Collection of Abstracts
of
Third National Research Symposium on Computing

(RSC 2018)

20th to 22nd December, 2018

Editor

Dr. P. J. Kulkarni

Chair RSC 2018

Jointly Organized
by
WCE-ACM Student Chapter
and
Department of CSE and Department of IT, Walchand College of Engineering, Sangli
and
Jabalpur Engineering College, Jabalpur

Supported by:

at
Walchand College of Engineering, Sangli

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PREFACE

Dr. G. V. Parishwad
Director, WCE Sangli

Dr. P. G. Sonavane
Deputy 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 on Computing. With constant proactive efforts of faculty members of these departments, this activity is now successfully organized from last three years and with each year's positive response, the activities in symposium are progressing. WCE has also been recognized to conduct Ph.D. research programme under Quality Improvement Programme (QIP) and National Doctoral Fellowship (NDF) of AICTE. Along with this, Technical Education Quality Improvement Programme (TEQIP), being implemented in its phase III 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 (WCE) 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 and in CSE (IT) in 2012. 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 III of TEQIP with outstanding performance.

From the desk of the Chair RSC 2018

Dr. P. J. Kulkarni
Professor in CSE, Chair RSC 2018

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 (SUK) has already recognized the CSE department to conduct Ph.D. research programme. Through AICTE's National Doctoral Research Fellowship (NDF) scheme, Ph.D. (CSE) programme has been also started in the CSE department. Research scholars admitted under QIP, SUK and NDF are getting guided to produce quality research work in CSE and allied areas. Association of Computing Machinery (ACM) has instituted WCE-ACM student chapter to encourage students to undertake various innovative activities. Some part of the research work in the department has been registered under Intellectual Property Rights (IPR) for its patent filing.

Since 2016, every year in December, a national Research Symposium on Computing (RSC) is being regularly jointly organized by CSE department and Information Technology (IT) department in WCE. Organization of RSC events has proved technically very beneficial to enable researchers in the field of CSE and allied to come together to provide critique on the ongoing research activities. In this series, "Third National Research Symposium on Computing, RSC-2018" has been organized during 20th to 22nd Dec 2018. Looking at the quality research promotions through RSC 2016 and RSC 2017 in previous years, RSC 2018 has been considered as a co-located activity of Fourth International Conference on Computing in Engineering and Technology (ICCET-2019). The organization of RSC 2018 is sponsored by Technical Education Quality Improvement Programme (TEQIP) which is being implemented at WCE. As a part of twinning activities under TEQIP, this year, Jabalpur Engineering College (JEC) is participating in the joint organization of RSC 2018. The Institution of Engineering and Technology (The IET) provided their support for better organization of events at RSC 2018. As usual, the WCE-ACM is active in providing their technical expertise at RSC 2018. Event of Innovative Project Showcasing (IPS) has been newly included in RSC 2018 to encourage undergraduate students to showcase their innovative and research oriented skills in a competitive way. In order to provide good mentoring to the young researchers and attendees, the organizers of RSC 2018 are fortunate to attract good number of practicing researchers to deliver key note addresses and deliberations.

The symposium will bring significant research achievements to all its participants. I wish each one of them excellent prospective research career in future.

20th December 2018   Dr. P. J. Kulkarni

ORGANIZING COMMITTEE

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Dr. D. B. Kulkarni	Walchand College of Engineering, Sangli
Dr. R. R. Rathod	Walchand College of Engineering, Sangli

PROGRAM SCHEDULE

Day 1: Thursday, December 20, 2018

9.30 am to 10.00 am	**Registration and Welcome Tea, Breakfast**
10.00 am to 11.00 am	**Inauguration of IET Activities at WCE : Dr. Anil Hiwale, The IET Member, Pune** Presentation of IET activities at WCE
11.00 am to 11.40 am	**Keynote address -1** **Dr. D. N. Sonawane, COEP, Pune**
11.40 am to 11.50 am	Tea Break
11.50 am to 01.15 pm	**Innovative Project Showcasing (IPS) Evaluation Group - I**
01.15 pm to 02.00 pm	Lunch Break
02. 00 pm to 03.00 pm	**Innovative Project Showcase (IPS) Evaluation Group - II**
03.00 pm to 04.00 pm	**IET Session:** **Dr. Anil Hiwale and Mr. Amol Gulhane, The IET Member, Pune**
04.00 pm to 05.00 pm	**Poster Presentation**
05.00 pm to 05.30 pm	**Award Ceremony of Innovative Project Showcasing Competition**

Day 2: Friday, December 21, 2018

9.30 am to 10.00 am	**Registration and Welcome Tea, Breakfast**
10.00 am to 10.15 am	Preamble of RSC 2018
10.15 am to 10.25 am	Inauguration and deep prajwalan
10.25 am to 11.15 am	**Inaugural Speech by** **Dr. Anant Patki, (Former Deputy Director, ISRO) Pune**
11.15 am to 12.00 pm	**Keynote Address 1:** **Dr. R. Venkateswaran, Senior Vice President,** **Persistent Systems, Pune**
12.00 pm to 12.15 pm	Tea Break

<table>
<tr><td colspan="4" align="center">SESSION – 1 (A) (Parallel)
Domain: Networking and security
Chair : Dr. V. R. Ghorpade   Co-Chair : Dr. B. F. Momin</td></tr>
<tr><td></td><td>Paper ID</td><td align="center">Paper</td><td align="center">Author</td></tr>
<tr><td>12.20 pm to 12.40 pm</td><td>16</td><td>Behavioral Analysis of Routing Protocols in VANET</td><td>Bhushan Yelure and Shefali Sonavane</td></tr>
<tr><td>12.40 pm to 01.00 pm</td><td>31</td><td>Cheating Prevention in Improved Extended Progressive Visual Cryptography Scheme</td><td>Suhas Bhagate and Prakash Kulkarni</td></tr>
<tr><td colspan="4" align="center">SESSION - 1 (B) (Parallel)
Domain: Machine Learning /Deep Learning
Chair: Dr. R. venkateswaran Co-Chair: Dr. S. P. Sonavane</td></tr>
<tr><td></td><td>Paper Id</td><td align="center">Paper Title</td><td align="center">Author</td></tr>
<tr><td>12.20 pm to 12.40 pm</td><td>41</td><td>Prediction of Pregnancy Induced Hypertension Levels Using Machine Learning Algorithms</td><td>Anuja Hiwale, Pratvina Talele and Rashmi Phalnikar</td></tr>
<tr><td>12.40 pm to 01.00 pm</td><td>33</td><td>Diagnosis of Diabetes Using Convolutional Neural Network</td><td>Tushar Deshmukh, Dr Hanumant Fadewar and Ankur Shukla</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>01.00 pm to 02.00 pm</td><td colspan="3">Lunch Break</td></tr>
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02.00 pm to 02.40 pm	**Keynote Address 2:** Dr. Pramod Patil, Dr. D. Y. Patil Institute of Technology, Pune		
02.40 pm to 03.30 pm	**Keynote Address 3:** Dr. Mrs. Rashmi Phalnikar, The IET Member, Pune		
03.30 pm to 03.40 pm	**Tea Break**		

SESSION – 2 (A) (Parallel)
Domain: Image Processing
Chair : Dr. Pramod Patil   Co-Chair : Dr. N. L. Gavankar

	Paper Id	Paper Title	Author
03.40 pm to 04.00 pm	26	Semantic Rules Based Classification of Outdoor Natural Scene Images	Chaitali Laulkar and Prakash Kulkarni
04.00 pm to 04.20 pm	29	Automatic Feature Extraction for CBIR and Image Annotation Applications	Sangita Nemade

SESSION – 2 (B) (Parallel)
Domain: Machine Learning /Deep Learning
Chair : Dr. Mrs Rashmi Phalnikar   Co-Chair : Dr. D. B. Kulkarni

	Paper Id	Paper Title	Author
03.40 pm to 04.00 pm	13	Mining Weakly Labeled Web Facial Images for Search-Based Face Annotation Using Neural Network Classifier	Ashwini Kale and Anis Mulla
04.00 pm to 04.20 pm	15	Hybrid Deep Learning Approach for Classifying Alzheimer Disease based on Multimodal Data	Arifa Shikalgar

04.30 pm to 05.30 pm	**Poster Presentation Chair Dr. R. B. Kulkarni** **Mrs. A. M. Chougule** **Mr. V. N. Honmane**

Day 3: Saturday, December 22, 2018

9.30 am to 10.00 am	Welcome Tea and breakfast		
10.00 am to 10.45 am	Keynote address 4: Dr. R. K. Kamat SU Kolhapur		
10.50 am to 11.40 am	Keynote address 5: Dr. Virendra Bhavsar, Honorary Research Professor and Professor Emeritus, University of New Brunswick		
11.40 am to 11.50 am	Tea Break		
SESSION – 3 (A) (Parallel) Domain: IoT, Optimization Chair : Dr. R. K. Kamat Co-Chair : Dr. N. L. Gavankar			
	Paper ID	Paper	Author
12.00 pm to 12.20 pm	6	Efficient Retrieval Of Relevant Documents By Constructing Ontology Framework	Sharvali Sarnaik and Ajit Patil
12.20 pm to 12.40 pm	17	Application of Linguistic knowledge in Factored Language Modeling for Hindi language	Arun Babhulgaonkar
SESSION – 3 (B) (Parallel) Domain – High Performance Computing + Machine Learning /Deep Learning Chair :Dr. Meghshyam parasad Co-Chair : Dr. R. R. Rathod			
	Paper ID	Paper	Author
12.00 pm to 12.20 pm	30	Template based Clustering of Web Documents using Locality Sensitive Hashing (LSH)	Tanveer Bagban and Prakash Kulkarni
12.20 pm to 12.40 pm	14	Minority Majority Mix mean Over_Sampling Technique: An Efficient Technique to Improve Classification of Imbalanced Data Sets	Sachin Patil and Shefali Sonavane
12.40 pm to 01.40 pm	Lunch Break		
01.40 pm to 02.30 pm	Poster Presentation Chair Dr. A. C. Adamuthe Mrs. A. M. Chougule Mr. V. N. Honmane		

