IEEE Conference #46726

International Conference on Intelligent Computing and Remote Sensing

(ICICRS 2019)

19th & 20th July, 2019

Proceedings (Program and Abstracts)

Organized by:

C. V. Raman College of Engineering, Bhubaneswar, INDIA

In Association With:

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About ICICRS 2019

Remote sensing, or the science of capturing data of the earth from airborne vehicles or satellites, enables regular monitoring of land, ocean, and atmosphere expanses, representing data that cannot be captured using any other means. A vast amount of information is generated by remote sensing platforms and there is an obvious need to analyse the data accurately and efficiently.

Due to the advances Satellite technology, Communication systems, Signal processing, Image and Video processing, GIS related studies and various Intelligent Computational methods, Remote Sensing has gained importance in many application fields such as defence, medical, agriculture, environment, mining, biometry and city monitoring & planning. Remote sensing has a strategic importance for disaster management, sustenance of environment, climate change and other biological/ geological / ecological impacts to mankind.

International Conference on Intelligent Computing and Remote Sensing (ICICRS 2019) is being organized in technical collaboration with IEEE Kolkata Section and IEEE GRSS (IEEE Application number 46726 Approved). The focus of ICICRS 2019 will be on "Advances in Intelligent Computing Areas and its Impact on Remote Sensing Applications"

ICICRS 2019 will feature invited keynotes, tutorials and peer-reviewed R & D paper presentations in the following major areas.

- **Satellite and Airborne Vehicles**
- **Communication Systems**
- **Signal, image and Video Processing**
- **Data Analysis and Computation**
- **Machine Learning and Computational Intelligence**
- **Applications of Remote Sensing**
- **Education and outreach in Remote Sensing and Geosciences**

A Pre-conference Workshop on Machine Learning & Open Source GIS Solutions for Geospatial Cloud Computing in Education Sector is organized on 18th July 2019.

Our Well-wishers

Shri Sanjib Kumar Rout

Mrs.Shailja Rout

Prof. (Dr.) K.C.PATRA

Prof. Bhabes Bhattacharya

Prof. Narayan Parida

Prof. Ashish Ghosh

Prof.G Panda

Prof. P.K.Mehar

Prof. Rachita Misra

Dr.S.K.Bisoy

Shri Sanjib Kumar Rout
Hon'ble Chairman, C.V. Raman Group of Institutions

Message

I am immensely delighted to know that the Department of Computer Science & IT is going to organize an International Conference on "Intelligent Computing and Remote Sensing" from July 19 to July 20, 2019 in collaboration with IEEE, Kolkata and IEEE, GRSS. To add to the significance of this event, the organizing committee plans to bring out a souvenir cum book of abstracts of the selected papers to be presented at the conference.

Remote Sensing has gained a lot of importance in the present world of satellite communication. I am sure that the leading scientists from India and abroad who converge at the conference will have a detailed discussion on the application of Remote Sensing in different field of community development. The conference will go a long way in finding solutions to the nagging problems that our country is facing due to the natural calamities.

I wish the conference a grand success.

(Shri Sanjib Kumar Rout)
Chairman, C.V. Raman College of Engineering

Mrs.Shailja Rout
Managing Director, SSEPL Skills
C. V. Raman College of Engineering

Message

The research on **Remote Sensing** and its **Applications** is a multidisciplinary arena dedicated to developing the solicitations of **remote sensing** technology for addressing geologic, botanic, and hydrologic issues at national, regional, and site-specific scales. Given the online obtainability of weather maps and high-resolution satellite base maps, it can be reasoned that cloud computing is already recurrently used in remote sensing. With the rise of the personal computer, and the relative cost efficacy of memory and processing speed for these systems, there supervened a similarly rich history of advanced high computing using the local desktop environment. As a result, in many application domains, including that of remote sensing, a dichotomy developed in the computing industry, with a large portion of the user community reliant on personal computers and mostly the government and big business utilizing large-scale servers, there has been an industry-wide surge in the prevalence of cloud computing usage. Therefore, ICICRS-2019 has emerged to be quite an accomplishment in the research field of CLOUD combined with REMOTE SENSING, stalwartly contingent on the interfacing between the both. I congratulate the Organizers for providing a proficient platform for an intellectual interaction through this Conference. I have no doubt that the suggestions made by the speakers in the relevant areas of specialization will be well taken care of and implemented by the concerned authorities. I wish the Conference a great success.

Mrs. Shailja Rout

(Managing Director, SSEPL Skills)

Prof. (Dr.) KARTIK CHANDRA PATRA
Director
C. V. Raman College of Engineering

Message

It gives me immense pleasure to know that the Computer and IT department is Organising International Conference on Intelligent Computing and Remote Sensing in collaboration with IEEE. I came to know that only forty to fifty numbers of papers have been selected through stringent review by the International reviewers from hundreds papers received, which are likely to be published in IEEE explore digital library. I understand that many foreign delegates from several parts of the globe may take part in this Conference. This will certainly add more colours to the event and there by the name and fame of the department as well as the institute will be lifted up.

I pray the almightily for the grand success of the conference.

Dr. K. C. Patra

DIRECTOR

Prof. Bhabes Bhattacharya
Principal
C. V. Raman College of Engineering

Message

I take this opportunity to extend my appreciations to the Organizing Committee of **"International Conference on Intelligent Computing and Remote Sensing (ICICRS 2019)"** for their tremendous involvement and dedication behind this effort. The broad domains chosen for deliberation in the conference are extremely pertinent for advancement of engineering and for societal benefit. Dynamism and constant evolution of these domains of engineering are making our life easier by day. I am sure the conference will be successful in providing a forum for researchers and practitioners in the field to exchange ideas and research results. Let me extend congratulations to the authors who have got their papers selected for the conference. Their efforts have been the driving force for the success of this conference. Research activities across all the engineering fields pave the way for the industrial world to strive forward with unremitting advancements. As an educational institution, encouragement and support to research is essential through establishment of a suitable platform for the research community, to interact with each other and to share the knowledge. I am confident **ICICRS 2019** will provide an ideal platform for sharing new ideas and research accomplishments among the participants, build new networks and explore future collaborations.

Best wishes for a successful and fruitful conference.

(Bhabes Bhattacharya)

Principal, CVRCE

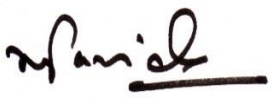
Prof. Narayan Parida
Dean R&D,**C. V. Raman College of Engineering**

Message

I am very happy to know that the International Conference on Intelligent Computing and Remote Sensing (ICICRS-2019)) will be held at CV Raman College Engineering during July 19-20, 2019. I also understand that around 21 invited speakers and a large number of researchers and experts from leading organizations are participating in the conference.

Remote sensing and intelligent processing of remote sensing data are nowadays becoming strategically important for regular monitoring of land, ocean, and atmosphere expanses, which help not only for sustenance of environment and climate change but also in disaster management. I am sure that this conference would provide an opportunity for all those connected with research and development of these techniques to review the current status and plan for future programmes.

On behalf of the research group of CV Raman college of Engineering, Bhubaneswar, I extend a warm welcome to all the participants and wish the conference a grand success.



(Narayan Parida)

Dean R&D, CVRCE

Prof. Ashish Ghosh
Indian Statistical Institute, Kolkata
Honarary General Chair ICICRS 2019.

Message

Welcome to ICICRS 2019!

The focus of ICICRS 2019 is "Advances in Intelligent Computing Areas and its Impact on Remote Sensing Applications". It has aimed to build a bridge between the new computing mechanisms and the ever evolving field of Geoscience and Remote Sensing. In today's scenario, with the advent of technology, a lot of relevant data is available in this domain, which makes it apt for a more focussed approach for research. This area is also extremely significant currently and is finding immense applicability in fields such as medical, agriculture, environment, climate etc.

Through this conference we have received an overwhelming amount of novel ideas, which is helping us move forward in this domain. This gives us hope and encouragement to make the conference even bigger and better in future. I thank all the participants for their innovative ideas and quality research in this area which will help us make this conference internationally prominent.

Lastly, I congratulate all the organisers and participants for providing us with the opportunity to experience this conference while bringing it under a world-wide limelight and making it a huge success now, and in the years to come.

I wish the conference a grand success.

Ashish Ghosh

Honorary General Chair

Indian Statistical Institute, Kolkata

Prof. Ganapati Panda
Retd. Professor IIT Bhubaneswar,
Honarary General Chair ICICRS 2019.

Message

I am happy to learn that C. V. Raman College of Engineering, Bhubaneswar, India is conducting an International Conference on Intelligent Computing and Remote Sensing (ICICRS 2019) during July 19-20, 2019. In recent years, Remote Sensing finds extensive applications in the areas of environment, smart cities, defence and medical diagnosis. It has gained importance during disaster management, climate control and various biological studies. The significance of remote sensing has increased due to advancement of signal, image and video processing, computational intelligence and machine learning techniques.

This international conference is being conducted in technical collaboration with IEEE Bhubaneswar Subsection and Kolkata Section as well as IEEE GRSS. Eminent keynote speeches, tutorials and presentation of peer-reviewed research papers are the special features of this conference.

I welcome all the delegates and the participants to C. V. College of Engineering, Bhubaneswar, and wish they will be immensely benefitted in terms of academic interaction and exposure to advance research areas on the theme of the conference.

I wish that ICICRS 2019 will be a grand success.

Prof. Ganapati Panda

Retd. Professor IIT Bhubaneswar

Prof. Pramod Kumar Mehar
Schoolof computer Engineering
Nanyan Technological University,Singapore

Message

I am highly honoured and delighted to extend a very warm welcome to all the participants and invited speakers to the International Conference on Intelligent Computing and Remote Sensing (ICICRS 2019) at the C. V. Raman College of Engineering, Bhubaneswar, Odisha, India during 19th and 20th July, 2019. We have a rich technical program comprised of five invited lecture sessions to be conducted by several renowned experts from different countries along with 61 accepted R&D papers to be presented in four parallel sessions. Besides, we have two pre-conference workshops on Artificial Intelligence and Open Source GIS Solutions for Geospatial Cloud Computing, which would be highly useful for many researchers. ICICRS 2019 will provide a great opportunity not only for knowledge sharing but also for informal networking and formal collaborations. The success of the conference is realized by the enthusiastic and sincere effort of many volunteers and experts in the Steering Committee and Advisory Board who have worked on planning and organizing the conference.

