

CHERAN COLLEGE OF ENGINEERING

[Approved by AICTE, Newdelhi and Affiliated to Anna University, Chennai,

Recognized by UGC with 2(f)]

K.PARAMATHI, KARUR-639111

www.cheran.ac.in



International Conference on Soft Computing and Intelligent Technologies

[ICSCIT- 2021]

24 December 2021

In Association With:



ISBN: 978-93-91535-15-5

**International Conference on Soft
Computing and Intelligent Technologies**

[ICSCIT- 2021]

Editors

Mr.S.Kannadhasan

Dr.R.Baskaran

Publish By:

A.R. Research Publication

Preface

Conference World and AR Research Publication is fast growing group of academicians in Engineering, Sciences and Management. AR Research Publication is also known for fast reply and zero error work. Conference world has organized a various conferences at renowned places namely Delhi University; New Delhi, Jawaharlal Nehru University; New Delhi, PHD Chamber of Commerce and Industry New Delhi, YMCA New Delhi, India International Centre New Delhi Sri Venkateswara college of Engineering and Technology, Andhra Pradesh, Dhananjay Mahadik Group of Institutions (BIMAT), Shivaji University, Maharashtra, Vedant Engineering Kota and many more places across the country.

We are very pleased to introduce the proceedings of the 3rd International Conference on Soft Computing and Intelligent Technologies (ICSCIT 2021). As for previous conferences, the theme was the link between the information provided by conference world and the use made of this information in assessing structural integrity. These were the issues addressed by the papers presented at the conference. The level of interest in the subject matter of the conference was maintained from previous events and over 70 suitable papers were submitted for presentation at the conference.

Papers were well represented in the conference to arouse a high level of international interest. Three countries were represented in the final program from Europe, North America and Asia. In the event, the conference was highly successful. The presented papers maintained the high promise suggested by the written abstracts and the program was chaired in a professional and efficient way by the session chairmen who were selected for their international standing in the subject. The number of delegates was also highly gratifying, showing the high level of international interest in the subject. This is also indicated by the large number of countries, 04 represented by the delegates. This Proceeding provides the permanent record of what was presented. They indicate the state of development at the time of writing of all aspects of this important topic and will be invaluable to all workers in the field for that reason. Finally, it is appropriate that we record our thanks to our fellow members of the Technical Organizing Committee for encouraging participation from those areas. We are also indebted to those who served as chairmen, without their support, the conference could not have been the success

that it was. We also acknowledge the authors themselves, without whose expert input there would have been no conference. Their efforts made a great contribution to its success.

About the College

Cheran College of Engineering has been started in the year 2012 – 13 with an intake of 300. It is approved by AICTE, New Delhi and affiliated to Anna University. The College offers five under graduate programmes (Bachelor of Engineering) – Civil Engineering, Computer Science and Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering and Mechanical Engineering. The college is located in a sprawling campus on Karur-Coimbatore National Highway (NH- 67) at Cheran Nagar, K.Paramathi, Karur – 639111. The institution has the academic ambiance for good teaching and practical trainings effected by qualified and experienced faculty to groom our students as complete technocrat and professionals. We inculcate the students the qualities required to envision their future, estimate the requirements, and equip them to overcome the obstacles and to reach their desired goal. The infrastructures provided to the students are world class and state of the art. The laboratories are equipped with instruments and equipment of industrial class and not merely desktop. This helps our students to learn to the requirements of real time industry. The library has adequate collection of books and journals in both print and electronic media which serves the academic needs of our students. It is computerized and has on-line access catalogue for the benefits of the users. Separate hostel facilities are available for boys and girls. Students are given abundant opportunities to involve themselves in co-curricular and extracurricular activities through various clubs, cells, associations and sports activities.

