Vasavi College of Engineering

(Autonomous)

Department of Information technology

Report on

International Conference on Computational Intelligence and Data Analytics

(ICCIDA-2022)

The International Conference on **Computational Intelligence & Data Analytics (ICCIDA 2022)** was organized during 8 and 9 January, 2022, by the **Department of Information Technology, Vasavi College of Engineering**, Hyderabad, in association with Springer.

The ICCIDA 2022 aims to provide an excellent platform for exchanging knowledge with the global community of scientists, engineers, and educators. The objective of this conference is to explore cutting-edge research in two prominent areas viz., Computational Intelligence and Data Analytics, and allied research areas. It also creates a forum for young researchers to find the potential research problems and future prospects in their respective research areas.

The conference solicited latest research ideas on Computational Intelligence and Data Analytics, thus inviting researchers working in the domains of Machine Learning, Deep Learning, Computer Vision, Image Processing, Rough Sets, Semantic Web, Knowledge Representation, Fuzzy Systems, Soft Computing, Data Models, Ubiquitous Data Management, Mobile Databases, Data Provenance, Workflows, Cloud Computing, Bigdata Analytics, Scientific Data Management and Security, etc.,.

The sincere effort of the program committee members and organizing committee members coupled with indexing initiatives from Springer have drawn a large number of high-quality submissions from students, research scholars, and faculty members all over India and abroad. A thorough peer-review process has been carried out by the PC members and by external reviewers. While reviewing the papers, the reviewers mainly looked at the novelty of the contributions, besides the technical content, the organization and the clarity of the presentation. The entire process of paper submission, review and acceptance process was done electronically.

It is worth mentioning that ICCIDA 2022 has made its significance by attracting 175 high-quality research articles from several parts of the globe including; USA, Canada, Europe, South Africa, Indonesia, Malaysia, Nepal, Bangladesh, Oman and UAE, and from 18 different states of INDIA. All the articles are critically peer-reviewed and finally 43 papers are accepted and presented by the authors during the conference. ICCIDA 2022 maintained all the necessary quality standards and regarded as a high-quality international conference with the acceptance ratio of 24.57%. All the accepted papers are published in "**Lecture Notes on Data Engineering and Communications Technologies (LNDECT)** series of **Springer**. The Conference brings together over 192 delegates from around the world and from a range of institutions and organizations to exchange ideas and discuss the challenges in emerging technologies.

The ICCIDA 2022 was organized through online mode via the Microsoft Teams platform. The inaugural ceremony of ICCIDA-2022 was started by welcoming all the dignitaries, delegates, and participants to the Conference by Ms.S. Aruna, Coordinator, ICCIDA-2022. Dr. K. Ram Mohan Rao, Professor & HOD, Department of Information Technology, and Convener of ICCIDA-2022, addressed the gathering by giving the welcome note on ICCIDA-2022. Then Prof. S. V. Ramana, Principal, Vasavi College of Engineering addressed the gathering. The Chief

Guest of ICCIDA-2022, Dr. Raj Kumar, Director, NRSC, Hyderabad, addressed the gathering. Then, the Guests of Honor of ICCIDA-2022, Dr. S. Ramchandram, Vice-Chancellor, Anurag University, and Prof. L.M. Patnaik, NASI Senior Scientist & Adjunct Professor, National Institute of Advanced Studies, Bangalore, addressed the gathering. Then, Sri M. Krishna Murthy Garu, Secretary, Vasavi Academy of Education, addressed the gathering. The inaugural function of ICCIDA-2022 was concluded with Vote of thanks by Dr. K. Shyam Sunder Reddy, Coordinator, ICCIDA 2022.