I thank all the invited speakers for agreeing to deliver their valuable talks on the state-of-art of the technology. I thank the Program Chairs for their untiring effort and dedication in the whole process. I believe the unique culture and architecture in and around Bhubaneswar will be a pleasant and memorable experience for all the participants ICICRS 2019 who have come outside India and outside Odisha.

Prof. Pramod Kumar Mehar

Schoolof computer Engineering

Prof. Rachita Misra
HoD, CS & IT, C.V. Raman College Of Engineering
Convener & General Chair ICICRS 2019

Message

On behalf of the organizing members of I extend a warm welcome to all the participants, invited speakers and guests to the ICICRS 2019 international conference. This is our first effort to conduct this conference in such a multidisciplinary subject of GEO Science, Remote Sensing encompassing several engineering and science branches such as satellite technology, communication systems, signal processing, computer networking, sensors, etc. Several emerging data analysis and machine learning techniques for identification, classification, prediction, and optimization has enriched the remote sensing study and applications.

I heartily acknowledge the help and support we have received from the Kolkata GRS Society chapter chairs for designing and planning this conference. The conference consists of a one-day pre-conference workshop as part of our effort to enhance education in the techniques used in remote sensing research and solution development. We have invited several eminent speakers around the world who will speak on recent advances in the field during the conference. The peer reviewed contributions to the conference will be presented by researchers which will be sent for publications in IEEE Explore. I hope the participants will greatly benefit from the various lectures, workshops and deliberations.

I am thankful to the IEEE Bhubaneswar subsection and Kolkata IEEE section for enabling us to get the technical collaboration. We have received lot of encouragement from our management and senior professors of C.V. Raman college of Engineering during the last nine to ten months without which we could not have progressed on the various conference activities. Our global advisors, technical program committee members & reviewers, the publication and publicity teams have greatly supported us to maintain both quality and timeliness.

This conference could not have been possible without the support of our organizing teams. The faculty and technical staff of the Computer Science Engineering and Information Technology departments of C.V. Raman College of Engineering have done great contributions as part of various organizing teams to make the conference a grand success. I am sure our team of student volunteers will do their very best to see that all guests and participants enjoy their stay and have a pleasant time in our college campus during the conference. Wishing everyone the very best.

Dr. Rachita Misra

Convener and General Chair–ICICRS 2019

Dr. Sukant Kishoro Bisoy
HoD, CSE , C.V. Raman College Of Engineering
General Chair, ICICRS 2019
& General Chair ICICRS 2019

Message

On behalf of organizing committee of ICICRS 2019, I extend warm welcome to our Chief Guest, the keynote speaker, our panellists, delegates, paper presenters and the participants of this conference. The ICICRS 2019 conference has come on the forefront amongst all the activities of the Department CSE and CS&IT, C.V.Raman College of Engineering, Bhubaneswar, Odisha.

It is a continuation of the initiatives of the Department to bridge the gap between teaching and research. ICICRS 2019 is a sequel envisaged to serve as an effective platform for teachers to interact with eminent researcher and scientists and share their knowledge and experience. The department is striving to establish itself as a centre of excellence in teaching and research. We sincerely hope that the topic presented in this conference will contribute to the advancement of knowledge in the respective fields. We present this proceeding of seminar to research community for their valuable feedback by way of suggestions and collaborative research.

I seek your support and good wishes for this two day conference to be a grand success. I thank our sponsors for providing financial and our management for their unconditional support in the organizing of this conference.

Warm Regards

Dr. Sukant Kishoro Bisoy
General Co-Chair, ICICRS 2019

Contents

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Program Schedule

Date	Time	Item	Speakers
18.07.19	**One-Day Pre-Conference Workshop**		
	9:30 to 11:00	*Machine Learning - What, Why, When and How?*	**Prof. Susmita Ghosh** Jadavpur University, Kolkata
	11:00 to 11:30	**Tea**	
	11:30 to 13:30	*Open Source GIS Solutions for Geospatial Cloud Computing (Part 1)*	**Dr. R. K. Barik** KIIT University, Bhubaneswar
	13:30 to 14:30	**Lunch**	
	14:30 to 16:30	*Open Source GIS Solutions for Geospatial Cloud Computing (Part 2)*	
19.07.19	8:30 to 9:15	**Registration**	
	9:30 to 10:30	**Inaugural Session**	1. **Chief Guest** 2. **Prof. Ashish Ghosh** ISI Kolkata, Past -Chairperson GRSS, Honorary General Chair ICICRS 2019 3. **Prof. Ganapati Panda** Past-President, IEEE Bhubaneswar Subsection, Honorary General Chair ICICRS 2019 4. **Prof. P.K. Nanda** SOA University, Chair GRSS 5. **Prof. Bhabes Bhattacharya** Principal, CVRCE, Bhubaneswar 6. **General Chairs, ICICRS 2019**
	10:30 to 11:00	**Invited Lecture Session-1** *Challenges and Opportunities with Edge Computing*	**Prof. Rabi N. Mahapatra** Texas A&M University, USA
	11:00 to 11:15	**Tea**	
	11:15 to 13:15	**Invited Lecture Session-2**	
		The Web @30 : Some challenges	**Prof. K. P. Jacob** Ex Pro-VC Cochin Univ, Panel Head (Scientific & Computing) NRB (DRDO)
		Applicability of AI for sustainable development	**Prof. Sanjay Misra** Covenant University, Nigeria
		Blockchain: Applications and Future Directions	**Dr. Kailash Kumar** Riyadh Electronic University, Riyadh
		Industry Speakers	
	13:15 to 14:00	**Lunch**	
	14:00 to 15:30	R&D papers (3 parallel sessions)	Authors
	15:30 to 15:45	**Tea**	
	15:45 to 18:00	R&D papers (3 parallel sessions)	Authors
	19:00 to 21:00	**Dinner**	

Date	Time	Item	Speakers
20.07.19	9:00 to 10:30	R&D papers (3 parallel sessions)	Authors
	10:30 to 11:00	**Invited Lecture Session-3** *IoT sensors in smart farming*	**Prof. Gyoo-Soo Chae** Baekseok University, South Korea
	11:00 to 11:15	**Tea**	
	11:15 to 13:30	**Invited Lecture Session-4** *Developing and Deploying Deep Learning Applications using MATLAB*	**Dr. Rishu Gupta** Mathworks India, Kolkata
	13:30 to 14:15	**Lunch**	
	14:15 to 16:15	R&D papers (3 parallel sessions)	Authors
	16:15 to 16:30	**Tea**	
	16:30 to 17:30	Closing and Feedback	

Invited Lectures and Workshops

Prof. Rabi N. Mahapatra

Prof. Gyoo-Soo Chae

Dr. K. Poulose Jacob

Prof. Sanjay Misra

Dr. Rishu Gupta

Dr. Rabindra K. Barik

Dr.Kailash Kumar

Prof. Susmita Ghosh

Dr. Rabindra K. Barik
Assistant Professor, KIIT Deemed to be University,
Bhubaneswar, India

Biography:

Dr. Rabindra K Barik is currently working as an Assistant Professor in the School of Computer Applications, KIIT Deemed to be University, Bhubaneswar, India. He has received his both M. Tech and Ph.D. in Geoinformatics from Motilal Nehru National Institute of Technology, Allahabad, India. His research area includes Geospatial Database, SOA, Cloud Computing, Fog Computing, IPR and Geoinformatics. He has more than 40 number of research papers in different international journals and conferences. He is a member of IEEE and IAENG.

Prof. Susmita Ghosh
Professor, Department Of Computer Science & Engineering,
Jadavpur University, Kolkata, India

Lecture Title: *Machine Learning - What, Why, When and How?*

Abstract: Machine learning is about designing algorithms that allow a machine to learn automatically from experience and data. Due to the availability of vast amount of data, which are mostly unstructured, somewhat uncertain, it has become enormously difficult to draw inferences/make decisions by extracting information out of it. Machine learning algorithms enable a machine to learn from data without being explicitly programmed.

This talk will provide a thorough understanding on learning, components of learning, machine learning, types of machine learning e.g., supervised, unsupervised, semi-supervised, active and reinforcement learning. Special emphasis will be given on supervised and unsupervised learning. Some popular algorithms on each of these will be discussed in detail. Some real life applications will also be touched upon.

Biography:

Dr. Susmita Ghosh (De), M.Tech from IIT, Bombay and PhD from Jadavpur University Kolkata is engaged in the faculty of CSE in Jadavpur University, Kolkata for the past 22 years. Her research areas are Pattern Recognition, Image and Video Analysis, Data Mining, Evolutionary Computing and Swarm Intelligence, Neural Networks, Soft Computing. She has more than 60 journals and conference papers and 8 books / chapters. She is a recipient of CIMPA-UNESCO-INDIA fellowship 2002, CIMPA-UNSA-UNESCO-CHINA fellowship, 1999.

Prof. Rabi N. Mahapatra

Professor, Texas A&M University College Station,

United States of America (USA)

Lecture Title: *Challenges and Opportunities with Edge Computing*

Abstract: This talk will introduce scope of Edge Computing and its relevance with Big data, Machine Learning and IoTs. What has prompted to the growth of Edge Computing? We shall review various challenges and opportunities to sustain Edge Computing. The recent research on computing at the edge will be discussed including security issues.

Biography:

Dr. Rabi Mahapatra is a Professor in the Department of Computer Science and Engineering at Texas A&M University since 1995. He was a faculty at Indian Institute of Technology, Kharagpur, India and a Faculty Fellow at IBM T.J Watson Research Center, USA. His principal areas of research are Embedded Systems, Systems on Chip, Low-power system design, IoTs and Data Analytic Codesign. Dr. Mahapatra serves as the chair of the Graduate Admission in CSE Department and directs the Embedded Systems Research Group at Texas A&M University. He served in the Editorial board of ACM Transactions on Embedded Computing, IEEE Transactions on Parallel Distributed Systems, and currently serving EUROSIP Journal on Embedded Systems. He has published three books and numerous research articles in the refereed International Journals and Conference Proceedings. Dr. Rabi Mahapatra is a Ford Fellow, BOYS-CAST Fellow, Senior-Member IEEE Computer Society, and was a Distinguished Visitor of IEEE Computer Society. Dr. Mahapatra received Undergraduate Teaching Excellence award in 2010. Currently, he is visiting at IIT Bhubaneswar.