About the Conference

Welcome to the 3rd International Conference on Soft Computing and Intelligent Technologies (ICSCIT 2021), which will be held on the 24th of December 2021 at Cheran College of Engineering in Karur, Tamil Nadu, in collaboration with Conference World, IOP Journal of Physics: Conference Series (JPCS), and IARDO. It's the third comprehensive soft computing conference, and cover all elements of the field like Artificial neural networks, fuzzy logic, fuzzy neural networks, expert systems, genetic algorithms and communication are some of the methodologies and

techniques that are commonly used to build intelligent, automated, and secure systems. Soft computing is emerging as a combinational paradigm by integrating a set of methodologies and techniques such as artificial neural networks, fuzzy logic, fuzzy neural networks, expert systems, and genetic algorithms that are commonly used to build intelligent, automated, and secured systems. The major goal of ICSCIT 2021 is to promote Soft Computing [SC] methodologies for solving real-time difficulties, such as fuzzy logic, neural networks, support vector machines, evolutionary computing, machine learning, and probabilistic reasoning. Soft Computing, Mathematics, and Control are an outstanding worldwide platform for exchanging knowledge and discoveries in theory, technique, and applications effects and difficulties. The conference will present practical and theoretical discoveries that will contribute significantly to the advancement of Soft Computing, Mathematics, and Control. Researchers and practitioners from academia and industry will come together to discuss cutting-edge developments in the area. The conference's theme is: For a Smart Nation, Soft Computing Researchers, academics, students, and professionals in the fields of engineering and technology will have an outstanding worldwide venue to exhibit their research, expertise, new ideas, and breakthroughs at ICSCIT 2021. It will have an intriguing technological programme on display. Research presentations, keynote lectures, invited talks, tutorials, panel discussions, and poster presentations will all be part of the programme. We're looking for new ideas in all areas of soft computing. Academic, government, and industrial submissions are all welcome. Technical paper submissions, workshop/special session ideas, and tutorial proposal submissions are now available.

All papers will undergo a double blind peer review process and the criteria for acceptance will be based on quality, originality, technical content and relevance.

Accordingly, Topics of interest for submission include, but are not limited to:

Track 1: Soft Computing Theory and Methods

Soft Computing

Probabilistic Reasoning

Evolutionary Computing

Pattern Recognition

Hybrid Intelligent Systems

Software Agents
Morphic Computing
Image Processing
Cognitive science
Deep learning
Digital information processing
Evolutionary computing
Fuzzy set theory
Knowledge virtualization
Machine learning
Modeling
Neural computing
Probabilistic reasoning

Track 2: Hybrid Intelligent Technologies

Advanced intelligent systems
Signal or Image Processing
Vision Recognition
Biomedical Engineering
Telecommunications
Reactive Distributed AI
Nano & Micro-systems
Data Visualization
Artificial Intelligence
AI Algorithms
Artificial Intelligence Tools & Applications
Automatic Control
Bioinformatics
Natural Language Processing
Autonomic and autonomous systems
Bioinformatics and scientific computing
Cognitive systems and applications
Complex systems
Computer forensics
Cyber Physical Systems (CPS)

Human computer interaction
Internet of Things (IoT)
Intrusion detection and Security intelligence
Mechatronics
Optimization
Pattern recognition
Robotics
Signal processing
Time series forecasting
Web intelligence

Track 3: Soft Computing for Computer Science and Circuit World

Semantic Web Techniques and Technologies
Soft Computing Theory and Applications
Software & Hardware Architectures
Web Intelligence Applications & Search
Renewable Energy
Electric Traction
Electromagnetic Compatibility
High Voltage Insulation Technologies
High Voltage Apparatuses
Lightning Detection and Protection
Power System Analysis
SCADA
Electrical Measurements
Energy efficiency in industry
Education and power quality
Power devices and components
Sensors
Integration and packaging
Control in power electronics
Low and high power converters (inverters, converters, controlled and uncontrolled rectifiers)
Power quality control and utility applications
Renewable energy

Electric machines
Data Communications.
Data Encryption.
Data Mining.
Database Systems.
Programming Languages.
Image processing and pattern recognition
Software Engineering.
Computer Animation.
Mobile Computing.
Embedded System Security
Block Chain Technology
Security and Cryptography
Data center networking.
Nano-electronics and microelectronics
Nanoelectronics and microelectronics
Power and Applied electronics
Microprocessor and Microcontroller
Very Large Scale Integration(VLSI)
Micro scale fabrication
Electrotechnologies
High Voltage and Insulation Technologies
Power Electronics and Drive Systems
Power Quality and Electromagnetic Compatibility
Digital Communication
Semiconductor Technology
Signal and Image Processing
Transmission of Numerical Images
Embedded Systems and Security
Intelligent Control
FPGA in outer space
Nuclear Micro batteries