Dr. Raj Kumar
Director, NRSC, ISRO

Prof. S. Ramachandram
Vice-Chancellor
Anurag University, Hyderabad

Prof L.M. Patnaik
NASI Senior Scientist, Bangalore

The Conference is structured with six keynote sessions by eminent professors followed by eight technical sessions which were chaired by distinguished faculty of outstanding institutions in the country. On the first day, three keynote speeches were presented by eminent researchers in Computational Intelligence and Data Analytics. Out of three, two were presented before the parallel technical sessions I and II, and another one was presented before the parallel technical sessions IV and V. Those three keynote speeches were presented by:

Prof. Rajkumar Buyya, Director, Cloud Computing and Distributed Systems (CLOUDS) Lab, The University of Melbourne, Australia, and CEO, Manjrasoft Pvt Ltd, Melbourne, Australia. He gave a keynote address on "***Neoteric Frontiers in Cloud and Edge Computing***". In this address, he covered (a) 21st century vision of computing and identifies various IT paradigms promising to deliver the vision of computing utilities; (b) innovative architecture for creating elastic Clouds integrating edge resources and managed Clouds, (c) Aneka 5G, a Cloud Application Platform, for rapid development of Cloud/Big Data applications and their deployment on private/public Clouds with resource provisioning driven by SLAs, (d) a novel FogBus software framework with Blockchain-based data-integrity management for facilitating end-to-end IoT-Fog/Edge-Cloud integration for execution of sensitive IoT applications, (e) experimental results on deploying Cloud and Big Data/ IoT applications in engineering, and health care (e.g., COVID-19), deep learning/Artificial intelligence (AI), satellite image processing, natural language processing (mining COVID-19 research literature for new insights) and smart cities on elastic Clouds; and (f) directions for delivering our 21st century vision along with pathways for future research in Cloud and Edge/Fog computing.

Dr. K. Raghavendra, Scientist/Engineer 'SG', Head High Performance Computing and Drones, Advanced Data Processing Research Institute (ADRIN), ISRO. He gave a keynote address on "***Deep Learning for IOT systems - A Last mile connectivity practical approach***". In this talk, he covered various applications of Deep Learning models being developed on IBM Power system AC 922 AI computing server and the porting of such developed models on IOT edge computing devices like Nvidia Nano Jetson boards, Raspberry Pi etc. The speaker emphasized more on Deep Learning programming models development on AI server, the use of jupyter notebook as container service, design of models using jupyter note book with TensorFlow and Caffe. The talk also covered a practical approach and demonstration of two major applications to understand the speech recognition and commanding system development aka AI based voice controlled IOT- Unmanned Aerial/Ground Vehicles system development followed by Real Time application of Attention estimation using Deep Learning.

Dr. Bing Xue, Professor in Artificial Intelligence Program, Director of Science in School of Engineering and Computer Science at Victoria University of Wellington, New Zealand. She gave a keynote address on "*Evolutionary Deep Learning for Image Classification*". Image classification is a fundamental task in a wide range of real-world problems, identifying patients with and without tumors from brain scan images and grading fruit for retailers are just two examples. This task is very challenging and has been studied for decades. Deep learning, particularly deep convolutional neural networks (DCNNs), is currently the most successful approach to image classification. However, designing the architecture of an effective DCNN is extremely hard. Almost all state-of-the-art DCNN architectures were manually designed, which requires structure design and trial-and-error hyper-parameter tuning based on rich experience and expensive expertise in both DCNNs and the problem domain. They also need a large number of examples/instances (e.g. AlphaGo used over 30 million instances) that many problem domains do not have. Further, those algorithms require a huge computational cost that big companies can cope well but most universities and research institutions often cannot. To address these limitations, evolutionary computation techniques start playing a significant role for automatically determining deep structures to tackle image classification tasks, and have great potential to advance the developments of deep structures and algorithms.This talk covered an extended view of deep learning, overview of the state-of-the-art work in evolutionary deep learning using Genetic Algorithms (GAs), Particle Swarm Optimization (PSO) and Differential Evolution (DE). It also covered some recent developments using Genetic Programming (GP) to automatically evolving deep structures and feature construction for image classification with a highlight of the interpretation capability and visualization of the constructed features.