Dr. K. Poulose Jacob
Ex Pro Vice Chancellor,
Cochin University of Science & Technology, Cochin 682 022,
Currently, Head of the Panel on Scientific Computing of the Naval Research Board under the Defence Research & Development Organisation (DRDO), Government of India

Lecture Title: *The Web @30 : Some challenges*

Abstract: The World wide web, in its 30+ years of existence has had tremendous impact on all facets of human life. More than 50% of world citizenry has acquired the title netizen through their involvement in web based transactions. The world has been made smaller and more friendly and convenient to live in. But the researcher who made the initial proposal has expressed his concern at the aberrations in the useage of the web. Well-meaning proponents of the web also tend to agree with him. Is it possible to do a track correction; can researchers start thinking in those lines? Digital ethics is a phrase to be coined, in this scenario and needing to be propagated among the stake holders for voluntary adherence.

Biography:
Dr. K. Poulose Jacob, Professor of Computer Science at Cochin University of Science and Technology since 1994, retired as the Pro Vice Chancellor of Cochin University of Science & Technology. He is currently, the Head of the Panel on Scientific Computing of the Naval Research Board under the Defence Research & Development Organisation (DRDO), Government of India.
A National Merit Scholar all through, Dr. K.Poulose Jacob joined the Cochin University as a Lecturer in the regular position in 1983. He has taught the B.Tech students of the University since 1980. His studies and research in Multi-microprocessor Applications earned him his PhD from Cochin University of Science and Technology. He was elevated as Reader in Computer Science in 1989 and subsequently Professor. He is the founder Director of the School of Computer Science Studies. A new M.Tech programme was started in the department of Computer Science, under his leadership. He has initiated the development of several new laboratories; the CUSAT intranet was conceived and commissioned under his leadership. He has been Director of the CUSAT Computer Centre and had initiated the Centre for Information Resource Management. He was Chairman of two Boards of Studies earlier. He has been the Dean of the Faculty of Engineering and is presently Chairman, Board of Studies in Computer Science. He is a member of Academic Council and has been in the University Senate for 10 years. He has held additional administrative responsibilities at CUSAT, like Head of the

Department of Computer Applications, Director - Centre for MHO Co-operation, Director - Strategic Planning.

He has presented research papers in several International Conferences in Europe, USA, UK, Australia and other countries. He has delivered invited talks at several national and international events.

He has served as a Member of the Standing Committee of the UGC on Computer Education & Development. He is the Zonal Coordinator of the DOEACC Society under the Ministry of Information Technology, Government of India. He serves as a member of the AICTE expert panel for accreditation and approval. He has been a member of several academic bodies of different Universities and Institutes. He is on the editorial board of two international journals in Computer Science. He has hosted an International Conference at Cochin serving as its Organising Chair.

Dr. K. Poulose Jacob is a Professional member of the ACM (Association for Computing Machinery) and a Life Member of the Computer Society of India. Till now twelve candidates have obtained PhD degrees under his supervision. He has more than 75 research publications to his credit. His research interests are in Information Systems Engineering, Intelligent Architectures and Networks

Listed in the 2010 Edition of Who's Who in the World® published by Marquis Who's Who, as the biographical reference representing the world's most accomplished individuals.

Prof. Sanjay Misra
Chair - Center of ICT/ICE Research,
Endowed Prof of Software Engineering and Intelligent system,
A201 -CUCRID Building, Covenant University, Ota, Nigeria

Lecture Title: ***Applicability of AI for sustainable development***

Abstract: Sustainability refers to the task of managing change in an equitable manner such that, the utilization of resources, the direction of investments, the focus of technological development and institutional transformations are all in harmony and enhance both current and future potential to meet human needs and aspirations. To ensure sustainability by ending poverty, protecting the planet and ensuring that people around the world enjoy peace and prosperity, the United Nations rolled out 17 Sustainable Development Goals (SDGs) in 2015. Recent studies show that Artificial Intelligence (AI) can provide solutions for achieving and realization of the SDGs. In fact, if the strong power of AI will be applied correctly it can provide an excellent tool for attaining United Nations' SDGs. In this paper, we demonstrate how AI can be implemented in solving problems related to each STG goal. Several examples are presented for showing the feasibility of AI applications in various areas.

Biography:

Sanjay Misra is full Professor of Computer Engineering at Covenant University, Ota, Nigeria. He has 25 years of wide experience in academic administration and researches in various universities in Asia, Europe and Africa. He is Ph.d. in Information and Know. Engg (Software Engineering) from University of Alcala, Spain and M.Tech.(Software Engineering) from Motilal Nehru National Institute of Technology, India.

He has previously held academic positions at FUT Minna - Nigeria (as Head Department of Computer Engineering and Head- Department of Cyber Security), Atilim University - Turkey, Subharati University and UP Technical University - India. He is also visiting/Collaborative professor at the University of Alcala – Spain(since 2011-), UCV- Valparaiso – Chile(since 2013-), UNICEN, Tandil – Argentina(since 2011-), and Atilim University – Turkey(since 2011-).

His current researches cover the areas of software quality assurance, software process improvement, software project management, object oriented technologies, XML, SOA, Web services, cognitive informatics, artificial intelligence, neural network, health Informatics, e-learning, cloud computing and cyber security. Prof Sanjay is coordinating/working/collaborating with several research groups (as visiting/adjunct professor/collaborative researcher) in various universities and industry around the world (Spain, Argentina, Turkey, Singapore, Chili, Brazil, Mexico, Norway, France, South Africa, Malaysia, Nigeria, Myanmar, Vietnam, India).

Dr. Kailash Kumar

Assistant Professor, College of Computing and Informatics,
Saudi Electronic University,
Riyadh, Kingdom of Saudi Arabia.

Lecture Title: ***Blockchain: Applications And Future Directions***

Abstract: Blockchain is a decentralized transaction, distributed ledger and data management technology developed first for the Bitcoin cryptocurrency. The interest in Blockchain technology has been increasing since the idea was coined in 2008. Security, anonymity and data integrity without any third party organization in control of the transactions is the main reason for interest in Blockchain. Hence, it creates interesting research areas, especially from the perspective of technical challenges and limitations. Blockchain applications and future directions always attract more attention. This talk is focused on understanding the current research topics, challenges and future directions regarding Blockchain technology from the technical perspective.

Biography:
Dr. Kailash Kumar presently serving as an assistant professor in the College of Computing and Informatics, Saudi Electronic University, Riyadh, KSA having experience of more than sixteen years in India and abroad. Previously, he was Dean (Academics) and Professor in the department of Computer Science & Engineering since July 2010 in Modern Institute of Technology & Research Centre, Alwar, Rajasthan. He is associated with various technical societies of national and international repute. He has also published various research papers at national and international level. He is a Life Member of Computer Society of India (CSI) and Indian Society for Technical Education (ISTE). He is also member of International Association of Computer Science & Information Technology (IACSIT) and International Association of Engineers (IAENG). He is profoundly engrossed in the area of Data Structure & Algorithms, Compiler Construction, DBMS, C and C++. He also authored a book on "Theory of Computation". He is an editorial board member and reviewer of various International Journals.

Prof. Gyoo-Soo Chae

Professor, Division of Information & Communication Engineering,

Baekseok University, Cheonan City, South Chungcheong province,

South Korea

Lecture Title: *IoT sensors in smart farming*

Biography:

Gyoo-Soo Chae received the B.S. and M.S. degrees in electronic engineering from Kyungpook National University in 1993 and 1995, respectively and Ph.D. degree in electrical engineering from Virginia Polytechnic Institute and State University in 2000. From January 2001 to February 2003, he was an RF manager at Amphenol Mobile. Since 2003, he has been with Division of Information & Communication Engineering, Baekseok University, Korea where he became a tenured professor in 2015.

His current research interests include microwave antenna, EMC(electromagnetic compatibility) and M&S of electronic warfare. He is a life member of the Korea Institute of Electromagnetic Engineering and Science, Korea Convergence Society and Convergence Society for Small & Medium Business. He currently has 30 more publications in the electromagnetic fields and M&S of electronic warfare. He is currently serving as a committee member of the International Conferences including ICCT (International Conference on Convergence Technology), ICSMB (International Conference on Small & Medium Business) and ICDPM (International Conference on Digital Policy & Management).

Dr. Rishu Gupta

Senior Application Engineer, MathWorks India Pvt. Ltd.,
Bengaluru, India

Lecture Title: ***Developing and Deploying Deep Learning Applications using MATLAB***

Biography:

Dr. Rishu Gupta is an expert in design and development of computer vision and image processing algorithms using conventional methods and deep learning methods with research experience of over 7 years.

His previous works include, development of computer vision algorithms (Disparity estimation, SLAM, SFM) using monocular and stereo camera system, design and development of machine learning architectures in neural networks for solving imaging problems and vision applications (segmentation, classification, object detection), development of algorithms and protocols for clinical application, while, working closely with medical practitioners on complex imaging problems

His research interests includes machine learning techniques such as deep neural networks (CNN/DNN), Decision trees (boosting, bagging, random forest).