02.30 pm to 03.10 pm	Keynote address 6: Dr. Meghshyam Prasad, Sr. Research Engineer, Videoken Pvt. Ltd. Banglore

SESSION – 4 (A) (Parallel)
Domain: Natural Language Processing
Chair : Dr. A. C. Adamuthe   Co-Chair : Dr. A. M. Chougule

	Paper ID	Paper	Author
03.10 pm to 03.30 pm	18	A Review paper on Clustering Large-Scale Data using Artificial Bee Colony Algorithm in distributed environment	Madhura Gaikwad and Anantkumar Umbarkar
03.30 pm to 03.50 pm	28	Mathematical Model of IoT based Decision Support System for Uncertainty Classification Problem	Archana Kale and Shefali Sonavane
03.50 pm to 04.10 pm	24	Research Issues in Designing Conversational Agent Systems	Komal Jadhav and Sandeep Thorat

SESSION – 4 (B) (Parallel)
Domain: Data Mining
Chair : Dr. S. K. Shirgave   Co-Chair : Dr. P. J. Kulkarni

	Paper ID	Paper	Author
03.10 pm to 03.30 pm	4	Performance Analysis of parallel and scalable GPU based Convolutional Neural Network	Umesh Chavan
03.30 pm to 03.50 pm	8	Parallelizing neural network learning to build safe trained model	Suhel Sayyad and Prof. Dr. D.B. Kulkarni
03.50 pm to 04.10 pm	25	Parallel computing approaches for dimensionality reduction in the high-dimensional data	Siddheshwar Patil

04.10 pm to 04.20 pm	Tea Break

04.20 pm to 05.00 pm	Panel Discussion: Member 1 : Dr. R. K. Kamat Member 2 : Dr. Meghshyam Prasad Member 3 : Dr. N. L. Gavankar Member 4 : Dr. P. J. Kulkarni Member 5: Dr. S. K. Shirgave
05.00 pm to 05.30 pm	**Valedictory & Awards**

Venue: *Library Conference Hall (WCE) Sangli*

Key Note Speech-1

"Future Technology Trends and Role of the Professional Societies"

Dr. Anil Hiwale
Professor and Head of Department of Information Technology,
MIT College of Engineering, Kothrud, Pune

Abstract:

Technology is ever evolving with time. The world has witnessed the impact of disruptive technologies in the recent past which has made some of the big industries obsolete in the course of time. Software development has played a vital role in disrupting the industries and will continue to disrupt the traditional industries in the near future. Traditional companies trying the evolutionary approach will no longer be able to sustain however companies adopting revolutionary approach will flourish. Today altogether different examples of companies like Airbnb, UBER, etc who do not possess any physical assets are the biggest players in their respective field. IoT is going to be a most important technology that will connect all sectors. In India alone, 1.9bn devices are expected to be connected by 2023. During and after third industrial revolution, India as an independent nation, has done well in IT and software, and is expected to do better in 4th Industrial revolution.

The biggest challenge is whether engineering education is able to cope up with the revolutionary changes in the industry sector. If the education sector cannot keep up with the industry, then there is going to be a problem in getting the required manpower, the industries look for. To bridge the gap between the skills the engineers coming out of the engineering institutions possess and the demand of industries from the new recruits, the professional societies can play a significant role. Moreover, with the fast changes in technology it has become difficult for many graduate engineers to take appropriate decisions to plan their career path where professional societies can be of great help.

Among various professional engineering societies, The Institution of Engineering and Technology (The IET) is one of the leading contributors to better engineer the world. The activities of professional societies do make significant impact on the career of an engineer. IET India has been involved in various programs with Government Machineries. IET is involved in activities to improvise competency and skills of engineering community that would in turn help solving the

problems of public importance. The technologies that IET have chosen to focus on are **Internet of Things** (IoT) and **Future of Mobility and Transport.**

The keynote focuses on future technology trends and discusses how the IET is working to engineer a better world by inspiring the next generation engineers, informing the wider engineering community and influencing the government and standards to advance the society.

About the Speaker:

Dr. Anil Hiwale is Professor and Head of Department of Information Technology at MIT College of Engineering, Kothrud, Pune. He has done his Phd in Electronics and Communications engineering from Sant Gadge Baba Amravati University, Amravati. His area of interests include Digital Communications, Wireless Communications, Electronic Systems Design, Multi-Antenna Systems, Co-operative Diversity. He has 29 years teaching and 10 years research experience.

Key Note Speech-2

"Model Based Predictive Control Application to Automatic Control of Intravenous Anesthesia"

Dr. Dayaram Sonawane[1]
[1]Associate Professor
Department of Instrumentation and Control,
College of Engineering, Pune
Email: dns.instru@coep.ac.in

Dr. Deepak Ingole[2]
[2]Post-Doctoral Fellow
The French Institute of Science and Technology
For Transport, Development and Networks
University of Lyon, France

Abstract:

Current scenario in operation theatre is that anesthesiologist use to monitor patient's physiology by observing different physiological parameters and based on his/her experience, adjusting the drug rate manually. This may lead to overdose or under-dose causing unwanted consequences. The proposed model based decision support system (DSS) for closed loop control of intravenous anesthesia can help and assist the anesthesiologist to regulate the drug dosing so that he/she will be free to focus on more critical issues during surgery. We propose the development of pharmacokinetic and pharmacodynamic (PK/PD) model of a patient and linear model predictive controller (LMPC) to predict and automate the drug dosing. LMPC is currently the only technique available for synthesizing controllers that can explicitly ensure constraint satisfaction by design and easily allows for the incorporation of nonlinear dynamics. Due to its ability to handle constraints explicitly which will always ensure an optimal drug dosing within specified safety limits that will help to reduce post anesthesia effects and hence results into fast recovery of patients. Eventually, it will increase the confidence level of anesthesiologist by assisting and supporting his/her decision of drug dosing. The results obtain proves the utility and robustness of LMPC over conventional PID controller used for closed loop control of intravenous anesthesia.

About the Speaker:

Dr. D. N. Sonawane is an Associate Professor in the Department of Instrumentation and Control Engineering at College of Engineering, Pune and the in-charge of Embedded Systems Lab. He joined Department of Instrumentation and Control, College of Engineering Pune as a lecturer in Instrumentation in 1998, later he selected as an assistant professor in 2005. From 2008, he is working as an associate professor at College of Engineering, Pune. He

obtained a B.E. degree in Instrumentation and Control form S. G. G. S. College of Engineering and Technology, Nanded in 1997 and Master of Engineering from the University of Pune in 2000. He has completed his PhD (Engineering) from University of Pune in 2012 and Post-doctorate from Washington University in St. Louis (USA) and University of Washington Seattle (USA) during January 2014- August 2015. He has been invited as a visiting Associate Professor at University of Washington Seattle during May 2017-July 2017.

Key Note Speech-3

Technology Trends in Internet of Things

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

Abstract:

This talk will cover three megatrends centered around Data, IoT and Machine Learning coming together to create significant business value across several industries. Drawing the attention to the key difference between IoT and the Internet as we know it, the talk will cover the technology aspects of different components of IoT. The value of data from IoT and how it is driving transformational disruptions in the industry will be highlighted, supported by several real-life examples. The enrichment of the value through Machine Learning will be covered in the final part of the presentation.

About the Speaker:

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-4

"Data Science and Computation using Mining Data Streams"

Dr. Pramod Patil

Professor, Department of Computer Engineering
Dr. D. Y. Patil Institute of Technology, Pimpri, Pune

Abstract:

Data mining is a process of knowledge and patterns extraction from huge data. The result of natural evolution of information technology is data mining. Several critical functionalities for data mining have been developed. Data mining is an interdisciplinary field. The parallel data mining and distributed data mining are introduced due to advances in information technology. The knowledge extraction from small subset of data and integration was a goal. The increase in accuracy of global model was observed by modifying algorithms.

The analysis of data intelligently is very significant in data mining. There are number of phases for data analysis. Each phase addresses novel research issues. The first phase was based on statistical exploratory data analysis. The testing of hypothesis was done by exploring the available data. An advanced research in machine learning field is the second phase due to the advances in computing resources. The computing solution efficiently to intelligent data analysis was the objective. The machine learning with statistical data analysis has been addressed in research field. As data size increases very fast, state-of-art algorithms have been proposed. The modification has been done in machine learning and statistical analysis techniques and adopted combined approach for large scale databases.

Today, this is an era of knowledge revolution. In survey, the digital universe of 281 billion gigabytes data was estimated in 2007 and now entered in big data. The massive data streams are available due to low cost capture and storage devices. The fast-expanding and dynamic field is data stream mining with great strengths. The rate of data generation is increased ever before. The data streams are different than traditional data set. The data streams are continuous, open ended, concept drifts and multidimensional. The streaming data is very massive, infinite, time variant and changing very fast. It is very hard to store whole data streams and scan multiple times. The representation of stream data is at low level. The analysts are very much interested in trends and dynamic changes in data streams.

There are challenges of storage, computation and communication due to high data rates of continuous data streams. The data streams can be used for interpretation to know more about the underlying system or to predict future events with higher accuracy. The big data analytics is a challenge in data streaming applications such as smart energy grid, Web click streams, retail sales, intrusion detection system etc. One of the important research challenges is that multidimensional data streams analysis fused with prediction model.

The researchers have been developing models, systems, and techniques to address these challenges, since last few years. The research issues of data stream mining are categorized using some parameters such as efficiency, methodology for mining, scalability and data type diversity.