On the second Day, there were another three keynote addresses, in which two were presented before the parallel sessions V and VI, and another one was presented before the parallel sessions VII and VIII. Those three keynote speeches were presented by:

Dr. Atul Negi, Professor, University of Hyderabad, India. He gave a keynote address on "***AI for Social Good- A Faustian Bargain***". Artificial Intelligence (AI) technology sits in our pockets and homes as smart devices in the guise of friendly personal assistants. We seem to have made a Faustian bargain with these smart devices powered by AI technology to help us live our life, to help us master our schedules, keep fit, keep up with our work and family communications, keep us entertained, allow us to shop from home, and amongst other things to manage our banking and finances from home. While making us immensely efficient or productive, all our personal information is being harvested. These smart devices and their application programs are engineered to make users addicted to look for "notifications" and constantly feed their data as "updates". This is the Faustian bargain of we seem to have made at an individual level. In the public domain and for humanity at large, is there another one? AI is also seen to be contributing to "Social Good" in many domains such as healthcare, agriculture, manufacturing, energy management, transportation, governance, etc. At the root of most modern AI applications is an adaptive machine learning component that needs properly labelled data. Data centric algorithms create an insatiable quest for all kinds of data, leading to unprecedented profits for mega international corporations. They have engineered applications and platforms to harvest personal data from millions of people. Governments don't seem to mind if the corporations are seen to provide services and aid governance. In this talk the speaker reviewed efforts and approaches where governments and industry take up more responsible positions on the acquisition of data and regulate its use.

Dr. Marde Helbig, Griffith University, Australia. She gave a keynote address on "***Dynamic Multi-objective Optimization using Computational Intelligence Algorithms***". Multi-objective optimization problems (MOPs) have multiple, often conflicting objectives where an improvement in one objective leads to the worsening of at least one other objective. The goal of a multi-objective algorithm (MOA) is to find a set of optimal trade-off solutions that is both accurate and diverse. However, many real-world problems are dynamic in nature where at least one objective and/or constraint changes over time. A dynamic multi-objective algorithm (DMOA) must therefore be able to track the changing set of optimal trade-off solutions over time. This talk covered various issues that have to be addressed when evaluating the performance of DMOAs, and areas that require further research, including decision making and analyzing the behavior of DMOAs. Emerging areas and how they can impact on research in the field of dynamic multi-objective optimization (DMOO) are also highlighted.

Dr. Manuel Roveri, Associate Professor, Politecnico di Milano, Italy. He gave a keynote address on "***Tiny Machine Learning and Edge AI".*** The "computing everywhere" paradigm (comprising Internet-of-Things and Edge Computing) will pave the way for a pervasive diffusion of Tiny Machine Learning (TinyML) in everyday life. To fully address this challenge TinyML solutions must become deeper, hence encompassing the deep-learning paradigms being the state-of-the-art in many recognition and classification applications, and wider, hence being able to operate in a collaborative and federated way within an ecosystem of heterogeneous technological objects. This talk explored the solutions and methodologies to make TinyML deeper and wider by also considering

the role of an effective and efficient processing of encrypted-data through deep-learning-as-a-service in a heterogeneous-hardware ecosystem.

The Conference concluded with Valedictory session. Prof. K. Ram Mohan Rao, Convener of ICCIDA-2022, gave closing remarks on ICCIDA-2022. Prof. S. V. Ramana, Principal, Vasavi College of Engineering appreciated the whole team of ICCIDA-2022 for organizing the Conference successfully in online mode. The Chief Guest for valedictory session, Prof. A. Govardhan, Rector, JNTU Hyderabad, addressed the gathering and appreciated all those who made the event a grand success. Few of the participants have shared their feedback about the Conference. The papers are categorized into two broad categories (i) Computational Intelligence and (ii) Data Analytics and Others. Two best papers are identified in each category by the technical committee and announced by Dr. T. Hitendra Sarma, Programme Chair. The first best and second-best papers are awarded 5,000/- and 2500/- respectively. The following are the details of best papers.

S. No	Paper ID	Track	Title of the Best Paper	Authors and Affiliation	Position
1	35	Computational Intelligence	Skin Cancer Classification for Dermoscopy Images using model based on Deep Learning and Transfer Learning	Vikash Kumar and Bam Bahadur Sinha, IIT Roorkee, Uttarakhand & Indian Institute of Information Technology Dharwad, Karnataka	FIRST
2	97		Lesion segmentation in skin cancer detection using U-Net architecture	Shubhi Miradwal, Waquas Mohammad, Anvi Jain and Fawwaz Khilji, Amdocs Development Center India LLP, Xoriant Solutions, Wipro Limited, Tech Mahindra	SECOND
3	7	Data Analytics and Others	Evaluating Models for Better Life Expectancy Prediction	Vikram Singh, Reshov Roy Amit Rajesh Tanwar, National Institute of Technology, Kurukshetra, India	FIRST
4	52		A Fully Distributed Secure Approach for Database Security in Cloud Computing.	SRINU BANOTHU, Govardhan A Karanm Madhavi, JNTU Hyderabad	SECOND

The above best papers are evaluated based on the following criterion: (i) Problem Statement (5M), (ii) Research Methodology (10M), (iii) Experimental Analysis (10M), (iv) Comparison with the state-of-the-art methods (10M), (v) Writing and Presentation Skills (10M), (vi) Q&A – (5M).