PRESENTATION SCHEDULE: ICICRS 2019

DATE 19-07-2019									
TIME	MBA Building- ROOM NO-3			MBA Building -ROOM NO-5			MBA Building - CDAC LAB		
	SESSION NAME	PID (easychair)	Session Chair	SESSION NAME	PID (easychair)	Session Chair	SESSION NAME	PID (easychair)	Session Chair
14:00 to 15:30	Communication Systems & Data Analysis Applications -1	91, 92, 93, 10, 34	Prof. K.C. Patra / Prof. A. Sahoo	GIS Applications	3, 15, 39, **41, 46**, 79	Prof. B. Pati	Artificial Intelligence & Machine Learning -1	20, 30, 35, 43, **55, 56**	Prof. B.K. Mishra
15:45 to 17:15	Communication Systems & Data Analysis Applications -2	18, 19, 26, 96	Prof. K.C. Patra / Prof. A. Sahoo	Remote Sensing - 1	**2**, 9, 27**, 29**, 40, 42	Prof. B. Pati/ Dr. Hemant Rath	Artificial Intelligence & Machine Learning -2	**57, 58, 59, 60**	Dr. L.D. Jena
17:15 to 18:00				Remote Sensing - 2	47, 48, 63	Dr. M. Panda/ Dr. Hemant Rath	ADJUSTMENT/ SKYPE	**67, 88**	Mr. A. Das
DATE 20-07-2019									
9:00 to 10:30	Wireless Sensor Networks and IoT -1	4, **8, 7,** 14, 23, 44	Prof. S.K. Bisoyi/ Prof. Ajit Nayak	Digital Signal, Image and Video Processing -1	25, 31, 33, **45, 50, 53**	Prof. R. Misra/Prof. P. Kanungo			
14:45 to 16:15	Wireless Sensor Networks and IoT -2	51, **70**, 85, **89**, 94, 99	Prof. P.K. Pattnaik	Digital Signal, Image and Video Processing -2	54, 61, 73, 86	Prof. P.K. Mallick	ADJUSTMENT/ SKYPE	**87, 89**	Ms. R. Priyadarshini

PAPERS DETAILS: ICICRS 2019

Paper ID	AUTHRS NAME	TITLE
1	Anumit Garg	Hybrid CNN-LSTM model for classification of multispectral satellite images
3	Viral Dave, Megha Pandya and Ranendu Ghosh	An Assessment of the Desertification Vulnerability based on MEDALUS model
4	Prasanta Kumar Bal and Sateesh Kumar Pradhan	Privacy Preserving Secure Data Storage scheme based on Adaptive ANN and Homomorphic Re-Encryption Algorithm for Cloud
9	Deepank Verma, Arnab Jana and Krithi Ramamritham	Identifying degrees of built arrangement in Indian cities through mid-resolution satellite imagery and Convolutional Neural Networks
10	Bhabani Patnaik, Ullash Kumar Rout and Sarat Chandra Swain	Effect of Greenhouse Gas Concentration on Solar Photovoltaic Performance
14	Bandita Sahu and Prahallad Sahu	Demand Based Secured data Transmission in WSN
15	Tanmoyee Bhattacharya, Dr Deepak Khare and Dr Manohar Arora	Hydrologic Impact assessment of glaciated BEAS river basin using High Resolution Climate Simulations from CORDEX Regional Climate Models
18	Ashutosh Biswal and Sarada Prasanna Behera	A DE algorithm optimized TIDF plus second derivative Order controller for Load Frequency Control of two-area thermal power system
19	Sarada Prasanna Behera, Ashutosh Biswal and Sidhartha Sankar Samantray	Differential Evolution algorithm technique based Automatic Generation Control of Two-area Power Systems using Hybrid PID controller with filter

Paper ID	AUTHRS NAME	TITLE
20	Prathyusha Kanakam and Asn Chakravarthy	Emotional Intelligence through Body Temperature using Hybrid Progressive Approach
23	Soumya Ranjan Jena, Bhushan Dewan, Swagatika Tripathy and Sukant Kishoro Bisoy	ISMAC:Past, Present & Future of Digital Technology
25	Atasi De, Dheeraj Kumar and Parul Patel	Performance analysis of different decomposition methods for classification of crops and other land cover targets using Risat-1 hybrid SAR imageries
27	Pragati Singh, Vaishali Sharma, Rajesh Kumar Upadhyay, Narendra Kumar and Shivpal Singh Jadaun	IMPACT OF SUMMER RICE CULTIVATION ON GROUND WATER IN PILIBHIT DISTRICT, UTTAR PRADESH, INDIA
30	Sumanjit Das and Sarojanada Mishra	Deep Learning prognostication Structure for Stock Value Prediction
31	Aditi Gaygole	European Script Identification using Projection Profiles and Statistical Features for Handwritten Documents
33	Trupti Bidwai	An Automated Technique for Screening of Diabetic Retinopathy from Fundus Images
34	Santanu Mallick and Ujjwal Mondal	Design of Lyapunov based Model Reference Adaptive Controller for First Order Plus Delay Time Liquid Level System
35	Apurv Prakash, Nikita Agarwalla and Rojalina Priyadarshini	A Novel Approach Towards Industrial Waste Management Using Q-Learning
39	Aadityan Sridharan and Sundararaman Gopalan	DEM Based Categorisation of Landslides Induced by 2011 Sikkim Earthquake

Paper ID	AUTHRS NAME	TITLE
40	Kanaya Dutta, Debolina Basu and Sonam Agrawal	Assessing Degradation in Local Environment Due to Recent Urban Sprawl, Through Case Study of an Indian Satellite Town
42	Shruti Bharadwaj and Dr. Susham Biswas	Use Of LIDAR Point Data For Noise Prediction-: "Determination Of Terrain Parameters For Modelling"
43	Adarsh Pratik, Subham Divakar and Rojalina Priyadarshini	A Multi facet Deep Neural Network Model for Various Plant Disease Detection
44	Varid Verma, Swati Priya, Somya Mishra and Rojalina Priyadarshini	Property fraud detection and prevention using blockchain
45	Abhishek Bhattacharjee, Vikash Kumar Sony and Rojalina Priyadarshini	Localization and Estimation of Plant Disease Intensity for Aerial Image
48	Prabira Kumar Sethy	An Android/Web based Application to Estimate Nitrogen Concentration in Rice Crop of Western Odisha
51	Namita Bajpai, Subhashree Mohapatra and Manohar Mishra	A Novel Distributed Energy Efficient Routing Algorithm Based on Clustering Mechanism in WSN
54	Sudheer Devulapalli, Rajakumar Krishnan, Arun Kumar Tangavelu and Prabhavathi P	Content Based Image Retrieval for SAR Image Data Using Multi-Resolution Analysis and Texture Feature Extraction
55	Harsh Lal and Priyanshu Lal	Learning Disease representations from Discharge Summaries
58	Khushboo Singh, Jitendra Kumar Rout and Himansu Das	Diabetes Prediction using Machine Learning Techniques
61	Sudhansu Bala Das, Dipak Das and Pradeep Kumar Swain	Intelligent Optical Tracking
63	Arunima Nandy, Premia Taifa and Abhijit Das	Above Ground Biomass Estimation of Son Beel using Landsat 8 OLI

Paper ID	AUTHRS NAME	TITLE
67	Hadi Ezaldeen, Rachita Misra, Rawaa Alatrash and Rojalina Priyadarshini	Machine Learning Based Improved Recommendation Model for E-learning
73	Avinash Chouhan, Shivraj S, Dr Dibyajyoti Chutia and Pln Raju	Comparison of tree canopy extraction using Object Based Image Analysis and Deep Learning Technique in UAV images
79	Marius Kyntiewbor Feegrade Lynrah, Arunima Nandy and Abhijit Das	Application of GIS in Crime Assessment: A case Study of Shillong Municipal Area
85	Kalyani Yawale	A Smart System for the People Enduring through Alzheimer's Disease
86	Kalyani Chavhan	Suspicious Object Detection
87	Pooja Deshmukh	Recontruction of Torn Document by Moore Algorithm
88	Pinaki Prasad Guha Neogi	Novel Approach for Steiner Nodes Filtration in VLSI Global Routing
89	Pinaki Prasad Guha Neogi	Cost-Effective Dynamic Workflow Scheduling in IaaS Cloud Environment
92	Anika Tahsin, Dr Anurag Srivastava and Dr Latha Christie	Design of a 12 kW Sheet Beam EIK for W-Band Radar
93	Rushmita Bhattacharjee, Dr Anurag Srivastava and Dr Latha Christie	Design of a W-band Multi-Beam Folded Waveguide TWT for High Data-Rate Communication
94	Swabhiman Choudhury, Rakesh Kumar Lenka, Rabindra Kumar Barik and Nagen Chandan Panda	Security Protocols in Internet of Things (IoT) - A Review
96	Debi Prasad Acharya, Subhashree Choudhury and Niranjan Nayak	Photovoltaic Cell Based Shunt Active Filter And Power Quality Improvement Using Hybrid Optimization Technique
97	Sandeepa Zakarde	Ensemble Bagging Script Identification of Handwritten South Asian Documents
99	Rakesh Kumar Lenka, Amiya Kumar Rath Rath and Suraj Sharma Sharma	Routing Protocols in WSN Assisted IoT Infrastructure - A Review

An Assessment of the Desertification Vulnerability based on MEDALUS model

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Abstract–Desertification and Land Degradation risk is one of the major environmental and socio-economic problem which constantly affects the global environment. Reduction or loss of land productivity caused by natural processes and human activities is land degradation which leads to desertification. The flaw in any system can be measured by basic concept of vulnerability. In the present study, desertification vulnerability assessment was carried out using geographic information system (GIS) for mapping sensitive areas using Mediterranean Desertification and Land Use (MEDALUS) approach, which identifies such sensitive areas on the basis of an index in which environmental quality as well as anthropogenic factors are included as layers for Surendranagar district of Gujarat state in India. Many aspects of vulnerability arising from natural and human factors were considered in this study. Soil, climate, land utilization, geography and vegetation contribute in the land degradation of any area. Indices related to these factors have been generated. Socio-economic factor is a one of the major input to assess desertification vulnerability as anthropogenic activities. As a result in this study MEDALUS model has been used for both natural and socioeconomic factors for finding the severity level of the desertification vulnerability in Surendranagar district.

Key words: MEDALUS, Desertification, Land Degradation, Desertification vulnerability indices

Hydrologic Impact assessment of glaciated BEAS river basin using High Resolution Climate Simulations from CORDEX Regional Climate Models

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Abstract— Under the changing environment, significant climate variability analysis and the hydrologic response of the Beas with changing climate is principle consideration for managing sustainable water resource. In this study, the possible future climate induced effect on the water and energy balance of the Beas river basin was evaluated using VIC- glacier model. In Beas river basin the increment of annual rainfall during the period 2006-2040 and 2041-2070 is 9-12% with respect to 1970-2005. There is a 64% reduction of deciduous broadleaf forest and a 65% increase of grassland by 2030. The hydrology model projects a general increase of rainfall-induced runoff, glaciermelt and the reduction in snowmelt as compared to historical climate data (1970-2005). This can be due to the warming climate and increased precipitation in future. The total runoff for this basin increases moderately by 6-17.0% during the period 2006-2040 and 2041- 2070. The rainfall-induced runoff has a major contribution to the discharge where the runoff input from snowmelt and glaciermelt is moderate.