About the Speaker:

An alumnus of COEP Pune, Pramod holds Masters in Computer Engineering and Ph.D from COEP. He has total 14 years of experience in Academics, Research and Industry. He held various positions such as HOD, Associate Professor, Assistant Professor, and Lecturer during his tenure. He is recognized as a Post Graduate Teacher, Computer Engineering at University of Pune. His expertise was acknowledged for developing & designing Academic policies for organizations. One such success story is of University Topper under his leadership & guidance. He is awarded as "Best Teacher" by students. He has successfully completed R & D Project entitled "Use of GPRS for Residential Meter Monitoring" funded by Pune University for 1.5 lacs. He has 20 research articles in National & International Journals and Conferences to his credit. He is judged for "Best Paper Award" in International Conference and National Conference for Paper Presentation held at Vellore Institute of Technology, Vellore (Tamilnadu). He has successfully organized and conducted National Conferences on Distributed Computing, Data Analytics, Research Methodology sponsored by Pune University, Infosys Technologies. He is Author of book "Programming Paradigm and Methodology". He is presently holding a multiple portfolio of Academics in the Role of Subject Chairman, Online Examination Core Committee member and Administrations in the role of HOD (Computer Engineering and IT). He is member of professional society such as CSI, ACM, IEEE, ISTE. His expertise was acknowledged for setting up Online Examination Infrastructure at Pune University. He is also contributing to industries through giving lectures, seminars and projects.

Key Note Speech-5

"Synergy of Artificial Intelligence and Software Engineering"

Dr. Mrs. Rashmi Phalnikar
Associate Professor - CSE
MIT WPU, Pune.

Abstract:

Artificial intelligence is the study of development of computer systems that are able to perform tasks normally requiring human intelligence. With the recent resurgence of interest and improved results on real-world tasks the field is undergoing explosive growth. Artificial Intelligence comes with other terms like **Data Science, Artificial neural network (ANN),** CI**, Genetic algorithm,** Deep Neural Network etc.

AI promises to change how organizations will conduct business and to make applications smarter. However, there has been criticism that many of these approaches to build more intelligent software are too far from human-level intelligence. Many AI systems are non-trivial to build and thus require careful problem analysis, modeling, system of system design and engineering, and test and evaluation. Interestingly, study from experts shows that advanced software engineering research can make effective use of AI expertise. It is only logical then that software development, i.e., the way we build apps, will be impacted by AI as well

The form of the solutions produced from these AI/ML technologies often look inherently different from the software that is normally designed, modelled and developed by Software Engineering principles. Thus, not only does the AI technology itself change quickly and at an increasing pace, the solutions it provides typically look very different from what software organizations and engineers are used to. This poses a new and unique set of risks and opportunities for software organizations and they need to understand and analyze these risks to select appropriate strategies.

The 5 major spheres of software development- Software design, Software testing, GUI testing, strategic decision making, and automated code generation- are all areas where AI can help. A majority of interest in applying AI to software development is already seen in automated testing and bug detection tools. Next in line are the software design precepts, decision-making strategies, and finally automating software deployment pipelines.

The recent surge in interest in the application of Artificial Intelligence (AI) techniques to Software Engineering (SE) problems is work typified by recent advances in Search Based Software

Engineering, but also by long established work in Probabilistic reasoning and machine learning for Software Engineering.

The key note discusses the ways in which Artificial Intelligence can improve Software Engineering, the spheres of Software Development affected by AI and the application of AI methods.

About the Speaker:

She is a recognized Ph.D. guide under MIT WPU and Associate Professor in Information Technology. She has been working for last 10 years. Having completed her Ph.D. in Computer Engineering, from SV NIT Surat, her research interest is in Data Science and Analysis and Software Engineering. She has more than 40 research papers in International Journals and Conferences and has completed a research consultancy project. Besides having shouldered many administrative responsibilities in the department, she also has guided postgraduate and undergraduate students in their project work.

Key Note Speech-6

"Automating Personalized Curriculum for Future based Programs in Computer Science and Engineering"

Professor Dr. R.K. Kamat
Professor and Head,
Department of Electronics & Computer Science,
Shivaji University, Kolhapur

Abstract:

In the era of rapid obsolescence of knowledge and shortening of the career portfolios there is increasing pressure on the formulation of career and validity of its life cycle. Moreover given the broad range of the diversity of the learners with differing aspirations has made the task of curriculum formulation challenging for the institutes of higher learning. In order to cope up with the forces of globalization the skillsets required to be possessed has to be trained with the curriculum with inputs from global experts. This all has to be done on a basis of intercontinental collaboration of experts having multidisciplinary members working in different time zones. Technology seems to be the only viable alternative to come up with the personalized curriculum which will certainly fuel the customized learning and fulfil the aspirations of the stakeholders.

The present talk will exemplify the above said theme with the implementation scenarios and case studies. It will encompass the technological tools and techniques such as AI, Machine Learning, Deep Learning, chatbots, NLP and their integration for formulation of an apt curriculum for future based programs in Computer Science and Technology.

About the Speaker:

Professor R.K. Kamat is currently Professor and Head of Department of Electronics and Computer Science. He is also holding the position as Director of Innovation, Incubation and Linkages, and Internal Quality Assurance Cell of Shivaji University, Kolhapur. He has been recently endowed with a grants in aid of Rs. 7 Cr. from MHRD to setup a FDC in Cybersecurity and Data Sciences. He has also been granted Rs. 1.7 Cr for setting up a Centre of Excellence in VLSI Design by RUSA. He has published more than 150 papers in reputed journals, authored 12 books from reputed publisher such as Springer and guided 12 Ph.D. students.

Key Note Speech- 7

"Convergence of Artificial Intelligence, Big Data, and High Performance Computing"

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Abstract:

Recently, Artificial Intelligence (AI) applications such as self-driving vehicles, robotic surgery, face recognition, and home robots have been in numerous news stories. Machine Learning (ML) - a subfield of AI – and in particular Deep Learning (DL) has gained huge attention. Nowadays, Big Data arises in social media, financial and government services, genomics, cyber security, businesses, environment, and many other areas. The Internet of Things (IoT) is partly responsible in generation of Big Data in some of these areas.

High performance computing (HPC) is crucial in satisfying computing and storage requirements of many AI techniques and Big Data applications. In fact, the availability of Big Data in many applications (e.g. image classification, speech recognition, computer vision) has enabled successful deployment of DL and other ML technologies.

An overview of the current state of AI, Big Data applications, and HPC will be presented. We will give examples from our past and present research in the areas of parallel computing, multi-agent systems, artificial neural networks, bioinformatics, natural language processing, deep learning, computer graphics, and spatio-temporal data processing to illustrate how many of these technologies have now converged. We will also present challenges and opportunities in select applications.

About the Speaker:

Dr. Virendrakumar C. Bhavsar is an Honorary Research Professor and Professor Emeritus at the Faculty of Computer Science, University of New Brunswick (UNB), and Fredericton, Canada. He was the Dean of the Faculty and founding Director of the Advanced Computational Laboratory (ACRL). He is a Fellow of the International Institute of Cognitive Informatics and Cognitive Computing, Calgary, Canada. He received a

B.Eng. (Electronics and Telecommunications) from University of Poona, and an M.Tech. (Electrical Eng.) and Ph.D. (Electrical Eng.) from the Indian Institute of Technology (IIT) Bombay. He was a faculty member at the Department of Computer Science and Engineering at IIT Bombay from 1976 to 1983 and since then has been at the UNB.

He is the President of the SAI: Super and Intelligent Computer Systems, Inc. in Fredericton, Canada. He has been a consultant to industries in the areas of semantic web, semantic search and matchmaking, artificial intelligence, and high performance computing.

He co-led the bioinformatics component of the Canadian Potato Genomics project. He also led the New Brunswick component of the Atlantic Computational Excellence Network (ACEnet) – a \$30+ million high performance computing initiative in Atlantic Canada. ACRL and ACEnet have offered high performance computing (HPC) resources and high performance software development support to researchers at UNB, and other universities in the Atlantic Canada as well as the rest of Canada. He was a founding member of the Board of Directors of C3.ca Inc. – a high performance computing initiative in Canada.

He was the Chair of the IEEE New Brunswick section and the Vice-President of the Canadian Information Processing Society (CIPS) New Brunswick section.

He has carried out research over 45+ years in almost all areas of computer science and engineering. While at IIT Bombay, he led the development of Plexus parallel computer- one of the first multi-microcomputer computing systems in India. He has published 170+ research papers in journals and conference proceedings, many book chapters and technical reports, and has edited four volumes. He has organized many national and international conferences as well as workshops. He also has given numerous invited talks in national/international conferences and universities around the world. His current research interests include artificial intelligence include deep learning for natural language processing, text-to-scene conversion, semantic matching and matchmaking and their applications in e-Business and e-Health, and Big Data storage and retrieval in spatio-temporal databases.

Key Note Speech- 8

"Lighting up the Blackhole of the Internet using AI"

Dr. Meghshyam Prasad

Senior Research Engineer, Videoken, Bangalore

Abstract:

Videos account for about 75% of the internet traffic today. Enterprises are creating more and more videos and using them for various informational purposes, including marketing, training of customers, partners & employees and internal communications. However videos are considered as the blackholes of the Internet because it very hard to see what's inside them. The opaque nature of videos equally impacts end users who spend a lot of time navigating to their point of interest, leading to severe underutilization of videos as a powerful medium of information.

Every video has key phrases that define its content and context. The VideoKen AI Player parses through entire video, and with high-tech computer vision and deep learning techniques, indexes these into a word cloud. Users can then click on each phrase and track its occurrence throughout the video. The VideoKen AI Player also segments videos into topics, and lets users navigate to a specific topic of their interest in every video. This makes for an enhanced user experience for viewers where video is now like a digital textbooks, easier to consume and share. When the VideoKen AI Player indexes videos, it automatically generates a transcript of the video using advanced speech-to-text technology. The auto-generated transcript is embedded into every video, by default. So, using VideoKen AI Player's in-video search, users can look for sentences and words in a video with a simple text search.