Track 4: Soft Computing for Communication

5G and beyond wireless communication Technology

Control and automation system

Antenna and RF-microwave

Optical and Visual light communication

Smart cities

Smart governance

Smart healthcare

Smart homes and buildings

Smart social services

Smart transportation

Smart utilities

Smart vehicles

Smart villages



CHERAN COLLEGE OF ENGINEERING

[Approved by AICTE, Newdelhi and Affiliated to Anna University, Chennai, Recognized by UGC with 2(f)]

K.PARAMATHI, KARUR-639111

www.cheran.ac.in

CHAIRMAN MESSAGE



I am glad to welcome you all for the International conference on Soft Computing and Intelligent Technologies [ICSCIT- 2021] in association with International Association of Research and Development Organization (IARDO) and Conference world which provides a multidisciplinary venue for inspiring new ideas. I am pleased to acknowledge the [ICSCIT-2021] International Conference on Soft Computing and Intelligent Technologies. I appreciate the organizing committee's commitment to a successful Conference and their contributions of fresh ideas and research discoveries. I congratulate them on their efforts to promote information. The main objective of the conference is to bring experts and research scholars from various institutions and industries to share their views and ideas in the area of Science, Engineering, and Technologies related with soft computing techniques. Approximately 150 authors and guests from six continents, including one-of-a-kind Keynote speakers, will present their most recent achievements in a variety of topics related to soft computing. All members of the organizational, scientific, technical, and financial committees have put in a lot of effort and attention to make this conference a success. The event would have been impossible to hold without them. My personal respect and thanks goes out to all of you. I congratulate all the concerned with gratitude and wish the conference a grand success.

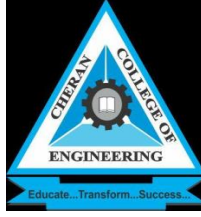
Mr.P.M.Karuppattan

Chairman

Cheran College of Engineering

K.Paramathi, Karur-639111

Tamilnadu, India



CHERAN COLLEGE OF ENGINEERING

[Approved by AICTE, Newdelhi and Affiliated to Anna University, Chennai, Recognized by UGC with 2(f)]

K.PARAMATHI, KARUR-639111

www.cheran.ac.in

TREASURER MESSAGE



I am delighted to note that the Cheran College of Engineering has organized the International conference on Soft Computing and Intelligent Technologies [ICSCIT- 2021] in association with International Association of Research and Development Organization (IARDO) and Conference world. The topic suggests that this conference focuses more on practical applications rather than on theoretical inputs on current Corporate World. This conference aims at disseminating knowledge and providing a highly interactive forum so as to bring together researchers of soft computing with various disciplines. I welcome all the participants to our institution for a fruitful participations and enjoyable time. I congratulate the organizing committee for their enthusiastic participation for various activities and making each event a grand success. I am sure this conference will be a milestone in ensuring the highest standards in this profession. I wish the organizers the very best in this and all their other endeavours.

Mr.K.Muthusamy

Trustee

Cheran College of Engineering

K.Paramathi, Karur-639111

Tamilnadu, India



CHERAN COLLEGE OF ENGINEERING

[Approved by AICTE, Newdelhi and Affiliated to Anna University, Chennai, Recognized by UGC with 2(f)]

K.PARAMATHI, KARUR-639111

www.cheran.ac.in

DIRECTOR MESSAGE



It is a great honor for me as a Director to welcome all the guests and participants for the International conference on Soft Computing and Intelligent Technologies [ICSCIT- 2021] in association with International Association of Research and Development Organization (IARDO) and Conference world. We are encouraged to continue the conference activities in future to bring the experts from various fields for knowledge updation. We would like to thank all of the industries and corporate entities who have supported this event, and we hope that it will engage and benefit a wide range of participants both locally and worldwide. International and regional experts, academics, service providers, and end users will be able to learn about the newest developments in the digitalization sector at ICSCIT 2021. This conference will provide an opportunity for us to discuss our views and ideas on how to map our path ahead to new heights. Soft computing (SC) is an area of computer science that aims to create computers that are more intelligent and smart. Soft computing is a new set of approaches that aims to provide resilience, tractability, and overall low cost by using tolerance for imprecision, uncertainty, and partial truth. We experience new development every day and every moment. The Conference will bring together business executives, academicians, researchers, industry organizational leader, government and non-government representatives, service providers, IT experts and technology solution innovators to address the challenges unleashed in order to enhance the competitiveness of the Indian industry. I appreciate the organizers of the conference for arranging a platform with experts and research scholars to discuss and share their ideas in recent trends in advanced technologies. I would like to thanks the organizing committee, technical committee and referees who has put so much effort to make this a successful conference.