The Conference concluded with vote of thanks by Ms. S. Aruna, Coordinator, ICCIDA-2022. Gratitude was expressed to the Management, Principal, Convener, Program chairs, Technical and Organizing chairs, Keynote Speakers, Session chairs, Authors, and participants.

Photo Gallery: ICCIDA-2022

Guest of Honor

Prof L.M. Patnaik

NASI Senior Scientist & Adjunct Professor

National Institute of Advanced Studies, Bangalore

For his publications and other contributions, please visit, http://www.lmpatnaik.in

Chief Guest

Dr. Raj Kumar

Director

National Remote Sensing Centre (NRSC)

Indian Space Research Organization (ISRO)

CLOUDS LAB

Neoteric Frontiers in Cloud and Edge Computing

for Big Data/IoT (Internet of Things) Applications

Dr. Rajkumar Buyya

Cloud Computing and Distributed Systems (CLOUDS) Lab

School of Computing and Information Systems

The University of Melbourne, Australia

www.cloudbus.org

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SAMSUNG

Deep Learning for IoT

–

Last Mile Connectivity Practical Approach

DR.K.RAGHAVENDRA

SCIENTIST/ENGINEER 'SG',

HEAD HIGH PERFORMANCE COMPUTING &

DRONES(HPCDS)

ADRIN, DEPARTMENT OF SPACE(ISRO)

Application of Machine Learning Algorithm in Identification of Anaemia Diseases

Prepared by

Lata Upadhye

and

Sangeetha Prasanna Ram

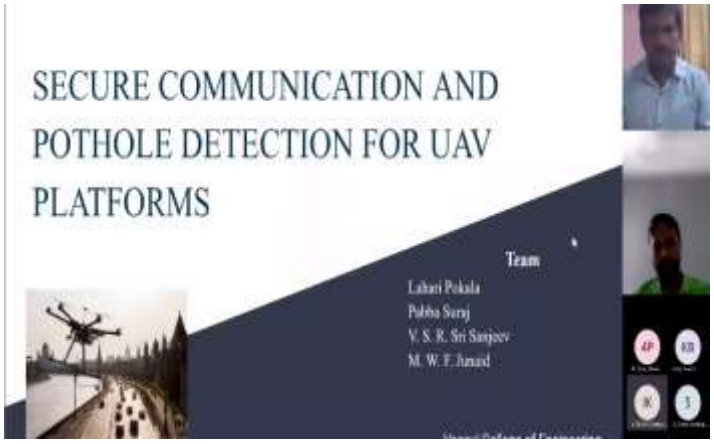
Department of Instrumentation and Control