In this talk, we will take deeper look at the table of contents part of our AI player. We will see challenges posed by variety of videos (educational, conferences, marketing etc.) in creating table of contents. Finally, we will discuss how various deep learning techniques such as FCN, CNN, and R-CNN are embedded at various stages of the workflow.

About the Speaker:

Meghshyam G. Prasad is a Senior Research Engineer at VideoKen (www.videoken.com). He obtained his B.E. degree in Computer Science from Walchand College of Engineering, Sangli in 2001. He has completed his Masters by Research from IISc, Bangalore in 2004 with specialization in Image Classification of Satellite Imagery. He received his Ph.D. degree from IIT Bombay in 2017. The title of his Ph.D. thesis was "Exploration of Multiplanar Scenes through Autonomous Navigation of Quadcopter" with research work done partly in NUS, Singapore. He has published his works in International as well as National Conferences. He has worked in various software industries such as Hewlett Packard, Strand Life Sciences for more than 7 years. He has also previously worked as Assistant Professor at KIT's College of Engineering. His research interests span Computer Vision, Deep Learning and Robotics with focus on image understanding.

GPU based Convolutional Neural Network

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Abstract:

Convolutional Neural networks (CNN) have succeeded great impact in various tasks of machine learning. Training CNN model is computationally intensive task. Scalability and performance of CNN with GPU is demonstrated in this study using Compute Unified Device Architecture (CUDA) framework. We evaluated performance characteristics of our own designed CNN model. The model is configured for recognition / classification of facial expression task. The novelty of proposed experiment is to demonstrate performance acceleration in scalable CNN. The parallel task using hardware feature of General Purpose-computing on Graphics Processing Unit (GPGPU) has been shown to be appropriate to be applied to CNN. We used multi-node distributed training; which allows us to efficiently parallelize deep networks across multiple servers, in order to reduce time for training. The experimental result shows that the proposed experiment in this study gained over 7 times speedup.

Keywords: Deep Learning, CNN, Graphical Processing Unit

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Efficient Retrieval of Relevant Documents by Constructing Ontology Framework

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Abstract:

Information retrieval has a motive for obtaining meaningful information on the basis of user demand. Information retrieval plays a major role in providing the information from huge amount of documents as per the requirements. The huge amount of data has been spread all over the world. We acquire data from various sources, namely; internet, social media etc. Some data is created by ourselves. In our system we have lot of documents stored but it is very difficult to address meaningful document or to find the information which relates our document. It is time consuming task to collect the needed information or document from the dataset available with us. This paper focuses on the information retrieval by constructing ontology framework. TF-IDF will help to find frequency of word present in document which will help to get the weightage of document. Input will be dataset & user document and the output will be documents matching the user document. The threshold is set to retrieve the accurate documents.

Keywords: Information retrieval, Feature extraction, term frequency& inverse document frequency, ontology

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Parallelizing Neural Network Learning to Build Safe Trained Model

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Abstract:

Deep learning has produced wide range of application in recent past. Deep learning techniques can help us solve complex problems like regression, clustering, classification for variety of data like unstructured, structured and semi structured input data. One of the most challenging tasks with deep learning in current era is to make it execute faster. Also if we host these models on cloud then security of trained model is a concern. The most common strategy that can be used is by solving the gradient descent in parallel on systems by either making use of model parallelism or data parallelism and to apply homomorphic encryption to build a safe trained model. In this paper we demonstrate how basic parallelism concepts can be used to improve performance of neural network training. We also demonstrate how homomorphic encryption techniques can help us provide security to trained model. Our experimental analysis uses MNIST dataset for hand written character recognition as data for neural network learning problem. Experimental results indicate the performance improvement in parallel version of neural network learning is achieved that provides a safe trained model.

Keywords: Neural network, parallel computing, deep learning homomorphic encryption.

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Mining Weakly Labeled Web Facial Images for Search-Based Face Annotation using Neural Network Classifier

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Abstract:

This paper inspects a structure for search based-face annotation using mining weakly labelled web facial images. Facial photographs are candidly present on the Internet, from that a few facial photographs are properly labelled however some of them are not correctly labelled. These facial photographs are repeatedly incomplete and noisy. For enhancing tag quality of weakly net facial photographs, ULR approach is also advantageous for cleansing or filtering the tags of net facial photographs [1]. Big headache issue for search-based face annotation scheme is, whenever the given test facial portrait is not a common person, there is no much more same facial photographs present on the web. A supervised appropriate name tag can be given to a test face portrait by employing face annotation using search-based paradigm, but it also increases the efficiency and scalability. The supervised neural network classifier approach is looking to optimize the tag quality of face portrait by majority voting against the face annotation by search-based paradigm.

Keywords: Face Annotation, Neural Network Classifier, Mining, Graphics and Intelligence Based Script Technology.

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Minority Majority Mix mean Over_Sampling Technique: An Efficient Technique to Improve Classification of Imbalanced Data Sets

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Abstract:

The challenges related to handling of the gigantic imbalanced data volumes are incredible and has set a new trail for its efficient processing. The inventive prospects contained by these huge imbalanced data sets have posed a priority of concern in recent research avenues. The several applications handling imbalanced Big Data sets have noted significance for precise classification while determining unidentified values from these data sets. Traditional classifiers are not able to discourse the imbalance of class distribution among the data samples. A class having fewer samples indicates difficulty in learning, whereas it points to a notable drop in the performance. Recent studies demonstrate that, the classifier independent set of over_sampling techniques are more capable to efficiently handle the issues raised in imbalanced data sets. An enhanced over_sampling technique viz. Minority Majority Mix mean Over_Sampling Technique (MMMmOT), improving classification performance is discussed in detail in this paper. An appropriate consideration of majority as well as minority samples is planned to generate the synthetic samples. The proposed technique is investigated encircling data sets mainly from the UCI repository over Apache Hadoop. Furthermore, the stimulus of maintaining the imbalance ratio with better over_sampling instances from the generated pool is analyzed. The results of classification performance are recognized using standard parameters like F-Measure and Area under the curve. The achieved experimental outcomes clearly exhibit the pre-eminence of the presented technique over the traditional techniques.

Keywords: Over_Sampling, Safe-level based, Better Learning, Safe-level Centered Synthetic Sampling, Imbalanced Data Sets

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Hybrid Deep Learning Approach for Classifying Alzheimer Disease Based on Multimodal Data

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Abstract:

Alzheimer's disease (AD) is a category of dementia that is difficult to identify under clinical supervision. Currently, there is no remedy for AD, but its initial indication is essential for effective treatment. AD causes memory, thinking and hence behavior problems. AD symptoms usually develop gradually and become worse from time to time, which can interfere with daily activities. Traditional machine learning algorithm does AD classification usually based on only single input that is the brain's magnetic resonance imaging (MRI) inspection. The proposed hybrid deep neural network classify according to multimodal data in the form of MRI images and EEG signals. The hybrid method is to model the behavior of the time-watch and use the model to select the most interesting features from multimodal data. The key objective of this method is to enhance learning procedure in which the weight factor of DNN is incorporated with CNN for dealing with multimodal heterogeneous information. This paper describes the study related to how hybrid classifier's accuracy depends on the number of features. As the number of features increase, the classification error decreases resulting in improving the accuracy of the classifier. Furthermore, other more traditional methods based on correlation measures and mutual information are also compared with proposed approach. Experimental results show that the proposed approach categorization accuracy is better than other classification methods.

Keywords: Alzheimer's disease (AD), Deep Neural Network (DNN), Multimodal Data

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Behavioral Analysis of Routing Protocols in VANET

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Abstract:

The vehicular ad-hoc network (VANET) plays a prominent role in the driver safety through inter-vehicular communication (V2V). Routing is one of the aspects through which vehicle communication is performed through message passing. IEEE 802.11p with the help of DSRC supports communication among vehicles (V2V) and in between vehicle to infrastructure (V2I) communication. VANET is basically different from the conventional wireless ad-hoc networks with respect to the speed of the vehicle, fast changes in the topology, fixed movement pattern and frequent disconnection in the links. Thus, developing a routing protocol is a tedious task in the VANET environment. The objective is to verify the behavioral performance analysis of the topological routing protocols in the VANET. The paper consists of description of the topological routing protocols such as AODV DSDV and AOMDV routing protocols. Simulation is conducted for the topological routing protocols using various scenarios. The parameters analyzed are the average end to end delay, packet delivery ratio, normalized routing load and throughput.

Keywords: VANET, DSRC, Routing Protocols, AODV, DSDV

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Application of Linguistic Knowledge in Factored Language Modelling for Hindi Language

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Abstract:

A language model is a technique that shows which words are more or less likely to be generated during some conversation in any natural language. N-gram language modelling is the pioneer technology used to construct language models. N-gram technique considers preceding words only to predict the upcoming word. Factored language modelling is a formalism that provides a facility to undertake other linguistic knowledge of the words like gender, number, part of speech, stem of word along with word itself to predict next word in a sentence. This paper discusses effect of various combinations of linguistic features of word on predictability of next word in Hindi language sentence. The paper also discusses how use of linguistic features decreases the perplexity by 31.71% as compared to perplexity of baseline N-gram language model.

Keywords: N-gram, Factored Language Model (FLM), Perplexity.

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Review on Clustering Large-Scale Data using Artificial Bee Colony Algorithm in Distributed Environment

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Abstract:

Advancement in technology is becoming an important factor for an increase in data usage and processing in a day to day life. So, good data analysis is needed to settle on better choices. Clustering is an essential component in the area of data analysis. For better decisions, analysis of the huge size of datasets is considered as a significant factor. The grouping of huge datasets is considered as an essential concern. The computational model with capacity to bunch an enormous volume of information in less time is required. MapReduce is also known as programming paradigm for handling enormous informational collections with a parallel, dispersed calculation on a group. Among all the evolutionary algorithms, Artificial Bee Colony (ABC) algorithm is chosen as a distributed algorithm in MapReduce environment. This paper gives a review on the papers which have discussed the ABC (Artificial Bee Colony) algorithm in a distributed environment, large-scale data clustering. This paper also reviews various algorithms which have been used for the large volume of data to cluster in a distributed environment.

