents use of multiple features to classify various objects of the outdoor natural scene image. Proposed system aims to classify images of the sky, water and green land. As all these nature components are irregular in shape, they can be classified using color and texture features. Color features of the object are extracted by using segmentation in La*b* color space. In the process of texture feature calculation, the image is initially divided into smaller grids. Global GLCM based statistical texture features are calculated using statistical features of these local grids. Results show that color and statistical texture features are not sufficient to differentiate sky and water body. To achieve discrimination between these two objects, a new edge-based horizontal line-texture feature is proposed. The proposed feature is used to differentiate between sky and water objects based on the density of horizontal lines. All these features are used together to train probabilistic neural network for classification. The system has achieved improvement of 5% to 8% in F-measure, when all these features are used together for classification of natural scene objects.

Keywords— Color Feature, Statistical texture features, Horizontal line texture feature, Image classification, PNN

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Accelerating performance of Convolutional Neural Network for Face Expression Recognition

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Abstract— Facial expression recognition (FER) system detects human’s emotion using their expression in the input image. It classifies expression into one of categories -sad, happy, disgust, fear, surprise, angry, neutral. Traditional systems are based on machine learning techniques. The training time is critical issue in these approaches. The advanced development is applying deep learning which is better approach which will accelerate the performance of the model. Convolutional Neural Network (CNN) is often used in object recognition and detection. We describe the basic structure of CNN and exhibit the speedup in training that can be achieved by shifting the computation intensive task of CNN to the GPU. In this paper we studied the method of learning and classification of CNNs on the GPU (Graphical Processing Unit) which accelerate the performance and scalability. We build a deep learning Convolutional Neural Network (CNN) model for facial expression recognition using Theano and Caffe libraries. The result demonstrated that GPU version works better than CPU version of training the model.

Keywords— Deep Learning, Graphical Processing Unit, Convolutional Neural Network (CNN).

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Tightly Bound Community Detection Algorithm for Social Network

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Abstract— Community detection is basic for the study of social network. A community detection is finding a related component in the graph of social network. In its basic form a community is a set of connected users in the social network. It is observed that all connected users may or may not have same opinion and topic of interest. The purpose of this experiment is to find of set of users who have same topic of interest. In this paper an algorithm for finding out tightly bound community is proposed. This algorithm detects the topics of the data generated by the user of social network. For this purpose the tweets generated by the users are processed through topic detection algorithm. These topics are attached as profile of the user and users with same topic profile are collected to form a community. The algorithm is tested for various size of Twitter user dataset. The statistics of the detected communities are derived

Keywords— Social Network, Topic Extraction, Community Detection

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Study of Detection of An Intrusion Using FilterBased Feature Selection Algorithm

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Abstract— To diagnose or segregate an anomalous performance in a network, an intrusion detection system is required. Due to protracted network connectivity of computer system, the system needs to be more impressionable to intrusion. Nowadays computer system has become an indispensable burden for network administrator since they have become the target of apprehensive demeanor. Intrusion detection system is handling considerable counter techniques like changing intrusion's content, blocking intrusion or uncertain security circumstances but one of the dominant problems encountered by an intrusion detection system is an enormous amount of false positive alerts. The system identifies distinct intrusion by an untrusted person. The system is mainly interested to identify four primary kinds of attacks likea probe, dos, u2r and r2l. This paper presents a study of detection of an intrusion using filter-based feature selection algorithm. An IDS is based on support vector machine which uses the least square (ls-svm) algorithm. The study shows that this algorithm achieved improved accuracy and reduced computational cost in comparison with other intrusion detection techniques.

Keywords—Detection of Intrusion, Selection of feature, Collective intelligence, ls-svm

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Data Duplicate Detection: A Survey

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Abstract—Duplicates arise when there are multiple representations of the same real-world entities. The process of identifying these duplicates is known as duplicate detection. Duplicates may cause a lot of problems and confusion while managing the database and thus need to be eliminated. Normally for a small dataset, the process of duplicate detection does not take long and thus it is efficient. But if the dataset is larger, then the process takes a long time, sometimes as long as some days. This paper covers various techniques that are used to detect duplicates and also discusses the drawbacks of these techniques and how they can be improved.