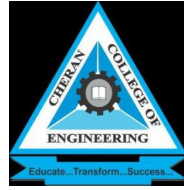
Dr. T.K. Krishnamurthy

Director

Cheran College of Engineering

K.Paramathi, Karur-639111

Tamilnadu, India



CHERAN COLLEGE OF ENGINEERING

[Approved by AICTE, Newdelhi and Affiliated to Anna University, Chennai, Recognized by UGC with 2(f)]

K.PARAMATHI, KARUR-639111

www.cheran.ac.in

PRINCIPAL MESSAGE



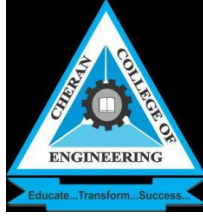
I am happy to note that the Cheran College of Engineering is conducting the International conference on Soft Computing and Intelligent Technologies [ICSCIT- 2021] in association with International Association of Research and Development Organization (IARDO) and Conference world. Intelligence is a human trait and each human is trying to import that intelligence into machines. We have been thinking about organizing a conference for quite some time and the first aspect which we had to discuss was that would we be able to make it meaningful and fulfill the expectations of the participants and the aspirants. This took us around a year to think over the issues to be floated, the format, the key participants, their orientation, and so on. The academia can contribute to society through their contribution towards Intelligence. Soft computing is an area of artificial intelligence in which fuzzy logic, probability theory, neural networks, and genetic algorithms are used to simulate human thinking and decision-making. The events in the conference are targeted towards researchers, practitioners, professionals, educators and students to share their experience, innovative ideas, issues, recent trends and future directions in field of soft computing techniques. This conference is a unique forum for exchange of innovative ideas, technical expertise for technological advancements etc. in this evergreen field. It includes keynote address from Academicians and paper presentation by research scholars. I am sure that this conference will identify the areas that will contribute to the overall development of our nation. The theme of the conference unifies the picture of modern techniques as an integral concept that highlights the trends in soft computing techniques for theoretical and practical research with applications. I wish the Dignitaries, participants, especially the organizing team and Publishing Committee in making this event a grand success. The success of this Conference is solely on the dedication and efforts of innumerable people who started working on the preparations for almost a year in many ways to make this Conference become a reality. Eventually I express my special thanks and appreciation to all. I wish all success for the International Conference on Soft Computing and Intelligent Technologies [ICSCIT- 2021].

Dr.R.Baskaran M.Tech., Ph.D.

Principal

Cheran College of Engineering

K.Paramathi, Karur-639 111, Tamilnadu, India



CHERAN COLLEGE OF ENGINEERING

[Approved by AICTE, Newdelhi and Affiliated to Anna University, Chennai, Recognized by UGC with 2(f)]

K.PARAMATHI, KARUR-639111

www.cheran.ac.in

HOD MESSAGE



International conference on Soft Computing and Intelligent Technologies [ICSCIT-2021] in association with International Association of Research and Development Organization (IARDO) and Conference world is one of the important means of sharing of knowledge that Cheran College of Engineering offers to the community of professionals and researchers concerned with technological advancements. I am confident, that as a participant, you will enrich yourself immensely from this conference ICSCIT 2021. I appreciate all the authors for their exemplary contributions and in particular, the members of the programme committee for their proficient review of the manuscripts. I would extend my gratitude to all the invited chairs, plenary speakers and the organizers for their collective contribution and preparation for the event. I record my sincere thanks to Scopus indexed Journals for publishing a subset of papers presented in the conference. It has been a great honor and privilege to serve as the Co-convenor of ICSCIT 2021. Since in this conference; the technical experts from utilities and academia will opportunities to share their knowledge and experience in the recent trends in Soft computing techniques. The deliberations in the conference would be very fruitful to the nation. I would like to extend my best wishes for the success of the conference in achieving its objectives. I am sure the participants of this International Conference will gain in-depth knowledge of soft computing and its applications. I also appreciate the faculty members who participate in this International Conference for their generous efforts in conducting this Conference successfully.