Keywords — CORDEX, Discharge, Glaciermelt, VIC-Glacier, Snowmelt

Emotional Intelligence through Body Temperature using Hybrid Progressive Approach

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Abstract—Novel methodologies are the combination of budding technologies. A machine needs to be trained in such a way to work along with sensors for understanding human perception. Thermal-ID is one such metric that combines sensor technologies with machine learning to identify the mental state of an individual based on their body temperature. The emotional intelligence is indulged in the machine to predict a particular state of emotion of the individual based on the body temperature. Hidden Markov model is the basis for making the decision by obtaining each emotion when experimented on sample data of an individual's body temperature. This work mainly focuses on the state-of-art metric Thermal-ID or body temperature-ID, its characteristics and factors. Hybrid Progressive Approach (HPA) is the methodology that applies double normalized values to a machine for predicting the body temperature change (ΔTb) with respect to an emotional state of an individual.

Keywords— Emotion, hidden-Markov model, machine learning, thermal conductivity

Deep Learning Prognostication Structure for Stock Value Prediction

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Abstract: The intense of share market is due to speedy growth of stock profitable value in short yoke of time. Therefore investors are more fascinated to spend funds in share market. The investor tries to read, analyse values and growth of organization before investing money in share market. The process of investigating may not be adequate by using conventional process or some available methods suggested by different researches. In recent days large number of stocks are available in market it is very difficult to study each stock by help of very few suggested foretelling methods. To know the expected stock value we need some innovative prediction technology for market. This paper discuss few recent efficient methods to plan and analyse the different organizers stock execution in market and prognosticate best suitable stock by predicting close price of stock with help of supervised data. The projected arrangements are based on RNN-LSTM, Back-propagation (BKP), Radial Basis Function (RBF) optimized by Adam optimizer with loss as MSE. From result it has been ascertained that the projected framework is best fitted and can be use in any real world data.

Keywords: ANN,deep learning,forecasting,stock market, soft computing.

European Script Identification using Projection Profiles and Statistical Features for Handwritten Documents

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Abstract – Europe has rich history of Roman Empire and many more but the biggest problem to extract this information is the lack of knowledge of the languages that were used at that time. There are almost 17 scripts[1] that were used in European countries in different duration of time which covers hundreds of languages. In order to preserve these this old document it is very important to digitized these documents. Manual digitization of these document is very difficult as there are very few people who understand these languages and also manual digitization is time consuming process. Hence this paper explain texture based approach for 14 different European script identification. Here we have used 22 features on the basis of GLRLM, GLCM, projection profiles and geometric moment features. Classification is done using SVM classifier and we obtain overall 90.8% accuracy.

Keywords- European script identification, handwritten documents, feature extraction, GLCM, GLRLM, SVM classifier.

Design of Lyapunov based Model Reference Adaptive Controller for First Order Plus Delay Time Liquid Level System

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Abstract— The control of liquid level in tanks is one of the fundamental requirement in all process industries. The objective of this work is to apply Model Reference Adaptive Control (MRAC) using Lyapunov rule for First Order Plus Delay Time (FOPDT) liquid level system. Different values of adaptation gains are taken for comparative analysis. The responses of the proposed controller are compared with conventional controller for analyzing the system performance. The MATLAB Simulink environment is used for simulation of different control strategies.

Keywords—Adaptive Control, FOPDT, Lyapunov rule, MIT rule, MRAC, Performance indices, Ziegler-Nichols

Assessing Degradation in Local Environment due to Recent Urban Sprawl: Case Study of an Indian Satellite Town

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Abstract—Commercialization and infrastructural development has resulted in severe urban sprawl in New Town, a satellite town of Kolkata. This is a part of Rajarhat C.D. Block. Escalating land use practice has lead to a dynamic transformation in the local land cover and associated micro environment of this region. Replacement of vegetation with concrete surfaces has caused problems of natural resource depletion without any attention paid to environmental sustainability. The study aims to identify the negative impacts of urban growth in this region, for the latest decade i.e. from 2009 to 2019. Loss of natural resource, as vegetation was monitored by mapping Fractional Vegetation Cover (FCOVER) index over time. Transforming the natural vegetation with built up surfaces also modifies the local climate of a city region. As an indicative climatic parameter Land Surface Temperature (LST) was considered. Landsat satellite images were processed for identifying the environmental degradation over time. Through areal change detection, nearly 40% vegetation loss was observed. Landscape metric analysis has been carried out for a better understanding of structural characteristics of this vegetation cover parameter. The analysis showed fragmentation and reducing density for vegetation patches over the area. The combined effect of vegetation loss and urbanization resulted in a rising LST patterns. New heat islands have been spotted and are found to grow spatially. This was established by statistically relating FCOVER with LST. The negative correlation between vegetation and temperature was found to be significant at $\alpha 0.01$. The critical areas of heat islands have been identified which urgently needs implementation of mitigation. Thus the study helps to build a database for future landscape planning and environment management.

Index Terms— Landsat satellite imageries, Urban sprawl,FCOVER, LST

Content Based Image Retrieval for SAR Image Data Using Multi-Resolution Analysis and Texture Feature Extraction

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Abstract—Radar images are the most vital information to analyze the earth and sea surface irrespective of the climatic situation. For difference applications like flood mapping, disaster management, sea ice detection, and terrain classification, etc., SAR imagery is the primary source. Information retrieval from a large amount of SAR data with traditional techniques like tag based search engines is failed to perform

faster and accurately. In this proposed work, Content-Based Image Retrieval (CBIR) has been used with a combination of Multi-Resolution Analysis (MRA) and texture features. Curvelet transform is used for decomposing the image into multiple scales and each scale with different orientations. Principle Component Analysis (PCA) is used to reduce the coefficients. Haralick texture features are extracted from the PCA based image using Gray Level Co- Occurrence Matrix (GLCM). The distance between Querry im- age and Database models will perform by using the Mahalanobis distance measure. The feature descriptors extracted in this work has obtained excellent Precision and Recall factors.

Index Terms—CBIR, SAR image retrieval, Curvelet, Texture features, Remote sensing.

Learning Disease representations from Discharge Summaries

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Abstract—One of the most important goals in healthcare is health promotion, disease prevention and identification of the associated risks.[1] The typical problems is that even after decades of epidemiological research, it has proven to be very difficult to identify diseases and its risk factors. Now a days most of the health data is stored electronically, for example as Electronic Health Records (EHR). Disease registries and similar database of information provides a wealth of information that can be used to identify and track the diseases since its onset and enable faster remedy.[2] This paper presents an artificial intelligence approach to disease identification. Also there has been a growing demand for ease of access to healthcare, and this necessitates the development of healthcare technology with Human Computer Interaction(HCI) design in mind. HCI usage can help both patients and healthcare providers as well.[3] So we also propose a Human Computer Interaction component that can answer patients´ question and help improve the quality of healthcare services provided to an individual. We make use of Natural Language Processing, Machine Learning and Big Data technologies to provide a feasible deployable solution.

Above Ground Biomass Estimation of Son Beel using Landsat 8 OLI

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Abstract—The wetland biomass is one of the most important factors for determining the status and restoration of wetland. Son beel, the largest wetland of Assam has unique dual char- acteristics. The pre monsoon and post monsoon scenarios are typically different which control the biomass characteristics of the beel. The present study is aimed to estimate biomass of the Son beel. The study has been carried out using Landsat 8 OLI satellite image. Ground biomass has been measured using traditional method for comparative analysis with the space-borne measurement. Spectral responses of biomass have been studied to understand the reflectance characteristics of the features present in the beel. Normalized Difference Vegetation Index (NDVI) and Normalized Difference Water Index (NDWI) have been analyzed to know the health of vegetation and to identify water submerged areas. The correlations of the NDVI and biomass, band 5 and biomass have been carried out and found to be in positive correlation. The distribution map of biomass has been prepared from the linear regression analysis of band 5 and ground biomass of the beel. Statistical comparison of ground measured biomass and satellite derived biomass has been analyzed and it has been found that they are strongly positively correlated with each other.

Keywords—NDVI, NDWI, biomass, turbidity, regression

Application of GIS in Crime Assessment: A Case Study of Shillong Municipal

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Abstract—In present context, crime is a social problem that maximum cities use to face. Shillong is one of the most popu- lated and important tourist hub of North Eastern India. From the view points of economical, residential, administrative and tourist importance, assessment of crime is very significant for Shillong. To assess crime scenario in Shillong municipal area, GIS techniques have been applied. Service area of each police stations have been generated. Shortest routes have been identified from the police stations to location

of crime. Probable temporal locations of criminal have been identified which will be helpful for security planning purposes of police**.**

Keywords—Service area, probable temporal location, shortest route.

Novel Approach for Steiner Nodes Filtration in VLSI Global Routing

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Abstract— In case of VLSI circuit planning, it is very significant to locate the positions of the most efficient Steiner nodes, as they play a very important role in optimizing the overall cost of the circuit. For any given arrangement of Terminal vertices, there exist enormous quantity of vertices that have the probability of being a Steiner vertex and it imposes a massive computational load on the computer to try out every possible combination of these probable Steiner vertices and choose the best one. This paper puts forward a novel and efficient methodology for Steiner nodes refinement and thus finding out the most constructive Steiner vertices, which, apart from reducing the computational burden, also minimizes the overall routing length, and that too with a much lesser execution time. The effectiveness of the proposed method has been studied by comparing the outputs obtained by feeding the Particle Swarm Optimization (PSO) algorithm with the entire point-set and the set obtained after Steiner nodes filtration.

Keywords— Steiner nodes, RMST, VLSI Global routing, metaheuristics, optimization, PSO.

Cost-Effective Dynamic Workflow Scheduling in IaaS Cloud Environment

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Abstract—Cloud computing is considered to be the most trending paradigm in an exceedingly distributed environment and it gives great potential to unravel substantial scientific issues. Cloud foundation, which was customarily constrained to single supplier server farms, is presently advancing. The greater part of the servers of the cloud server farms is so overladen because of expanding requests and diverse sorts of errands that it leads to load imbalance within the cloud setting, thus influencing the execution of the framework. Asset designation in the cloud is an NP-hard issue and numerous algorithms have been put forward to take care of this issue of asset distribution. In this study, we have addressed the problem by proposing a resource allocation strategy for finding the best-fit VM and assuring maximum resource utilization while meeting the deadline and budget constraint. The efficiency of the proposed approach has been compared with other cutting edge techniques by taking to account different performance metrics over a number of well-known scientific workflows and from the achieved outcome, it can be seen that the proposed approach performs at a superior scale than the prevailing ones.