Keywords: Artificial bee colony algorithm, Data clustering, MapReduce

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Research Issues in Designing Conversational Agent Systems

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Abstract:

Conversation is an interactive communication between two or more people which enhances knowledge among these people. It is a key to exchange thoughts and ideas while listening to each other. Based on this idea the advances in artificial intelligence started to develop technologies in which computer can communicate with human in a more natural way. A computer program which acts like an automated conversation agent is also called as a Chatbot. Chatbots are useful in many different applications like healthcare, education, financial marketing, banking, agriculture, etc. This paper presents a survey on different issues in designing conversational agents. The paper discusses types and applications of Chatbot; it lists research challenges while designing and implementing these systems. The paper presents a study and comparison of different techniques like Natural Language Processing (NLP), Deep Learning, and Neural Networks that are used for designing these systems. The paper also presents various datasets used by popular Chatbots in the industry. The paper ends by summarizing scope for future work in this domain.

Keywords: Chatbot, Conversation agent, Rule based, AI based, AI, NLP, Machine Learning

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Parallel Computing Approaches for Dimensionality Reduction in the High-Dimensional Data

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Abstract:

The machine learning as well as data mining techniques, deal with huge datasets. The numbers of features or instances for these datasets are very large, which reduce accuracy of classification. The high dimensionality data models generally involve enormous data to be modelled and visualized for knowledge extraction which may require feature selection, classification, and prediction. Because of high dimensionality in terms of the features of the datasets, it often consists of many redundant and irrelevant features. This increases the classification complexity and degrades the learning algorithm performance. Recent research focuses on improving accuracy by the way of dimension reduction techniques resulting in reducing computing time. So, it leads researchers to easily opt for parallel computing on high-performance computing (HPC) infrastructure. Parallel computing on multi-core and many-core architectures has evidenced to be important when searching for high-performance solutions. The General Purpose Graphics Processing Unit (GPGPU) has gained a very important place in the field of high-performance computing because of its low cost and massive data processing power. Also, parallel processing techniques achieve better speedup and scale up. The popular dimensionality reduction methods are reviewed in this paper. These methods are Linear Discriminant Analysis (LDA), Principal Component Analysis (PCA), Random Projection (RP), Auto-Encoder (AE), Multidimensional scaling (MDS), Non-negative Matrix Factorization (NMF), Locally Linear Embedding (LLE), Extreme Learning Machine (ELM) and Isometric Feature Mapping (Isomap). The objective of this paper is to present parallel computing approaches on multi-core and many-core architectures for solving dimensionality reduction problems in high dimensionality data.

Keywords: High-performance computing, Parallel computing, Dimensionality reduction, Classification, High-dimensionality data, Graphics processing unit

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Semantic Rules Based Classification of Outdoor Natural Scene Images

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Abstract:

This paper proposes classification of outdoor natural scene images using semantic rules. The proposed work is divided into three stages; segmentation, object recognition and image classification. Segmented images are generated by applying SPDBSCAN with user interaction on original image. CNN model is trained using these segmented images for recognition of the objects as sky, water, green land and sand. Semantic rules are designed using information of object class and its spatial location in an image for classification of scene image into either of four classes i.e. green_ground, desert, sea_water and beach class. For this research work we have used images from SUN-397 dataset. The work has achieved F-ratio of 84% for scene classification.

Keywords: Image classification, segmentation, SPDBSCAN, CNN, AlexNet, Object recognition, Semantic Rules.

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Mathematical Model of IoT based Decision Support System for Uncertainty Classification Problem

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Abstract:

Uncertainty classification problem is one of the critical problems in machine learning. In various existing applications, similar features are present in the input dataset itself which creates ambiguity. Due to which it is difficult to assign the exact input to one of the target classes. Such type of the problems belongs to the uncertainty classification problem. So, here the Feature Subset Selection (FSS) is a very important step which selects relevant and non-redundant features. FSS in Genetic Algorithm (GA) is a critical task and existing methods fails to deal with optimal population size. To solve the said problem, an Improved Genetic Algorithm (IGA) based multilevel parameter optimized feature selection algorithm for ELM classifier (IGA-ELM) is proposed. Also, this paper gives technical support by developing a mathematical model for Internet of Things (IoT) based decision support system (DSS). This is termed as SMART FARMING over uncertain data classification by using IGA-ELM. Simulation results demonstrate that SMART FARMING has capability to handle optimization, uncertainty and supervised binary classification problems.

Automatic Feature Extraction for CBIR and Image Annotation Applications

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Abstract:

In the area of information technology, organizing and indexing of digital information is a primary concern. In Content Based Image Retrieval (CBIR) system, one of the most significant issues is a semantic gap. Semantic gap refers to difference between the features extracted from image and human interpretation of the features in the image or within the regions. Hence, automatic image annotation has achieved significant momentum. Objective of the Automatic Image Annotation (AIA) is to allocate textual labels to the image that would clearly describe content or objects in the image. Accuracy of the automated image annotation algorithm depends upon the feature extraction process. Therefore, effective feature extraction algorithm is essential. In this paper, feature extraction algorithm using Gabor filter is presented. Gabor filter through its multi resolution capability, successfully extracts effective features from images or regions obtained after segmentation. It is demonstrated that the Gabor filter generates low level, less number of features and it accurately describes the image if filter with frequency response in band of 50% to 75% of total frequency is selected. These extracted features further reduce complexity in the classification algorithms which are developed using statistical models or soft computing techniques.

Keywords: Gabor filter, Feature extraction, Image annotation, CBIR.

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Template based Clustering of Web Documents using Locality Sensitive Hashing (LSH)

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Abstract:

Web template exhibits a typical structure to enable easy and fast access of the web contents. Rich web documents are created using templates by Content Management System (CMS). CMS populates data from database into web templates to generate web documents. Comparison shopping websites use web templates to extract and integrate products related data from various e-commerce sites. The objective of template based clustering of web documents is to carry out partitioning of web documents based on the templates they are generated from. A good amount of research has been done in template based clustering of web documents but it is limited to homogeneous web documents which are part of same web sites. The proposed work addresses the objective of template based clustering of heterogeneous web documents (TBCHWD) which are part of different websites. This paper discusses implementation of a Min-Hash based Locality Sensitive Hashing (LSH) technique (TBCHWD-LSH). The results obtained are compared with results obtained using traditional Jaccard (TBCHWD-Jaccard) and Cosine (TBCHWD-Cosine) based web documents similarity measuring techniques. The experimental results on more than 100 large sized web documents collected from 10 different domains prove the effectiveness of TBCHWD-LSH in terms of accuracy over TBCHWD-Jaccard. The results also indicate more efficiency in terms of execution time and scalability over TBCHWD-Jaccard and TBCHWD-Cosine techniques.

Keywords: Template, Clustering, Cosine, Jaccard, Agglomerative Hierarchical Clustering, locality sensitive hashing (LSH), Min-Hash

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Cheating Prevention in Improved Extended Progressive Visual Cryptography Scheme

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Abstract:

Securing information from unauthorized access is mandatory. Secret sharing schemes deal with security of information during exchanging it with others. Visual Cryptography Scheme (VCS) is a secret sharing scheme for visual information like images and video. Various revisions of VCS such as; k out of n VCS, Extended VCS, Progressive Visual Cryptography Scheme (PVCS) etc.; are available. Some common issues of various VCS are; pixel expansion, poor contrast of share images constructed, poor accuracy of reconstruction and management of noise like random shares. Improved Extended Progressive Visual Cryptography Scheme (IEPVCS) deals with all these issues, but suffers from the problem of cheating with VCS. Commonly used approach for cheating with VCS is to introduce fake shares in the system and affect the reconstruction of secret information. Very few VCS deal with cheating by fake shares introduction. A cheating prevention mechanism is introduced in IEPVCS to handle the issue of fake shares and prevent the recovery system from reconstructing wrong secret image.

Keywords: Visual Cryptography, Visual Secret Sharing Scheme, Cheating Prevention, Cheating Immune Visual Cryptography Scheme.

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Diagnosis of Diabetes using Convolutional Neural Network

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Abstract:

Modern society because of their life style is always prone to imbalanced metabolism disease called diabetes. Early diagnosis of diabetes is a major challenge in real life since people don't check their blood glucose level very often. But if the diabetes remains unattended or is detected at late stage, it may lead to severe problem. So, what is important is to predict the diabetes at earliest. For the same reason various researchers are taking efforts by using various data mining techniques for the early prediction of diabetes. The automated prediction system is just one of the outcomes of the efforts taken by the researchers. The proposed system uses convolutional neural network for this kind of classification.

Keywords: diabetes, Prediction of diabetes, convolution neural network, classification

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Prediction of Pregnancy Induced Hypertension Levels using Machine Learning Algorithms

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Abstract:

Pregnancy Induced Hypertension (PIH) is a foremost reason disease and death in maternal, fetal and neonatal babies. Women having PIH are at greater risk of intrauterine growth retardation in fetuses, premature delivery of a baby and intrauterine death. Machine Learning has been widely used in array of applications in the healthcare domain and has been used for analyzing data. The aim of this study by the authors is to predict the PIH levels using supervised learning algorithms with an aim to prevent PIH related complications. The study works on a dataset of about 100 pregnant women between the age group of 18 to 32. The data set uses 19 predictor variables like Body Surface Area (BSA), Pulse Rate (PR), Systolic Blood Pressure (SBP), Diastolic Blood Pressure (DBP), etc. SBP and DBP variables are considered to predict the PIH level of the pregnant woman. This work shows that the accuracy achieved by use of decision tree (90%) is better than that of support vector machine (86.667%) and logistics regression (83.334%) algorithms used in earlier work.