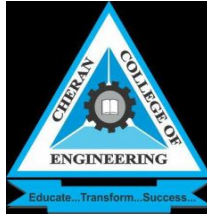
I wish all success in this endeavor.

Mrs.R.Bharathi. B.E., M.E.,[Ph.D]

Assistant Professor & HOD/CSE

Cheran College of Engineering

K.Paramathi, Karur-639 111, Tamilnadu, India



CHERAN COLLEGE OF ENGINEERING

[Approved by AICTE, Newdelhi and Affiliated to Anna University, Chennai, Recognized by UGC with 2(f)]

K.PARAMATHI, KARUR-639111

www.cheran.ac.in

ORGANIZING SECRETARY MESSAGE



The developments in the field of soft computing have far reaching impacts in all aspects of life and society. This conference will play a humble role in bringing together researchers, young scientists and students in an informal environment for discussing the latest advances and this will help young researchers to gain novel ideas. International conference on Soft Computing and Intelligent Technologies [ICSCIT- 2021] in association with International Association of Research and Development Organization (IARDO) and Conference world. This Conference will consist of tutorials, plenary lectures, oral and poster presentations. Fuzzy logic, genetic algorithms, artificial neural networks, machine learning, and expert systems are examples of soft computing approaches. Despite the fact that soft computing theory and methods were originally established in the 1980s, it has since grown into a prominent research and study field in automated control engineering. Soft computing methods are currently effectively applied in a wide range of home, commercial, and industrial applications. With the introduction of low-cost, high-performance digital processors and the lower cost of memory chips, it is apparent that soft computing methods and application areas will continue to grow. More than 120 Papers were received from over 50 Institutions all over India, and abroad, and from this 60 Papers were selected for oral presentation.

The selected papers are arranged into 08 tracks under five streams, according to the technical contents of the paper. The oral presentations are overseen by 05 session chairs who are experts in the topics of presentations. The presented papers will be published in Scopus, Web of Science, UGC Care, and Peer Reviewed Journal. There were five national and international keynote speakers, who gave comprehensive, yet in-depth talks on their areas of expertise. We would like to thank the keynote speakers for their enthusiastic participation, for sharing their knowledge, and for their guidance which was elemental for the success of this conference. We own the success of the conference to every one of the organizing committee members, and everyone who spent their valuable time, going above and beyond their call of duty, planning every aspect to perfection.

We are also extremely thankful to the management of Cheran College of Engineering and Conference World for proving all the necessary financial, organizational, and Infrastructural help necessary for organizing this conference, and for all the support and encouragement that enabled us to make this a success. We would also like to thank all the reviewers, authors, session chairs, and participants for their active participation in making this conference into a rich technical forum. I record my sincere thanks to Scopus indexed Journals for publishing a subset of papers presented in the conference.

I wish this International conference on Soft Computing and Intelligent Technologies [ICSCIT- 2021] in association with International Association of Research and Development Organization (IARDO) and Conference world a mastering Success.

Mr.S.Kannadhasan

B.E.,M.E.,M.B.A.,[Ph.D].,PGDCA.,PGVLSI.,PGESDI.,PGDRD.DCHN,DCP.,ADSE.,PGDBI.,B.S
c.,M.Sc.,M.A

Membership of Professional Society:

MIE.,MISTE.,MIETE.,CSI.,IACSIT.,IAENG.,IEAE.,ICSEC.,SPG.,SEEE.,SDIWC.,IJSR.INSC.,I
ARDO.,EAI

Assistant Professor & Head of the Department

Department of Electronics and Communication Engineering

Cheran College of Engineering, K.Paramathi

Karur, Tamilnadu-639111

Mobile: 9677565511, 8838586305

Email ID; kannadhasan.ece@gmail.com

<https://sites.google.com/view/kannadhasansuriyan-ece/>

Chief Patrons

Mr.P.M.Karuppannan

Chairman

Cheran College of Engineering

K.Paramathi, Karur

Mr.K.Muthusamy

Trustee

Cheran College of Engineering

K.Paramathi, Karur

Patrons

Dr.T.K.Krishnamurthy

Director

Cheran College of Engineering

K.Paramathi, Karur

Convener

Dr.R.Baskaran M.Tech., Ph.D.

