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IFIP was founded in 1960 under the auspices of UNESCO, following the first World Computer Congress held in Paris the previous year. A federation for societies working in information processing, IFIP's aim is two-fold: to support information processing in the countries of its members and to encourage technology transfer to developing nations. As its mission statement clearly states:

IFIP is the global non-profit federation of societies of ICT professionals that aims at achieving a worldwide professional and socially responsible development and application of information and communication technologies.

IFIP is a non-profit-making organization, run almost solely by 2500 volunteers. It operates through a number of technical committees and working groups, which organize events and publications. IFIP's events range from large international open conferences to working conferences and local seminars.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is generally smaller and occasionally by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is also rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

IFIP distinguishes three types of institutional membership: Country Representative Members, Members at Large, and Associate Members. The type of organization that can apply for membership is a wide variety and includes national or international societies of individual computer scientists/ICT professionals, associations or federations of such societies, government institutions/government related organizations, national or international research institutes or consortia, universities, academies of sciences, companies, national or international associations or federations of companies.


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Computational Intelligence in Data Science


4th IFIP TC 12 International Conference, ICCIDS 2021
Chennai, India, March 18–20, 2021
Revised Selected Papers

Editors

Vallidevi Krishnamurthy 
Sri Sivasubramaniya Nadar College of
Engineering
Chennai, India

Kanchana Rajaram 
Sri Sivasubramaniya Nadar College of
Engineering
Chennai, India

Suresh Jaganathan 
Sri Sivasubramaniya Nadar College of
Engineering
Chennai, India

Saraswathi Shunmuganathan 
Sri Sivasubramaniya Nadar College of
Engineering
Chennai, India

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Preface

The main objective of the Fourth International Conference on Computational Intelligence in Data Science (ICCIDS), held virtually during March 18–20, 2021, was to help you connect the dots that matter to you. The world appears increasingly complex, and to seize the opportunities ahead we need to be better at looking at the world from a wider array of perspectives.

The growth of data, both in structured and unstructured form, presents challenges as well as opportunities for industry and academia over the next few years. With the explosive growth in data volume, it is essential that real-time information that is of use to businesses is extracted, in order to deliver better insights to decision-makers and to understand complex patterns.

God’s greatest gift to humans is “intelligence”. While human intelligence aims to adapt to new environments by utilizing a combination of different cognitive processes, artificial intelligence (AI) aims to build machines that can mimic human behavior and perform human-like actions. The human brain is not digital, but machines are. That is hard computing. On the other hand, computational intelligence (CI) is a new concept for advanced information processing. Computational intelligence tools offer adaptive mechanisms that enable the understanding of data in complex and changing environments. Hence, learning computational intelligence in data science helps researchers to gain knowledge and skills in order to analyze, interpret, and visualize huge volumes of data which are complex in nature.

The building blocks of computational intelligence involve computational modeling, natural intelligent systems, multi-agent systems, hybrid intelligent systems, etc.

Data is the key ingredient for the development and enhancement of all intelligence-based algorithms, and blockchain secures this data. Blockchain, IoT, and AI/CI can and should be applied jointly. One possible connection between these technologies could be that IoT collects and provides data, blockchain provides the infrastructure and sets up the rules of accessing the data, and computational intelligence optimizes the processes and rules.

The aim of ICCIDS 2021 was to explore computational intelligence and blockchain technology and how they can be used together. The conference program included a pre-conference workshop session along with prominent keynote talks and paper presentations.

The conference received a total of 75 submissions from authors all over India and a few papers from authors at universities outside India too, out of which 20 papers (an acceptance rate of 26.66%) were selected by the Program Committee after a careful and thorough review process. The papers were presented across two sessions. Two papers from each of the sessions were declared as the best papers from the respective sessions.

Sasikumar Venkatesh, Senior Software Engineer from Walmart Global Tech, India, elaborated on the topic “How Deep Learning Helps Finding Patterns in Time-Series

Data? – Exploring with Sparkling-Water (H2O.ai)” during the pre-conference workshop.

To enlighten our participants in this new era of blockchain enabled AI, five keynote talks were arranged. On the first day of the conference, Elizabeth Chang, Professor of Logistics and IT at the University of New South Wales, Australia, delivered her talk on “Enterprise Blockchain - Trust, Security and Privacy”.

On the second day of the conference, a keynote talk on “Data Science for Social Good” was delivered by Ponnurangam Kumaraguru from IIIT Delhi, India. Another keynote talk on the topic of “Emerging Trends in Advanced Artificial Intelligence” was given by Vivek Singhal, Co-Founder and Chief Data Scientist of CellStrat, India.

On the third day of the conference, the program featured a keynote talk by Garrick Hileman, Head of Research at Blockchain.com, UK. He shared his knowledge about “Cryptocurrency and Blockchain Technology: Past, Present and Future”. The final keynote was delivered by R.K. Agrawal, Professor at Jawaharlal Nehru University, India, on the topic “Deep Learning Models for Medical Image Analysis”.

ICCIDS 2021 was organized by the Department of Computer Science and Engineering at Sri Sivasubramaniya Nadar College of Engineering (SSNCE), India; we are grateful to everyone who helped to make it a success, including all authors and participants.

March 2021

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