Keywords—Cloud computing, cloud infrastructure, workflow scheduling, virtual machine, makespan, deadline, budget constraint.

Security Protocols in Internet of Things (IoT) - A Review

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Abstract—The technical and scientific domains have undergone a major revolution in this twenty-first century. With several new spheres have been explored to make lives simpler and solve complex challenges. The area of Computer Science and Information technology has eased people lives by introduction of Artificial Intelligence, Virtual reality. One such useful domains are the Internet of Things (IoT) that has now started a recent trend in making things simpler and easy to access. This has enabled several daily use objects to be smartly connected with various computing devices, and it can also be helpful to control them by a click of a button or sending a simple command. However, every technology gets threat with increased users and to prevent these, various security protocols have been implemented in IoT.

Index Terms—IoT, Security Protocols, CoAP, MQTT

Photovoltaic Cell Based Shunt Active Filter and Power Quality Improvement Using Hybrid Optimization Technique

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Abstract— This paper explained efficient operation of solar cell based shunt active power filter for considerable energy management, harmonic estimation and is elimination along with reactive power compensation. The PV module is designed with INC MPPT technology and the shunt active power filter is connected at the AC side of the inverter integrated with a nonlinear rectifier load. The harmonics in load voltage, load current and source current are present due to connection of nonlinear load and intermittent PV power generation. The presence of harmonics in the power system may cause severe harm such as component overheating, increase in installation and consumer cost, malfunctioning of equipment, unusual tripping of circuit breakers, failure of sensors and noisy communication. To overcome all the above problems Filters are to be designed. Here a shunt active power filter designed to suppress the harmonic effects produced in the PV based system. Here the shunt active power filter design includes the PI controller whose gains are selected arbitrary which affects its performance. In the first study the total harmonic distortion (THD) is calculated with no filter and nonlinear load. Then THD Analysis is performed with shunt active power filter. Further to improve the performance of shunt active power filter, a hybrid optimization

technique is applied to select the proper value of PI gains R and L of nonlinear load. The simulation result depicts that the optimized shunt active filter reduces harmonics to a great extent.

Keywords— Shunt active filter, INC, Maximum power point tracking, THD

Ensemble Bagging Script Identification of Handwritten South Asian Documents

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Abstract—The world population is 7.7 billion and the largest and most continent is Asia where 59.66% population consists of the entire world. Southern Asia accounts for 39.49% of the total Asian population. This region hosts a variety of languages, playing a critical role in the polygraphia formation, sharing of one script by several languages which have applications in multilingual access to patents, business regulatory information for independently evaluating all regional market requirements. Ideographic languages in Southeast Asian scripts from left-to-right or vertically from top-to-bottom shows more flexibility in their direction of writing. This paper presents the challenges involved in analyzing handwritten documents of popular scripts namely Chinese, Hiragana, Hangul, Khmer, Latin, Thai, Sinhala, Arabic and Devanagari. The proposed technique for script identification is based on the methods of mathematical features, Gabor filter and wavelet moments feature extraction classifying the scripts using Ensemble Bagging Algorithm achieving an accuracy of 88.4%.

Keywords—Script Identification, South-East Asia, South- West Asia, Feature extraction, Gabor filter, Ensemble Bagging, Handwritten documents.

Routing Protocols in WSN Assisted IoT Infrastructure - A Review

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Abstract—The Internet of Things (IoT) can be characterized as a powerful and universal system which empowers checking and control of the physical condition by gathering, preparing, and breaking down the information created by sensors. The huge number of wireless sensor devices are interconnected to form a Wireless Sensor Network (WSN) which completes the IoT infrastructure. These sensor devices have many functionalities, such as data sensing, data transmission, intercommunication, computation, etc. The IoT devices sense and monitor the ambient conditions such as temperature, pressure, humidity, movements, speed, etc. of objects around it and convert that sensed signal to an electric signal. The received signal is processed, and useful information is extracted out of it, and the information is transmitted to a data center. These sensor networks have many applications in the field of military surveillance, healthcare, industries, environmental, etc. Mostly, the battery is the only source of energy for a node, and it is quite difficult to recharge node batteries. Hence, the design of proper routing protocol is required to extend the network lifetime. Many routing techniques have been proposed to solve this problem. All the energy

efficient protocols that were proposed can be classified into three types, namely flat, hierarchical, and location-based protocols. In this paper, various energy efficient, position-aware state-of-art routing protocols based on their network structure are analyzed.

Index Terms—Internet of Things, Hot Spot Problem, WSN- Assisted IoT, Routing Protocol, Green IoT.

ADE algorithm optimized TIDF plus second derivative Order controller for Load Frequency Control of two-area thermal power system

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Abstract— In this paper a unique TIDF plus Second Derivative Order (TIDFD2) controller is recommended for load frequency control of two-area non reheat thermal unit power systems where the unique TIDFD2 controller is placed in first area and second area. In the below system model controller parameter are tuned by the help of differential evolution algorithm. An effort has been made to prove that the TIDFD2 controller is showing better result as compared to other controller which is recently being published like Firefly Algorithm optimized PID controllers and differential evolution algorithm optimized TIDF controllers in the same thermal power system. From Simulink response it is found that settling times, overshoots of tie-line power deviation and frequency are better as compared to recently published work. Hence TIDFD2 controller is having better response following a disturbance.

Keywords— Proportional Integral Derivative (PID); Tilted Integral Derivative Controller with Filter (TIDF); Tilt Integral Derivative with Filter plus Second Derivative Order (TIDFD2); Differential Evolution (DE).

Demand Based Secured data Transmission in WSN

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Abstract- Based on the popularity of the application of wireless sensor network in our day to day life, most of the researches are going on in this area. Where, data transmission of secure data takes the major role. As the data flow in the network, the integrity should be maintained. In this paper, we have proposed a new approach to send the encrypted data from the Cluster head to the base station using RSA algorithm. The data are sent to the base station based on the demand generated by the base station. Hence, less amount of energy consumed by the sensor nodes. This approach is simulated using NS3 simulator and the result is being

compared with several algorithms. Based on various parameters our approach takes the supremacy over those.

Keywords- Cluster head, Non cluster head, data security, data integrity

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Differential Evolution algorithm technique based Automatic Generation Control of Two-area Power Systems using Hybrid PID controller with filter

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Abstract— This paper deals with load frequency control of two interconnected power system having no reheat process by using a new controller that is Hybrid Proportional Integral Derivative Controller with Filter (H-PIDF).The H-PIDF controller is an amalgam of classical PI controller and PIDF controller. This method is better as compare to the previous pre-established methods in literatures in terms of different parameters like the rise time and undershoots values of the system. In this work a two area non reheat thermal system is considered for simulation purpose. Here differential evolution algorithm is proposed to optimize the H-PIDF controller. The recently published paper as Firefly Algorithm (FA),Genetic Algorithm (GA), differential evolution (DE) algorithm optimized PID controllers and Particle Swarm Optimization (PSO) are compared with differential evolution (DE) algorithm optimized H-PIDF controller and from the study it is observed that proposed H-PIDF controllers shows more advantages on the basis of dynamic performance in comparison with recently published PID controller considering tie-line power variations and settling time of power system.

Keywords— (H-PIDF) Hybrid Proportional Integral Derivative controller with filter; (DE) Differential Evolution algorithm; (ITAE) Integral Time multiply Absolute Error

ISMAC:Past, Present & Future of Digital Technology

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Abstract— As we seen the rapid emergence of ISMAC in IT Industry which are the combination of five disruptive technologies like: Internet of Things (IoT), Social, Mobility, Analytics and Cloud Computing

therefore the theoretical investigation is highly essential to enhance digital transformation of India. Therefore, this article means to illuminate them with the ability to make up for lost time with ISMAC developments so they are not deserted in the race for advanced change. Here we address the following questions: How ISMAC can be helpful for developing digital India? What is the relationship between the five pillars of ISMAC? Moreover how ISMAC can be helpful to enhance business strategy of an Organization? In this regard enterprises need to fully understand the ability and usage of this rising technology so as to understand their planned strength in the following couple of years ahead.

Keywords— IoT, Social, Mobility, Analytics, Cloud Computing.

Performance analysis of different decomposition methods for classification of crops and other land cover targets using Risat-1 hybrid SAR imageries

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Abstract— The purpose of the current study is to analyze the decomposition methods for detecting crops and other land-cover targets based on Risat-1 hybrid polarimetric Synthetic Aperture Radar (SAR) imageries. In this study, the scattering mechanisms of every target feature have been investigated in terms of odd bounce, even bounce and volume component using m-χ, m-δ, m-α and modified m-χ decomposition methods to understand their performances in a better way. The comparative analysis of four decomposition methods has been performed in two test site areas namely Burdwan in the state of West Bengal and Bharatpur in the state of Rajasthan. Modified m-χ decomposition method provides the better results followed by conventional m-χ decomposition for segmentation of target features. Other conventional methods such as m-δ, m- α decomposition methods are in decreasing order of performance. The volume component is still found over-estimated in settlement using the modified m-χ decomposition method.

Keywords—SAR, Hybrid polarimetry, Decomposition method, scattering mechanisms, RISAT-1.

Impact of summer rice cultivation on ground water in pilibhit district, Uttar pradesh, India

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Abstract: Ground water is the major source of drinking as well as irrigation in India. In present scenario a major depletion in ground water is recorded due to over exploitation. Dueto summer rice cultivation, a huge

amount of ground water pumped every year, causing depletion in water table of Pilibhit district of Uttar Pradesh. Remote Sensing and GIS techniques provide an advance and reliable information regarding the area sown under summer rice. The present study focused on the identification of area under summer rice cultivation in different years and its impact on ground water level. The Landsat-8 Operational Land Imager (OLI) and Sentinel-2A satellite data were used to identify the area under summer rice. The non-agricultural map of Pilibhit district was prepared using Sentinel-2A satellite data. The ground water data was used to find out the water table in different years.