Keywords: Decision Tree, Support Vector Machine, Logistic Regression

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Self-driving Car Prototype through Machine Learning Approach

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Abstract:

Automation in the existing technology has matured to a point at which exciting applications have become possible. The software industry has developed a variety of intelligent automation products and services from the home automation system to Tesla or Google self-driving cars which have alleviated human's life altogether. This paper is about demonstrating the self-learning capability and embedding intelligence in a Remote Controlled (RC) car to exhibit a prototype of self-driving car using combination of advanced techniques like Machine Learning with micro-controllers, android and networking technologies. Previous works on such applications are summarized and compared with this model. We demonstrate that our model gives significant improvements in results. Training accuracy and cross validation accuracy is reported as 89.3% and 93.1% respectively.

Keywords: Tesla or Google self-driving cars, Remote controlled car, prototype of self-learning, micro-controller.

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Review Paper on Energy Efficient Coverage and Sensor Localization for Scheduling

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Abstract:

Wireless Sensor Network (WSN) is the collection of already deployed motes which sense the physical phenomena and pass the sensed information to the sink node. The sink node stores that information and according to users' need the node sends that information to users. Wireless Sensor Network (WSN) has self-directed tiny, low powered devices called sensors. In almost all cases motes are connected in tree structure design which is grounded at sink and sensed data are submitted to base-station by organizing given WSN into "data-collection-tree". Due to battery limitation, utilization of energy is an extensive challenge in sensor network. Only few nodes may determine the network-lifetime in existing approaches .The main role of nodes is sending and receiving the whole traffic, so their "energy preservation" is a demanding concern in sensor network. This suits for application-specific network where "collection of data" is compulsory. So, it is essential to increase the "network lifetime". Arranging is main concept in which sequence of mote is important which increases the energy efficiency and network lifetime. For arranging, prediction and localization is important. In this review paper many arranging and localization schemes are discussed.

Keywords: Wireless sensor network (WSN), Sensor Localization, Prediction, Scheduling.

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Review Paper on LEACH Protocol for Wireless Sensor Network

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Abstract:

A wireless sensor network (WSN) is a set-up of sensing (measuring), computing, and communication elements that gives an authority to observe and react to events (and phenomena) in a specified environment. The major problem of WSN is energy ingestion and battery power. So to reduce the energy ingestion various types of routing protocol are used. LEACH protocol is one of them and it is used to reduce the energy ingestion and enhance the battery power and network life time. It is a homogeneous WSN protocol so that it has some limitations. There are few versions of LEACH protocol. Some version on heterogeneous WSN is also available. The sensor has small tiny OS having capability of sensing physical phenomena and then to transfer it to base station to convert the sensing information into human readable form.

Keywords: LEACH protocol, Clustering, Heterogeneous WSN, energy Ingestion, Network lifetime.

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Review Paper on Data Clustering Method using Ant Colony Optimization

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Abstract:

Optimization is typically finding an alternative to maximize conceivable performance under given constraints, through maximizing desired factors and minimizing undesired ones. In assessment, maximization means seeking best or maximum performance. The cause of optimization is to reap better design with respect to hard and fast prioritized standards or constraints. It means maximizing performance elements consisting of productivity, energy, reliability, longevity, efficiency etc. The paper presents brief review on data clustering methods using ant colony optimization.

Keywords: Ant colony optimization algorithm (ACO), Data Clustering, Optimization.

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Review Paper on Design and Analysis of Pressure Sensor

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Abstract:

To locate impact of geographical constraints such as temperature, humidness and gasoline strain, it is vital to get correct info. Few geographical constraint are typical and restrictive for gathering of statistics so we have a propensity to appropriately accumulate some expertise. Micro-Electric–Mechanical-Device (MEMS) has a product called as "piezo resistive pressure sensor". These sensors are employed in various areas such as software, car enterprise and unit appliances. Through numerous research papers, effects of different chip structures and applied temperature variations have been presented on such pressure sensors but the concept of elevation / altitude has not been well focused. The main conclusion drawn from review of these research papers is that it lacks results to find effect of altitude on pressure sensor. In this context, the paper provides review of few research papers on design and analysis of pressure sensors.

Keywords: Piezo resistive pressure sensor, MEMS, Temperature, Altitude

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Sentiment Analysis of Tweets: A Review

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Abstract:

Most of the modern sentiment analysis research is focusing on obtaining sentiment by means of reading lexical and syntactic functions. The features of sentiment analysis are expressed explicitly via sentiment words, emoticons, exclamation marks etc. This paper reviews different sentiment analysis techniques and it especially makes a comment on Bag of Words (Bow), Skip-Gram Model, Word2Vec, GloVe algorithm for word embedding methods of Deep Learning, TF-IDF method etc. This paper reviews gradual improvement in performance of sentiment analysis with different classifiers like Naive Bayes Classifier, Logistic Regression, Support Vector Machine (SVM), Deep Learning methods using Convolution Neural Networks (CNN) / Recurrent Neural Networks (RNN). It also focuses on Natural Language Processing (NLP) task of sentiment analysis.

Keywords: Sentiment Analysis, Advance Data Processing Techniques, DCNN.

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Analysis of Different Ways for Improving Speed and Accuracy of Image Classification

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Abstract:

Machine learning algorithm can focus on learning features from unlabeled data. Size and complexity of the dataset have important roles in determining speed and accuracy of the learning. There are different methods for image classification. Support Vector Machine (SVM) is widely used algorithm for image classification. But the time taken for image classification using SVM is large. So for getting the faster results use of GPU is very important. With help of GPU image classification time is reduced. Another method for image classification is Extreme Learning Machine (ELM). It contains of 3 layers namely, input, hidden and output. In this paper discussions and analysis of two different classifiers namely, SVM and ELM for image classification have been presented.

Keywords: High Performance Computing, Unsupervised Feature Learning (UFL), radial basis function (RBF), Support Vector Machine (SVM).

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Energy Efficient Routing for 6LoWPAN

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Abstract:

Wireless Sensor Network (WSN) is a network of small sensing devices, which communicate with each other over wireless channel to gather and process information about some physical phenomena. Internet of things (IoT) can build a global network by interconnecting devices through the internet. These Sensor nodes have less resources, so they form a new network called Low power and Lossy Networks (LLN). As LLN works on IPv6 protocol, 6LoWPAN standard is used to allow these resource-constrained devices to participate in a network. This network has some issues related to energy, bandwidth, central processing unit, and storage. Energy consumption of the sensor nodes is an important issue as it affects the lifetime of the network. The Stability of a network is another major concern. In this context, issues like improved routing algorithms, energy consumption, stability etc. are discussed in this paper.

Index Terms: Internet of Things (IoT), 6LoWPAN, RPL

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IoT Enabled Collection/Distribution Process using CoAP

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Abstract:

Collection/Distribution process is an important process in Internet of Things (IoT) enabled smart applications. However, it is often an inefficient process due to the high uncertainty associated with real nodes' capacity. To deal with such uncertainty, the use of sensors for transmitting real-time information is seen as one of the possible solutions. System communication is implemented by IoT's lightweight protocols. In order to improve efficiency for the transportation, a typical Decision Support System (DSS) is designed. The information is used for forming a route for collection/distribution purpose by employing effective routing algorithms. Using Geo-location Application Programming Interface (API), the formation of an optimal route can be effected. This will guarantee minimizing load of collection/distribution process. This will also result in minimizing transportation costs with respect to time. These aspects are well described in this paper.

Keywords: IoT, 6LoWPAN, CoAP, DSS, HTTP, API, cooja

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Convolution Neural Network for Fingerprint's Liveness Detection

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Abstract:

Biometric authentication systems are gaining popularity in providing integral part of security systems in every organization. Spoof fingerprint detection is a very important problem in this domain. There are several techniques proposed to tackle this problem. Fingerprint's liveness detection is a method to detect real fingerprints. In this paper we propose a Convolution Neural Network (CNN) model to achieve average classification accuracy of 93.12% on LivDet 2009, 85.16% on LivDet 2011, 86.76% on LivDet 2013 and 82.20% on LivDet 2015 datasets.

Keywords: Convolution Neural Network (CNN), Fingerprint Liveness Detection, Deep Learning

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Development of an Automated Framework for Measurements of SSD Performance

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Abstract:

Automated Framework for performance measurements of Solid State Drive (SSD) attempts to overcome few drawbacks of manual performance measurement. A framework is developed using python language. For scheduling of tests Jenkins is used. Performance Metrics used are IOPS, Throughput, and Response time. Results of the tests are updated into a sheet. The paper presents the development of the framework.

Keywords: SSD, IOPS, NAND, HDD

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Internet of Things Enabled Smart Activity Recognition Systems for Energy Conservation: A Survey

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Abstract:

Activity recognition and energy conservation are key enablers in context-aware smart home systems. Conflicts among user preferences are challenging issues when it is involving more than one resident living in the smart home. To assist energy conservation system, exiting approach focuses in multi agent environment. Researchers have proposed context aware models. In these, each user activity is aggregated with its related appliances. However it usually ignores the user comfort indices. This paper presents context aware application with rule based approach to achieve energy conservation while considering comfort indices in a multiuser smart home.

Keywords: Multiuser resident activity recognition, Energy Conservation Responsive Support Engine (ECRSE), Inclusive user comfort index.

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A Review on Humanizing Chatbot with Semantics based Natural Language Generation

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Abstract:

This paper is a survey of approaches made for improving efficiency of the Chatbot or artificial conversational entity used in various commercial and banking sectors. Humanizing is to improve the response generation ability of the Chatbot. In this work, an attempt has been made to generate more natural responses for a question asked to an artificial conversational entity by using various Natural Language Processing (NLP) and Natural language Generation (NLG) techniques. Paraphrase generation plays a main role by generating semantically similar response for a query in making it more natural.

Keywords: Natural Language Processing (NLP), Natural Language Generation (NLG), Paraphrase generation.