Principal

Cheran College of Engineering

K.Paramathi, Karur

Chief Guest

Dr. Nilesh J UKE

Principal/Professor

Trinity Academy of Engineering , Kondwa, Pune

Keynote Speaker

Dr. in Engg. & Dr. in Law. R. RAVI

Director (Research) & Professor in Department of CSE/IT,

Francis Xavier Engineering College,

Vannarpettai, Tirunelveli , Tamilnadu, India.

Keynote Speaker

Mr. Kanagaraj Venusamy

B.E.,M.E.,[PH.D]

Control Systems Instructor , Department of Engineering,
University of Technology and Applied Sciences-al Mussanah,
Sultanate of Oman, Muscat.

Session Chair

Dr.R.Nagarajan

B.E., M.E., Ph.D

Professor, Department of Electrical and Electronics Engineering
Gnanamani College of Technology, A.K Samuthiram, Namakkal, Tamilnadu

Co-Convener

Mr.S.Kannadhasan

Assistant Professor & HOD/ECE

Mrs.R.Bharathi

Assistant Professor & HOD/CSE

Mr. R.Pari

Assistant Professor & HOD/EEE

Mr.A.Sasikumar

Assistant Professor & HOD/CIVIL

Mr.R.Sabariselvan

Assistant Professor & HOD/MECH

Ms.P.Bagavathidevi

Assistant Professor & HOD/S&H

Conference Program Committee Members

Mr.M.Karthik AP/ECE

Mr.S.Vetrivel AP/CIVIL

Mrs.V.Kavitha AP/CSE

Mr.R.Stalinbabu AP/CSE

Mrs.M.Ananthi AP/CSE

Mr.R.K.Harishgowtham AP/CSE

Mr.R.Subramani Rao AP/EEE

Mr.S.K.Palanisamy AP/MECH

Mrs.V.Sudha AP/S&H

Organizing Secretary/Editor

Mr.S.Kannadhasan

B.E.,M.E.,M.B.A.,[Ph.D].,PGDCA.,PGVLSI.,PGESDI.,PGDRD.DCHN,DCP.,ADSE.,PG
DBI.,B.Sc.,M.Sc.,M.A

Membership of Professional Society:

MIE.,MISTE.,MIETE.,CSI.,IACSIT.,IAENG.,IEAE.,ICSEC.,SPG.,SEEE.,SDIWC.,IJSR
.INSC.,IARDO.,EAI

Assistant Professor/Head of the Department

Department of Electronics and Communication Engineering

Cheran College of Engineering, K.Paramathi

Karur, Tamilnadu-639111

Ph: 9677565511 (Whatsapp), 8838586305

ORCID ID: <https://orcid.org/0000-0001-6443-9993>

<https://sites.google.com/view/kannadhasansuriyan-ece/>

Dr.R.Baskaran M.Tech., Ph.D.

Principal

Cheran College of Engineering

K.Paramathi, Karur

**National Advisory Committee Members (May be added in your national
committee members)**

Dr.M.Saravanan, Electrical and Electronics Engineering, Thiagarajar College of
Engineering, Madurai, Tamilnadu, India

Dr.R.Nagarajan, Electrical and Electronics Engineering, Gnanamani College of
Technology, Namkkal, Tamilnadu

Dr.V.Saravanan, Electrical and Electronics Engineering, Thiagarajar College of
Engineering, Madurai, Tamilnadu, India

Dr.S.Muthubalaji, Electrical and Electronics Engineering, CMR College of
Engineering and Technology, Hyderabad, Telangana, India

Dr.G.Yamuna, Electronics and Communication Engineering, Annamalai University,
Chidambaram, Tamilnadu, India

Dr.N.Balakrishnan, Mechanical Engineering, Gnanamani College of Technology,
Namakkal, Tamilnadu, India