Vivekanand Education Society's Institute of Technology

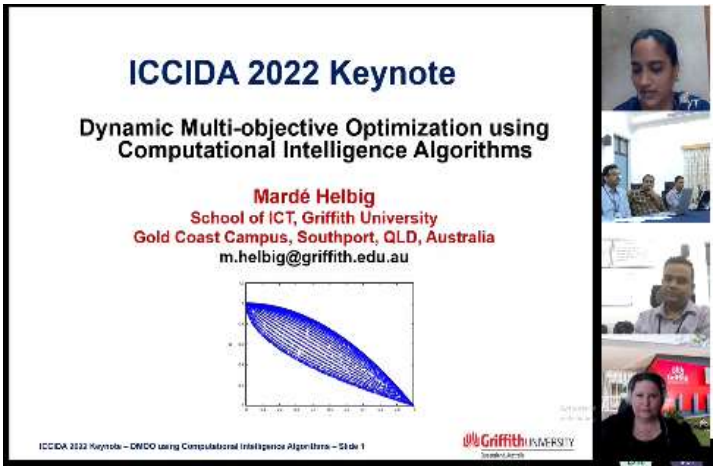
Mumbai-74

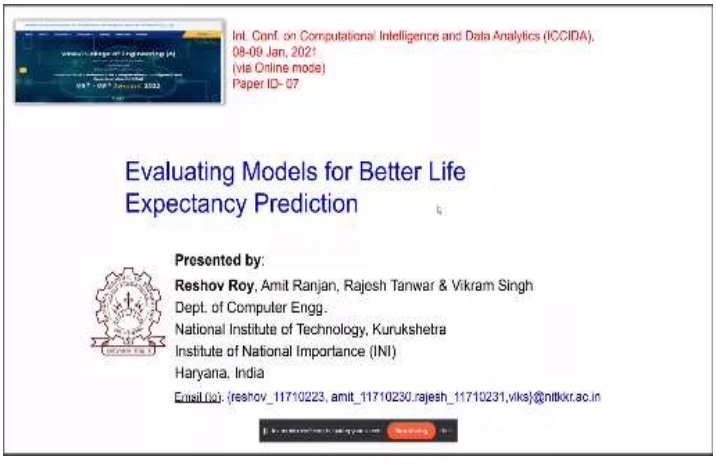

WELLINGTON
TE HERENGA WAKA
ICCIDA 2022
Evolutionary Deep Learning for Image Classification
Prof. Bing Xue
Evolutionary Computation Research Group
School of Engineering and Computer Science
Victoria University of Wellington

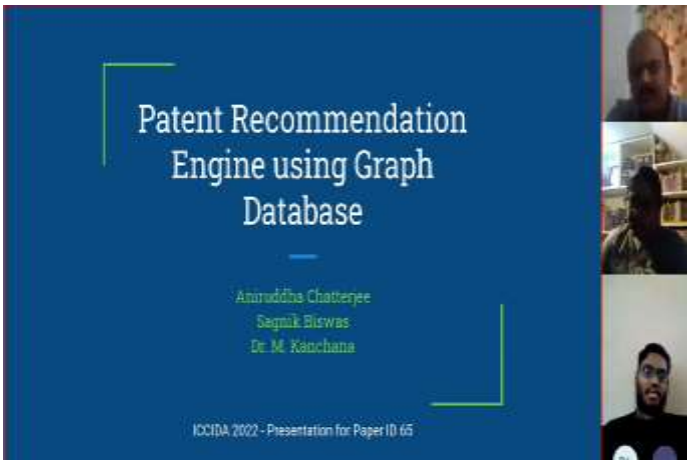

Getting Around the Semantics Challenge in Hateful Memes
Anind Kiran, PES University
Manah Shetty, PES University
Shreya Shukla, PES University
Varun Kerenalli, PES University
Prof. Bhaskarjyoti Das, PES University


SECURE COMMUNICATION AND POTHOLE DETECTION FOR UAV PLATFORMS
Team
Lahari Pokala
Pabba Suraj
V. S. R. Sri Sanjeev
M. W. F. Junaid


Keynote Talk - 4
AI for Social Good- A Faustian Bargain
Dr. Atul Negi
Professor SCIS, University of Hyderabad, India


ICCIDA 2022 Keynote
Dynamic Multi-objective Optimization using Computational Intelligence Algorithms
Mardé Helbig
School of ICT, Griffith University
Gold Coast Campus, Southport, QLD, Australia
m.helbig@griffith.edu.au
ICCIDA 2022 Keynote – DMOO using Computational Intelligence Algorithms – Slide 1
Griffith UNIVERSITY


Int. Conf. on Computational Intelligence and Data Analytics (ICCIDA),
08-09 Jan, 2021
(via Online mode)
Paper ID- 07
Evaluating Models for Better Life Expectancy Prediction
Presented by:
Reshov Roy, Amit Ranjan, Rajesh Tanwar & Vikram Singh
Dept. of Computer Engg.
National Institute of Technology, Kurukshetra
Institute of National Importance (INI)
Haryana, India
Email (s): {reshov_11710223, amit_11710230.rajesh_11710231,viks}@nitkkr.ac.in



Valedictory Ceremony
ICCIDA – 2022
9 January 2022