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Quality Analysis of Drives and Certification

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Abstract:

Quality analysis of drives and certification is an important process to be done before actual use of drives in real market. Finding failure reasons of drives and reporting it in an automated way is a challenging work. There is no direct solution available to find the actual cause of failure. The cause of failure can be related to drives, firmware, or testing environment. So there is a need to develop an automated tool which can report it automatically and give probable cause of failure. Storage drives are important components of any computing devices which need to be analyzed using various techniques. This paper is an attempt to explore the quality analysis and certification of digital storage drives.

Keywords: Quality Analysis, Drives Security, Performance, Drive analysis.

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Improving Performance of Solid State Drive using I/O Scheduling Algorithm

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Abstract:

This paper proposes Input-Output (I/O) scheduling algorithm for improving performance of Solid State Drives (SSD). A new Input-Output scheduler for Solid State Drives is proposed here, which explores the higher-level demand attributes, and low-level parallelism of flash chips. It enhances the execution of SSD-based storage devices. Garbage Collection (GC) aware request dispatching is proposed which avoids issuing requests to the flash chips that are in the GC state. In proposed approach, I/O scheduler write enhances the throughput and the normal reaction times essentially. The prewrite context (PWC) is used for sorting the write requests.

Keywords: Solid State Drive, Write enhancement, I/O Scheduler, Performance measurement, Random write, Sequential write

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Building Search Engine using Machine Learning Technique

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Abstract:

Internet is the gigantic and richest source of information. To retrieve data from World Wide Web (WWW), Search Engines are specially designed. Search engines provide a simple interface to search user query and display the results in a form of web address of the relevant web page. It has become very difficult to get relevant information using traditional search engines. This paper proposed search engine using Machine Learning technique that will give more relevant web pages at top rankings for user queries.

Keywords: World Wide Web, Search Engine, PageRank, Machine Learning.

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FISL- Framework for Insightful Smart Logging

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Abstract:

The computer activity records such as backup, recovery, root cause analysis of failure of application etc. are used for statistical purposes. These records are called as a logs. The log files are written for recording incoming dialogs, debug, error, status of an application and certain transaction details by the operating system or other control program. The generated logs by an application that can be referred by user may be helpful in the event of failure. For example, in a file transfer, FTP program generates a log file consisting of date, time, source and destination etc. In this context, logs generated by the application generally use too much disk space. If the logging is tuned down (e.g., by lowering the log level) then the disk space usage is less, but then not enough information is available to debug issues. Maintaining a balance is a challenging task, for which "Framework for Insightful Smart Logging" (FISL) is one of the solutions. FISL is a framework that provides features such as In-memory logging, packet capturing, dynamically change effective log level etc. The paper discusses details of FISL.

Keywords: FISL (Framework for insightful smart logging), RCA (Root cause analysis), In-memory Logging.

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Survey on Predictive Alert for Artificial Oil Lift

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Abstract:

Well failures in oil field assets incite age setback and can immensely burden on the operational expenses. Envisioning commendably on these failures before they happen can altogether improve execution, for instance, by changing working parameters of known defects, we may reduce the downtime thereby wastage of time and oil is reduced, and the outcome is enhanced. Artificial lift methodologies are for the most part used to enhance age for repositories with essentialness levels too low to explicitly lift fluids to the surface. Guidelines drawn from this overview are discussed in this paper.

Keywords: Oil lift, Downtime, Alert, Pump

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A Scheme of Answer Selection in Social Question Answering Using Machine Learning Techniques.

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Abstract:

In Community Question Answering (CQA), answer selection is a demanding and important assignment in developing a typical automatic Question Answering System. The goal is not only to study grammatical matchings between QA pairs but also to identify modelling of contextual factors. An Attentive Neural Network (ANN) architecture is proposed in this paper. The architecture is having three layers which are Convolution Neural Network (CNN), Long Short Term Memory (LSTM) and Conditional Random Field (CRF). The SemEval-2015 CQA dataset is used to develop proposed experimental setup.

Keywords: community question answering, answer selection, deep neural network.

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Event Detection Techniques and Performance Analysis using Twitter Data

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Abstract:

Social media sites are regarded as resources for providing information. Different social media sites are available for exchanging the information. Among these sites, twitter is a popular social media site. Twitter asks to user on "what's happening?" and user may update the status in less words. In twitter, users update their opinions in less words by attractive way. Many things happened in daily life are reported on twitter. There by huge data chunks get stored on twitter. To get this data for statistical analysis purposes, there are various techniques available. Twitter data may also be useful for public safety events. In this paper, details of using twitter data for computations of spatial and temporal distances are presented to detect any meaning-full event. Various techniques for data extractions and its performance measures are also detailed.

Keywords: Twitter, performance measurement, spatial and temporal model

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An Intelligent Tutoring System for Predicting Student Performance

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Abstract:

Data mining in educational and learning analysis studies have shown its more uses for forecasting student's success. Its capability to predict overall performance of students can be useful for activity in contemporary instructional structures. Current techniques have used capabilities that are by and large relevant to academic overall performance, own family earnings and own family property. In this survey paper, an attempt is made to analyze introductory function sets by way of gathering and retaining college student's information from distinctive universities. Gaining knowledge of analysis, selective and creative class representations are carried out to predict whether a student will be capable to complete his degree education or not. It will also indicate the overall performance of the students in schooling discipline.

Keywords: Data Mining, Machine Learning, Personalized Education, Tracking Students Performance, Course Prediction, and Recommendation System

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A Survey on Continuous Integration and end-to-end Automation Framework Deployment using Docker

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Abstract:

Docker is an open source software platform to create, deploy and manage virtualized application containers on a common Operating System (OS). Docker has been widely adopted in enterprise-level container environment. As an important part of Docker-based container ecosystems, Docker registry provides the service of storing, distributing and managing Docker images, which are crucial to run Docker containers. A Docker image is a file, comprised of multiple layers, used to execute Id in a Docker container. A Docker registry is a centralized repository which can store images of operating systems and enterprise applications. In this paper, experiments on developing a private centralized registry for employees of any organization have been detailed. The experiment focuses on generating Docker images for various platforms and on automating image creation with Dockerfiles that would work across platforms. The paper also discusses on developing effective search logic for searching Docker images to get faster and easier outcomes to enable devise some new searching tool for better results.

Keywords: Docker, Docker images, Dokerfiles, Docker registry

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Improving Performance and Lifetime of SSD

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Abstract:

The performance and endurance of Solid-state drives (SSD) are the major issues on which most of the storage companies are working. There are different factors by which performance of SSD is usually specified. Two of the major factors are data-size and writes-amplification. This paper proposes two approaches to increase the performance and life of solid-state drives. One is by using Data compression and other one is by using a technique that would help in minimization of write amplification.

Keywords: Solid-state drives, Write amplification, Data compression.

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Convolution Neural Network based Malicious Code Detection

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Abstract:

As Internet usage is growing rapidly, there is urgent need of Internet Security. Many new malicious code or malicious code variants are getting rapidly introduced simultaneously. These malicious code variants affect Internet security and cause other issues. It is important to detect malicious code for security and other danger. There are several methods for malicious code detection. But they have some issue like low accuracy and detection rate. In this paper, we propose to use deep learnings Convolutional neural Network (CNN) for detection of malicious code. It shows comparatively more accuracy and better detection rate with reference to other methods.

Keywords: Grayscale image, Malware code variants, Convolution neural network

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Land Use Land Cover Classification using Supervised and Unsupervised Classification Techniques

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Abstract:

There are two classification techniques, namely unsupervised classification and supervised classification to map the agricultural land. The main goal is to select best classifier for classifying the land surface. First classifier is maximum likely hood and second is k-means clustering. Both approaches are applied to classify the land. Available land is classified into three major groups namely agriculture, barren land, water bodies. As a case example, the paper focuses on pattern of urban growth of Kolhapur city from 1990 to 2018.

Keywords: Urbanization, LULC, Remote sensing.

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A Scheme of Credit Card Fraud Detection

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Abstract:

Credit card fraud is a growing issue worldwide that prices upwards per annum. Detecting frauds in huge requests of credit card transactions is probably best test beds for machine intelligence and related algorithms. It involves variety of related challenges to consider like, concept drift, verification latency, class imbalance. Majority of learning algorithms hardly perform well during real world Fraud Detection System (FDS). It involves two main aspects: 1) the manner and temporal order of data 2) measure used to evaluate fraud-detection performance. In this context, this paper describes a typical scheme of credit card fraud detection.

Index Terms: Credit card fraud detection, concept drifts, unbalanced classification, and learning in non-stationary environment.

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Recognition of Sketch with Face Photos Using Transfer Learning and Deep CNN

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Abstract:

In order to grab a criminal on the basis of eyewitness, prior description of sketches of the criminal is becoming useful. Sketch recognition is an important component used by CBI and law enforcement agencies to investigate the crime. There are numerous algorithms proposed for matching composite sketches to face photos but its performance is not satisfied for large amount of set of photos. The paper proposes a solution on a problem. UoM-SGFS database is proposed to be used. Data augmentation technique is proposed to extend the database so that it would be easy to apply deep learning methods on the database.

Index Terms: UoM-SGFS database, Deep learning convolutional neural network, data augmentation, morphable model.

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A Review on Human Activity Recognition using RGB-D Sensors

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Abstract:

Computer vision (CV) is a very active area of research. CV has multiple applications. In this paper, we are discussing one typical application of it which is termed as Ambient Assisted Living (AAL). AAL is getting very much importance day by day because of its extra ordinary social values. The paper focuses on human activity recognition for that we are proposing knight depth camera for capturing 3-D skeleton data. Here human activity recognition deals with bag of multiple frame sequences with image captioning.

Keywords: Ambient Assisted Living, Human Activity Recognition, Posture Feature Recognition.