In the present study, the summer rice area estimation were done for the year 2012-2013, 2013-2014, 2014-2015, 2015-2016, 2016-2017 and 2017-2018 and as such, the rice area were estimated around 28667.08 ha, 29607.84 ha, 30382.62 ha, 31728.89 ha, 32675.38ha 32313.27 ha respectively. The cultivation of summer rice in above years (2012-2013 to 2017-2018)consumed around 100334783 litters, 103627443 litters, 106339173 litters, 11105111.53litters, 114363833litters and 11309644.53litters of water respectively. The source of thishuge amount of water is mainly ground water, which results in 2 to 3 feet depletion of water table in last decade and if this continues in future, the district of pilibhit will surely be faced severe scarcity of ground water.

Keywords: Landsat-8 OLI, Sentinel-2A, Summer rice, Ground water, Remote sensing & GIS.

Space based Remote Sensing of an Extreme Dust Event over India using INSAT-3D

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Abstract—Understanding the origin of a dust storm and its propagation is very pivotal in its forecasting now that the nowcasting of such extreme events are challenging. In this paper, an extreme dust event, occurred over India in May 2018 which has been quite hazardous, is monitored using INSAT-3D - sounders and imagers. This work does provide not only an insight to the impact of dust event on meteorological parameters but also the scope of such satellite meteorology in capturing dust event signatures and therefore carrying the potential to help the weather forecasting processes.

Keywords—Dust event, INSAT-3D, extreme event monitoring, satellite meteorology

An Automated Technique for Screening of Diabetic Retinopathy from Fundus Images

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Abstract—Diabetic Retinopathy is an eye complication which affects the retina of the diabetic patient. The retina starts getting damage which leads to lifelong vision loss. The solution to prevent lifelong vision loss is

grading the fundus image. The automatic grading of fundus image helps to cure diabetic retinopathy in early stages. In this paper a grading algorithm is designed which decides the severity of disease. The two abnormalities are taken into consideration while grading. The optic disc, macula, red lesion and exudates are segmented. After the segmentation of optic disc, the diameter is calculated. The grading algorithm is designed with the help of optic disc diameter. The distance between the macula and abnormalities such red lesion and exudates is examined in the grading algorithm while grading a fundus image. The grading algorithm is evaluated on the database of fundus images and accuracy of 91% has achieved.

Keywords- Diabetic retinopathy(DR), Fundus image, Optic disc, Macula, Red lesion, Exudates.

DEM Based Categorisation of Landslides Induced by 2011 Sikkim Earthquake

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Abstract— Remote sensing techniques are widely used in disaster hazard detection and management. Cartosat Digital Elevation Model of landslides triggered by Sikkim 2011 earthquake was collected and the slope and elevation data was generated using ArcGIS software. This data was used to categorize the landslides and look at the variation in the material that has caused slope failures. Similarly calculated distance of triggered landslides from epicenter has been mapped and the types of landslides triggered was observed. It has been noted that most landslides that have been triggered are more than 40km away from epicenter. Debris overburden slides are the most among the triggered landslides while rock falls were also observed, the rainfall during the event had also reactivated certain older slides.

Keywords—Earthquake induced landslides, GIS, ArcGIS, QGIS and Bhuvan.

Use Of LIDAR Point Data For Noise Prediction-: "Determination Of Terrain Parameters For Modelling"

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Abstract:- Noise prediction requires major information regarding terrain data (positional information of building, road etc.), noise data (of sources) and a prediction model to predict noise levels around different noise sources for managing noise pollution. For the study of noise over a particular area noise spatial variation is needed that requires information of source, destination and terrain dataset. Existing techniques for sound propagation models suffer from approximation in many algorithm, inadequate technique to generate terrain related information and limitation in gathering accurate terrain information in several cases. In case of outdoor propagation, Noise keeps propagating from source to receiver's location.While moving it can directly reach to receiver or reach indirectly after diffracting arounds barriers and buildings, reflecting from ground as well as after absorbing to different surface. It may be thought that the best way of finding noise levels is noise modelling. The modelling required possible route determination. In the paper a

technique is described for taking input from LIDAR data to generate terrain data, technique uses Laser beam to generate dense and accurate high resolution terrain data, which is present in the form of point cloud. Each point cloud contains 3D spatial coordinates (latitude, longitude and height). And algorithm is proposed to determine all the possible routesin 3D from noise source to desired destination(s). A point to point rigorous routing technique is developed capable of working in 3D, specially made to suite acoustic propagation principle (unlike well know shortest route determination algorithms primarily work in 2D). Once get the detailed routes information, it is planned to apply semi-empirical noise model over each route to determine the noise levels of unknown locations considering distance, building, atmosphere, ground, vegetation andreflection attenuation factor. From the lidar data of RGIPT campus building coordinates are extracted and then by running proposed noise model we can identifythe routes, and noise map for RGIPT campus. The main purpose of this study helps the social aspects by assessingthe different noise levels generated nearer to the areas and to aware the population about the amount of noisethat affects the livings. This study put a step to evaluate possible steps that could be used to reduce the noise.

Keywords— Noise modeling, Noise mapping, Noise prediction, Sound propagation, Traffic Noise, LIDAR

A Multi facet Deep Neural Network Model for Various Plant Disease Detection

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Abstract—Plant diseases are very common in India, but their effect is severe. If those could be identified beforehand, most of the disease can be checked in their early stage. Thereby their severity could be avoided by taking necessary precautions. In this paper we present a deep learning based neural network model to do disease prediction in various plants. It makes use of a convolutional neural network architecture. For testing the model, an open source data set has been used. A total of 3790 images are

collected from more than six plants, which carry more than 11types of disease. Data Augmentation has been used to strengthen the training dataset.The application of data augmentation has increased the accuracy from 72% to 92%. The advantage of Transfer learning has been exploited in the current work. Google

Inception V3 model is used to train the data set. The overall accuracy for this model is coming around 93%, where as for certain disease like Black Measles the proposed model is giving an accuracy up-to 99.35%, which is quite comparable with the other contemporary research works.

Keywords—Deep learning, Convolutional Neural Network,Plant Disease, Detection, Accuracy, Augmentation

Localization and Estimation of Plant Disease Intensity for Aerial Image

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Abstract—Disease spreading in crops is a very important topic to work on. Knowing where and how severe the disease has spread in the field would help individuals to take effective counter measures to reduce or stop the spreading of the disease. In this paper image segmentation was performed on the aerial image of wheat crop on the basis of colour spaces to find out the where in the field the disease is present. The disease was shown by masking the affected area over a black background. The disease stem rust was focused on and the density of this particular disease was found out from the image itself using the mask image. The results also gave the estimation of the disease in percentage value so as to know what amount or how severe the disease has covered the crop field. Such calculation could also help to understand the pattern of spreading of the disease.

Keywords —Segmentation, Colour Spaces, Density, Localization

An Android/Web based Application to Estimate Nitrogen Concentration in Rice Crop of Western Odisha

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Abstract: In Rice crop, (Oryza sativa) the Nitrogen & Chlorophyll contents can be estimated by Leaf Color Chart (LCC) for proper prescription about the Fertilizer. Comparing the visual attributes with the LCC is not same always. The accuracy is affected by human color perception. This paper proposes development of a Web/Android based application called “n4riceleaf”. This application captures a 2D color image of rice leaf & determines its average color in HEX color code. Then it makes an estimation of N concentration in accordance to the generated HEX color code of the image & the five shade LCC achieving high accuracy. This application runs on all devices irrespective of device & platform i.e. Smartphone, tablet, Laptop etc. which meets a minimum requirement.

Keywords—Leaf Color Chart, Android Application, Apache Cordova, Adobe Phone Gap, Nitrogen Concentration.

A Novel Distributed Energy Efficient Routing Algorithm Based on Clustering Mechanism in WSN

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Abstract— In this work, an energy efficient cluster-based routing protocol has been proposed, which provides balanced energy consumption in the wireless sensor network to extend the network lifetime. There are many clusters based routing protocols which work on different techniques of cluster formation that leads to energy loss. Usage of the same cluster head and routes may lead to excess energy drop of nodes near to sink in WSN (Wireless Sensor Network). Here, we propose a technique using which energy can be saved during cluster formation and used in routing. The proposed mechanism also allows different nodes to get a chance to become a cluster head. In this proposed algorithm, new clusters are formed after each interval, hence new routes are followed for data transmission which results in balanced energy consumption. Therefore, no particular node is overexploited and the task is distributed among all nodes. Moreover, the performance of the proposed mechanism is measured and compared with the existing k-means algorithm. The comparative analysis proves the effectiveness of the proposed algorithm.

Keywords— Cluster, Routing, Energy, k-means, Wireless Sensor Network

Machine Learning Based Improved Recommendation Model for E-learning

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Abstract - E-learning has gained importance due to the need of re-skilling, up-skilling, augmenting normal education system by providing knowledge delivery in virtual environment. A good E-learning system needs to have a customizable process, initiated by learner profile and dependent on training requirements. It can deliver desired results when it is integrated into day-to-day learning patterns providing a clear competitive edge for e-learning platforms. Learning needs to be relevant to the context of the concept. Learners in any learning environment differ in their learning style, level of knowledge, preferences, and attempts in solving and addressing problems when their expectations are not met. The current study illustrates and discusses a framework how machine learning (ML) technologies can be applied to e-learning systems to help the learner in selecting an appropriate learning course. Courses that require special privileges to be accessed can be handled according to the learner profile and learner's categories. In this paper, we present a comprehensive

survey of current e-learning systems. Further an intelligent e-learning framework has been presented. The authors have applied 2 machine learning methods to the proposed framework and outcomes are discussed.

Key Words - E-learning system, Learner profile, Learner category, Machine learning.

A Smart System for the People Enduring through Alzheimer's Disease

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Abstract— A large count of individuals suffering from dementia and similar cognitive disabilities have been reported to be missing every year and most of them are found dead. Alzheimer's disease (AD) is a growing problem that affects the lives of diagnosed individuals and their caregivers. According to research, over half of those with MCI will develop dementia within 5 years. In 2017, approximately 50 million people have dementia in the world. Various researchers and companies have proposed products that aid towards relief for these people. There are many products, which are just aiming for patients' safety, although there is a gap: no work is done by considering the link between the system and caregiver's need. We designed a complete system to monitor and record patient's locations, heart rate which organizes the way that the caregivers comprehend and also it recognizes the faces which are forgotten by the patient and inform the patient about that patient with few details in speech. In this system, it mainly consists of two parts; first one is the monitoring system and second one is the algorithm used for the face recognition then text is converted to speech. This algorithm is using open source image processing framework known as OpenCV which is an efficient algorithm.