Keywords—Duplicate Detection, Data cleaning, Windowing, Blocking

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A Review on RFID Technology and its Applications in M2M Communication Systems

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Abstract—Machine to Machine (M2M) communications system aims to enable information exchange between smart devices and objects, such as sensors, actuators, robots, etc. M2M communication system is a key feature of remote control, warehouse management, traffic control, logistic services, supply chain management, robotics and telemedicine. This paper outlines the Radio Frequency Identification Technology (RFID), which is spreading significantly around the globe. RFID Technology is counted in one of the methods of automatic identification technology and is also grouped under automated data collection technology. RFID assists microcontrollers, tablets, computers, etc. to identify or track objects, record metadata, etc. Compared to the barcode identification system RFID system is advantageous in many parameters and is replacing the barcode technology in various industries. RFID is progressively used for tracking people, biometric authentication technologies for security, library automation, indoor navigation, supermarket mall systems, etc. This paper concludes with the discussion of improvement in business lines with the usage of RFID Technology for M2M applications and required future work in M2M communications.

Keywords—RFID Technology, RFID Components, Machine to Machine Communications

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A brief optimization of correlated SQL queries

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Abstract—Efficient evaluation of correlated sub queries in large systems received much attention by researches as it became crucial issue. Correlated SQL subqueries, in a relational database management system (RDBMS) can be efficiently evaluated by decor relating them, by taking care of SQL count bug and avoid using of outer join operation which is very expensive. RDBMS query processor returns a tuple of null(s) from a scalar derived table when there is no tuple match found from a correlated subquery. It then uses COALESCE function which generates proper count value of zero from the null and maintains correlation level one. The query processor also performs a “pass-through” optimization instead of a join operation to improve efficiency.

Keywords— Correlated SQL Subqueries, Outer Join, Optimization

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Vehicular Ad-hoc Network- A Brief Survey

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Abstract—Now-days Vehicular ad-hoc networks (VANET) become one of the promising components of the intelligent transportation systems (ITS). ITS help to enhance efficiency and traffic safety services to the stakeholders such as vehicle and drivers. The VANET is a special type of mobile ad-hoc networks in which vehicle acts as a mobile node. The VANET achieves vehicle to vehicle and vehicle to infrastructure communication through the dedicated short-range communication standards. The VANET is having challenges like a frequent change in the topology, complex city environments, dynamic behavior, unstable links and vehicle movement with constraints like the layout of the road and restricted movement pattern. Hence designing a routing protocol is difficult in the VANET. The objective is to study of the several routing protocols comprising pros, cons, route selection method and significance of Quality of Service. To perform experimentation and to represent the real view of the traffic in the vehicular network, a simulation tool and mobility models are used. This paper elaborates the several mobility models and simulation tools with their features.

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Online Social Network based Question Answer System

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Abstract—The System is important for exchanging the knowledge and information among the participants of the system. The participant is willing to know something, ask questions in the system and participant who are capable will give the response on the question. As population increases number of questioner and answerer are increase so it gain the chance to get answer with quality and within time. Searching the previously asked question reduces need to answer for same question again. Goal of this paper is to improve the performance and efficiency by forwarding the question to users who are interested to give the response as expected on the questions. The previously asked questions will saved in the repository. We illustrate the architecture and procedure to observe the performance with the participants present in the system.

Keywords— Knowledge and Information, Performance, Question answer system, Repository.

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Response Generation Model for Chatbot using Neural Responding Machine

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Abstract—The issue of response generation in the various helpdesk systems or chatbots or conversational entities is addressed considering its multi-dimensional functioning in this paper. To deal with response generation basic encoder decoder model is suggested and its implementation and methodology is based on Recurrent Neural Network (RNN). The paper mainly focuses on implementation of response generation model on using Neural Responding Machine and its implementation with RNN.

Keywords— NRM, RNN, Encoder Decoder Model

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At Walchand College of Engineering (WCE) Sangli, Computer Science and Engineering (CSE) Department as well as Information Technology (IT) Department, under Association for Computing Machinery (ACM) India, are active in promoting research in advances in computer science and engineering; so also in information technology. This has resulted into instituting WCE-ACM chapter. The first 2 days national research symposium was organized during Dec 19-20, 2016 at WCE and it received excellent response from researchers. In this series, the WCE-ACM chapter is delighted to announce its Second National Research Symposium on Computing 2017 (RSC 2017) in Dec 2017 under the technical support from ACM. The WCE-ACM chapter welcomes research paper submissions from faculty, doctoral students, research scholars and industry experts who are actively working in the area of Computer Science and Engineering and allied branches.

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