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Review Paper on Modified Algorithm for Well Allocation Optimization based on Porosity and Permeability in Oil Fields

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Abstract:

In a process of oil reservoir development, it is important to drill at optimal location to extract maximum hydrocarbon. Existing systems use algorithms like Cat Swarm Optimization algorithm (CSO), Imperialist Competitive algorithm (IC) for well allocation. These systems have a drawback of repeatedly evaluating different exploitation scenarios by numerical simulation. The proposed work is based on GA for optimal well allocation in oil fields. The aim of proposed study is to develop automatic optimization algorithm for finding efficient and robust set of nearly optimal solutions with better computational cost and convergence rate by using genetic techniques.

Keywords: Genetic Algorithm (GA), well allocation, Cat Swarm Optimization algorithm (CSO), Imperialist Competitive algorithm (IC).

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Counterfeit Currency Detection using Deep Feed Forward Convolutional Neural Network

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Abstract:

Counterfeit money refers to fake currency that is produced with an idea to deceive. According to recent reports, demonetization led to all-time high inflow of fake notes into banks, resulting in a spike in suspicious transactions .The existing works to detect a counterfeit note are mostly based on image processing techniques. This paper deals with Deep Learning technique in which a Convolutional Neural Network (CNN) model is built with a motive to identify a counterfeit note on handy devices like smartphones, tablets. The model built is trained and tested on a self – generated dataset. Images are clicked through the smartphone camera and fed to the CNN network. The results obtained are encouraging and can be improved further by research and improvements in the architecture of DCNN model.

Keywords: Fake or imitation currency, deep convolutional neural network, demonetization.

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Video Steganography Based on Linked Hopping and Preprocessing Frame

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Abstract:

Data Security has emerged to be the utmost priority in recent decades. To send data from one place to another securely, different techniques have been proposed. One of them is video steganography. It is an art of hiding information inside the video by manipulating pixels of the frame. In this paper we have proposed a steganography algorithm based on linking of text inside the frame and pre-processing the frame to reduce the alteration of original data. The processing focuses on finding if some pixel already has that data, then maintaining a link to that pixel and if failed to find the required pixel, replacing the pixel with the minimum of absolute difference between both the pixels. Link is maintained by hiding the x, y co-ordinates in the vicinity of the previous frame data. The PSNR value obtained by this approach is about 71. The obtained PSNR value has been compared with various other techniques and the results are encouraging.

Keywords: Video Steganography; Cryptography; Lease Significant Bit (LSB); Linked Hopping;

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Senti-beat: An Emotion Based Music Player using Fisher-face Classifier and Haar Cascade Algorithm

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Abstract:

The most basic form of emotion is through facial expressions. This paper aims to build an application that would recognize the facial expressions using a camera and classifies them amongst six universal emotions (Happiness, Sadness, Anger, Fear, Disgust and Surprise) and a neutral state. Further the Application focuses on playing music on the basis of the recognized emotion. Haar-Cascade Classifier is used for face detection. Fisher-Face Algorithm is implemented to classify the facial expressions. In future this can be extended to various other applications for automation in various streams.

Keywords: Modern facial expression recognition technique, Haar-cascade algorithm, Fisher-face classifier.

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Real-time Air Pollution Monitoring System for Vehicles

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Abstract:

Air pollution is one of the major health issues in the world today. Major components such as concentration of harmful gases and gases emitted by vehicles play major role in air pollution. The use of vehicles in day-to-day life cannot be avoided due to its high demand in today's speedy life. Using the vehicles is not an issue, but problem occurs when its emission exceeds the predefined level. The project aims to create prototype that detects amount of Parts Per Millions in air causing air pollution, find location of vehicles emitting them and real-time monitoring of these parameters for taking appropriate actions to reduce and control air pollution caused by vehicles. Measuring, monitoring and controlling the high amount of air pollution is the need of the time. With the help of emerging Internet of Things (IoT) technology, the amount of air pollution emitted by vehicles can be sensed by sensors and stored on cloud for real-time monitoring. The low-cost Arduino Mega micro-controller allows programmers to simply write the Id and execute it without installing full operating system. Using appropriate sensors, Arduino Mega can transmit air pollution data sensed by sensors.

Keywords: Air Pollution, Vehicles, Internet of Things, Cloud, Arduino Mega, Sensors

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Automation of Laptop by Hand Gestures using Deep Learning

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Abstract:

The emergence of the web cameras in almost every device these days, has led to the birth of new era of Human-Computer Interaction (HCI). The main role of HCI is to provide pleasant user experience and improve interaction between user and computer with high accuracy and speed. Keeping these notions in mind, the purpose of our implemented solution is to perform the operations of the mouse (for example, left click, right click ,cursor movement , screenshot etc.) by dynamic hand gestures. These gestures are recognised with the help of R-CNN and the corresponding operation is performed. For the movement of cursor, we continuously track the palm movement. The midpoint of the palm is detected simultaneously and the cursor is moved to the midpoint thus initiating the cursor movement. We also automate the movement of laptop by providing a robot at the base which would be controlled by hand gestures.

Keywords: R-CNN using tensorflow, Raspberry Pi, HCI, Cursor Movement, Mouse Operations, dynamic hand gestures, OpenCV.

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Crop Disease Detection Using Deep Learning with Friendly Approach

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Abstract:

Identification of plant diseases is the key to prevent losses in yield and quantity of the agricultural product. Automatic and accurate estimation of disease severity is essential for food security, disease management, and yield loss prediction. We propose and experimentally evaluate a software solution for automatic detection and classification of plant leaf diseases. The latest generation of convolutional neural networks (CNNs) has achieved impressive results in the field of image classification. This paper is focused on a new approach for development of plant disease recognition model. The model is based on leaf image classification, by the use of deep neural networks. The developed model is able to recognize 8 different types of plant diseases out of healthy leaves, with the ability to distinguish plant leaves from their surroundings. The experimental results on the developed model achieved precision between 85% and 90%.

Keywords: CNN, image classification, neural networks.

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Rash Driving Detection System

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Abstract:

The present world is advancing rapidly in the field of trade and business, and the development in technology has been significantly influencing this growth. However, transportation by road is one of the major factors that have been affecting the commercial development of our country. With increasing vehicular population and their movement on the roads, accidents are also steadily increasing. It has become a nightmare for the authorities to prevent or reduce such fatal accidents on the road. According to the Indian road accidents survey, every year there are more than 135,000 [3] incidents of road accidents [6]. Out of these, most of them are due to rash driving. According to Indian Constitution, IPC section 279, rash driving is an offence [1][2] . So, this project aims to design a module which can detect the vehicle whenever it is rashly driven or driven above permissible speed limit, and transmit the data to the concerned authority. For example, when the cab driver is driving rashly or beyond the speed limit a message would be transmitted to the cab owner or the cab agency stating this, or the police could monitor vehicles to check whether they are driven correctly or not [4].

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Secure Decentralized Voting System using Blockchain

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Abstract:

The ballot system and electronic voting system are being used all over the world but it has numerous flaws regarding security and transparency. The newly emerging technology named Blockchain holds a huge potential for building more secure software systems. The motive of this paper is to specify why a decentralized voting system built using blockchain is better than the traditional system. This paper illustrates the implementation of a blockchain based application which improvises the ease to vote, increases transparency and security in voting and is more economical as compared to the current system.

Keywords: E-Voting, Permissioned Blockchain, Cryptographic Hashing, Byzantine Fault Tolerance Algorithm, Distributed Systems.

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A Decentralized Digital Voting System Based on Blockchain Architecture

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Abstract:

Large section of demographic today does not trust their government. This makes an election a very crucial aspect in a modern democracy. The issue with the current Indian election system is that it can be manipulated and hence is not reliable to larger extent. Hence cryptographic techniques are employed to ensure the security of voting systems in order to increase its wide adoption. However, in such electronic voting systems, the public bulletin board that is hosted by the third party for publishing and auditing the voting results should be trusted by all participants. Recently, a number of digital solutions have been proposed to address this issue. However, these systems are impractical to use due to the limitations on the voter and candidate numbers supported, and their security techniques which are highly dependent on client-server architecture. To deal with all these issues, we propose practical platform-independent secure and distributed voting system which is developed using the blockchain architecture. The proposed system hopes to wipe out the part of trust from an election to make it more secure and transparent. Undeniable nature is characteristically given by the fundamental blockchain design, and cryptographic methods like CSPRNG, salt hashing, proof of work are employed to enhance data security measures. There are many substantial social benefits to using the system as well such an easier and quicker voting process which will lead to higher voter turnout. We might definitely see a future where our country has implemented a system similar to ours.

Keywords: e-voting, blockchain, decentralized, encryption, consensus, byzantine fault tolerance, P2P network.

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Computer Control Using Hand Gesture Recognition

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Abstract:

Evolution in technology has occurred from conventional keypads to "touch" screens. Presently, PCs still need a pad to work its mouse and keyboard which are more often wired. The idea was to replace a conventional mouse and a keyboard with a device which deals with the hand gestures of the user making an easy interaction between the human and the PC. The execution is carried out using ultrasonic sensor, MPU 6050 and Arduino UNO. The project is divided into two different modules. This includes a gesture mouse and a gesture keyboard. For keyboard operations, the demonstration will be provided by training the system to recognize letters as per the gestures performed by the user using motion tracking device. The given gesture is recognized by a model which is trained using SVM algorithm. For Mouse operations, the distance between the hand and the sensor is used to determine the gesture. These gestures are recognized and mapped into commands to control computer.

Keywords: IOT, Machine Learning, SVM.

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Stock Market Index Prediction Using Ensemble Techniques

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Abstract:

Economy of any individual or any firm mostly depends upon the health of economy of its nation or state therefore financial body of every country has its own index to measure their economy. In this context this project provides a support for managing portfolios of individuals and firms and gives interface to provide stock market indices' prediction. The prediction of values is done by ensemble techniques and also by considering social media sentiment as a feature.

Keywords: Economy, Prediction, Ensemble Techniques, Social Media, Sentiment Analysis

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