Keywords— Dementia, alzheimer's disease, monitoring system, openCV, raspberry pi, haar cascade, LBPH recognizer, tts.

Suspicious Object Detection

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Abstract: The public places such as schools, stadiums, museums, etc. lack proper safety systems as the available security systems (for ex., CT scanners) are expensive. Some violent people can cause serious damage by carrying dangerous liquids at public places. There is a need of less expensive and more effective system for such public places. This paper presents a new cost-effective method to detect the suspicious liquids by using an ultrasonic sensor. The basic concept is to use time taken by the ultrasonic wave to travel for classification. The dataset is created by capturing the values of time taken by ultrasonic wave for different liquids. The Linear Discriminant Analysis (LDA) algorithm is used for classification.

Keywords: Ultrasonic sensor; suspicious; object detection; classification.

Recontruction of Torn Document by Moore Algorithm

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Abstract— Mosaic is a creative art which is used for combining number of torn document or books pages piece to get completed stitch document. Mosaicing technique can be applied to videos, photos images and documents images. Image mosaic has a wide application such as image data security, biomedical image processing, image forensic, historic artifact processing, image combining and image restoration. In this paper, proposed work on boundary extracted. Experimented torn documents as input on proposed algorithm which work on documents mosaic techniques and results is successfully stitched output get.

Keywords— Shredded Images; Boundary Detection Algorithm; Ostu Algorithm; Image Mosaicing.

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Design of a 12 kW Sheet Beam EIK for W-Band Radar

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Abstract—A sheet beam extended interaction klystron (SBEIK) has been designed at a frequency of 94 GHz, operating at a voltage of 19.5 kV. Cold-test characteristics were performed using Eigenmode solver in CST Microwave Studio (MWS) and further 3-D particle-in-cell (PIC) simulation provides 12 kW output power along with an electronic efficiency of ~ 24.6% and a gain of 30 dB.

Keywords—Cavity, Extended Interaction Klystron (EIK), Travelling Wave Tubes (TWT), Sheet Beam.

Design of a W-band Multi-Beam Folded Waveguide TWT for High Data-Rate Communication

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Abstract— The design of multi-beam folded waveguide TWT was carried out at 94 GHz. The dispersive properties of FWSWS were synthesized using a numerical approach, and further results were validated with MWS CST solver. The PIC 3-D simulation result shows an output power of 256 watts and a gain of ~ 24 dB at 94 GHz for the three-section FWSWS.

Keywords— Dispersion, folded waveguide (FW), Slow wave structure,(SWS), Traveling wave tube (TWT)

Property Fraud Detection And Prevention Using Blockchain

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Abstract—Blockchain is a trending topic to explore after the popularity of Bitcoin. Bitcoin can be defined as a digital currency, mainly developed to speed up transactions and to reduce third-party control over any transaction. Blockchain is the underlying technology that is responsible for maintaining the bitcoin transaction ledger. It can be defined as a chain of blocks such that each block holds some information. The information stored is dependent on the type of blockchain and can be referred to as a digital signature. The digital signature of the next block is based on the digital signature of the current block and the digital signature of the next block is based on the previous block signature. Blockchain is a fast-evolving technology that is eventually replacing the current transaction management system.The problems that are being faced by the current transaction system such as the transaction costs, crisis and crashes due to depression and fractional reserve banking, blockchain helps to solve these issues. Blockchain is not limited to the transaction system and can be used in other fields also. The property fraudulent cases are becoming very common these days, the reason being centralized control and no public access to data and absence of a system to cross-check the property for which transaction is being made. In this paper, we focus to discuss on

issues like centralized control, how the blockchain technology will benefit and help to overcome the issues in any kind of property fraud cases and what are the major challenges to this technology implementation.

Keywords —Blockchain, Hash, Bitcoin, Crypto currency,Property Management System

A Novel Approach Towards Industrial Waste Management Using Q-Learning

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Abstract—Industrial waste refers to the unwanted solid, liquid and gaseous wastes resulting from an industrial operation. And the collection, transport, processing, disposal and monitoring of these wastes is called as IndustrialWaste Management. Industrial Waste has adhered to severe pollution to air, water and soil in the recent years affecting environment and human health. So,its proper and effective management has become important also as the industries' liability towards the environment. Since many industries don't have in-house processing plants, they tie-up withindustries for the task. This paper focuses on using Q-learning for effective path-planning from generator industries(waste generating) to aggregator industries(waste processing). Q-learning is used for predicting the most efficient path by learning from itsown experiences of rewards and penalties and so we don't need to train the model which therefore increases the efficiency.This work can be implemented at a place where industrial waste is generated and can be very helpful in managing the same. This could be implemented as a service and handed over to the probable customers or government organizations which provide waste management services to the industries. This submission is a step towards automation of the Industrial Waste Management and helps in planning of waste management in real-time.

Keywords —Reinforcement learning, Q-learning, IndustrialWaste, Waste-Management

Hybrid CNN-LSTM model for classification of multispectral satellite images

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Abstract—The advent of recent technological breakthroughs in deep learning have introduced some of the state of the art algorithms and techniques for processing and gaining insights from the data. These techniques played an important role in improving existing techniques while replacing many obsolete and computationally inefficient algorithms. Image classification is an important task which finds its application in various fields. In this paper we have used contemporary deep learning techniques to build a model for the classification of multispectral satellite images. In this work two of the most successful principles of deep learning have been combined, namely convolution neural networks and recurrent neural networks for

classification task. In this paper hybrid CNN-LSTM architecture for the classification task has been proposed. The model achieved a staggering accuracy of 94.8 percent on 6 class classification task. Moreover this work is a testament of the fact that Neural Networks could be robust classifiers for processing multispectral data, even outperforming traditional learning techniques

Keywords—Multispectral satellite images, remote sensing, multi label classification, recurrent neural networks (RNN), long short term memory (LSTM), convolution neural network (CNN), traditional learning techniques.

Privacy Preserving Secure Data Storage scheme based on Adaptive ANN and Homomorphic Re-Encryption Algorithm for Cloud

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Abstract: Intrusion detection systems (IDSs) protect the communication networks and computer systems by supervising data traffic and finding malicious activities that represent uncommon network or system behaviour. From data instances that correspond to the normal behaviour of the network, the IDS learn the data model of normality which is known as inliers. Also, they detect the malicious activities that are capable of detecting intruders and generating the alarms when any illegitimate activity occurs in a cloud environment. As the cloud users are growing rapidly, the security and privacy concern also increase. As the users' data are being managed by the third party, data protection has become a primary issue. So as to handle the mentioned issue, an IDS has been presented to find any malicious activity on a cloud environment that is capable of detecting intruders and sends a warning when any illegitimate activity occurs. For detecting normal and malicious data, the Adaptive artificial neural network (AANN) has been utilized in the proposed scheme For optimally designing the training structure of presented AANN based IDS, the grasshopper optimization algorithm (GOA) has been utilized in the novel approach. This further enhances the intrusion detection. Then the homomorphic reencryption technique has been utilized for improving the security further. Further, a third party auditing (TPA) has been performed for checking the data periodically. Finally, the data have been stored in the cloud. Using the cloud simulator, the presented scheme has been implemented in theworking platform of Java software.

Keywords: Intrusion detection system, artificial neural network, grasshopper optimization algorithm, homomorphic re-encryption, third party auditing, cloud computing.

Identifying degrees of built arrangement in Indian cities through mid-resolution satellite imagery and Convolutional Neural Networks

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Abstract— The performance of Convolutional NeuralNetworks (CNN) in satellite image classification tasks has been found superior to that of traditional algorithms. However, comparatively fewer studies have experimented with CNNbased classifiers to classify intra-urban characteristics with open mid and low-resolution earth observation (EO) datasets. The current pace of urbanization necessitates understanding and mapping of inherent urban forms, which would further assist in devising policies pertaining to sustainable urban development. While several remote sensing methods have been utilized to understand the urban structure, the replicability and generalizability of such approaches have been some of the key limitations. This study creates the CNN model to identify the degrees of built arrangement in mid resolution Sentinel 2B imagery of ten largest Indian cities. Training and testing datasets for seven land cover classes such as compact, open, sparse built, paved, unpaved, greens, and water are manually created with the help of Google Earth Pro platform. The definitions of the classes are acquired from the LCZ classification scheme. The CNN model trained with the prepared dataset provides the overall accuracy of 90% and kappa value of 0.88. The classification results are plotted for each city and compared with each other. The study has potential in the large-scale assessment of built forms of cities for quick assessment and policy formulation.

Keywords—Built Form, Convolutional Neural Networks, Deep Learning, Indian Cities, Sentinel 2B

Intelligent Optical Tracking

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Abstract—Optical Tracking System are very vital for target acquisition, surveillance and also in battle field. However, always it becomes challenging to realize the full potential of Optical Tracking System by overcoming the shortfall in the operator's real-time decision apart from rough environment and unclear background. In this context, optical tracking system needs to be 'intelligent' i.e. self-configurable,

knowledge driven, intelligent learning and operation-and-support with remotely delivered authentic speech. This paper depicts a novel approach towards realization of 'Intelligent Optical Tracking System' that would overcome the challenges of conventional Optical Tracking System.

Index Terms—TSPI, LOS, FOV, ToI, FoT, NLP, machine learning.

Diabetes Prediction using Machine Learning Techniques

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Abstract—Machine learning is one of the most inspired zones of experimentation that is flatter progressively accepted in a health institution. This research work distributes with planned machine learning techniques strategy for speculating diabetes patients on the basis of their medical records. Nowadays it is a very ordinary disease in all age categories. It may also lead to different type of diseases like heart and kidney disease, nerve damage, blood vessel damage and blindness. Here we took a data set from PIDD, which collects the information about the patient's test result that may be negative or positive. It is a two-class problem whether a person is diabetic or not, and we do a comparison between different algorithms like SVM, NB, DT, KNN. This paper presents a diabetes prediction system to diagnosis diabetes. Basically, the work addresses different features associated with diabetes risk in addition to incorporating methods that advance the practice of epidemiology. Moreover, this exploration is improved to the correctness in diabetes prediction using medical data with various machine learning algorithms and methods.

Keywords —Machine Learning; Diabetic Mellitus; Medical Diagnosis; KNN, Naive Bayes, Decision Tree, SVM.

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