Dr.S.Selvaperumal, Electrical and Electronics Engineering, Syed Ammal Engineering College, Ramanathapuram, Tamilnadu, India

Dr.G.Ranganathan, Electronics and Commuication Engineering, Gnanamani College of Technology, Namakkal, Tamilnadu, India

Dr.N.Karuppiah, Electrical and Electronics Engineering, Vardhaman College of Engineering, Hyderabad, Telangana, India,

Dr.R.Umamaheswari, Computer Science and Engineering, Gnanamani College of Technology, Namakkal, Tamilnadu, India

Dr.D.Prince Winston, Electrical and Electronics Engineering, Kamaraj College of Engineering and Technology, Virdhunagar, Tamilnadu, India

Dr.R.C.Karpagalakshmi, Computer Science and Engineering, Gnanamani College of Technology, Namakkal, Tamilnadu, India

Dr.Alagar Karthick, Electrical and Electronics Engineering, KPR Institute of Engineering and Technology, Coimbatore, Tamilnadu, India

Dr.R.J. Kavitha, Electrical and Electronics Engineering, Anna University, University college of Engineering, Panruti, Tamilnadu, India

Dr.K.K.Saravanan, Electrical and Electronics Engineering, Anna University, University college of Engineering, Thirukkuvalai, Tamilnadu, India

Dr.P.Hari Krishnan, Electrical and Electronics Engineering, Anna University, Regional Campus, Coimbatore, Tamilnadu, India

Dr.M.Durairasan, Electrical and Electronics Engineering, Anna University, University college of Engineering, Thirukkuvalai, Tamilnadu, India

Dr.S.P.Mangaiyarkarasi, Electrical and Electronics Engineering, University college of Engineering, Panruti, Tamilnadu, India

Dr.B.Meenakshisundaram, Electrical and Electronics Engineering, Sethu Institute of Technology, Kariapatti, Tamilnadu, India

Dr W. Deva Priya, Electronics and Communication Engineering, K S R Institute for Engineering and Technology Tiruchengode, Tamil Nadu, India,

Dr T. Srihari, Electrical and Electronics Engineering, K S R Institute for Engineering and Technology Tiruchengode, Tamil Nadu, India,

Dr. S. Gopinath, Electronics and Communication Engineering, Karpagam Institute of Technology, Tamilnadu, Coimbatore, India

Dr.V.Mohanavel, Mechanical Engineering, Bharath Institute of Higher Education and Research, Chennai, Tamilnadu, India

Dr.R.Saravanakumar, Electrical and Electronics Engineering, Saveetha School of Engineering, Chennai, Tamilnadu, India

Dr. P. Ramanan, Mechanical Engineering, National Engineering College, Kovilpatti, Tamilnadu, India,

Dr. R.Madavan, Electrical and Electronics Engineering, P.S.R Engineering College, Sivakasi, Tamilnadu, India

Dr. V.Usha, Department of Chemistry, University College of Engineering Panruti, Tamilnadu, India

Dr.S.Rajalakshmi, Department of Physics, University College of Engineering Panruti, Tamilnadu, India

Dr.P.Durgadevi, Computer Science and Engineering, SRM Institute of Science and Technology, Chennai, Tamilnadu, India

Dr.M.Durgadevi, Computer Science and Engineering, SRM Institute of Science and Technology, Chennai, Tamilnadu, India

Dr.A.Babu Karuppiah, Electronics and Communication Engineering, Velammal College of Engineering and Technology, Madurai, Tamilnadu, India

Dr.R.Tamilselvi, Electronics and Communication Engineering, Sethu Institute of Technology, Kariapatti, Tamilnadu, India

Dr.G.Saravanan, Electrical and Electronics Engineering , Annamalai University, Chidambaram, Tamilnadu, India

Dr.Su.Suganthi, Electronics and Communication Engineering, Sri Sairam Institute of Technology, Chennai, Tamilnadu

Dr.S.Dhanasekar, Electronics and Communication Engineering, Sri Sairam Institute of Technology, Chennai, Tamilnadu

G. Valarmathi, Electronics and Communication Engineering, Sri Sairam Institute of Technology, Chennai, Tamilnadu

Dr.R.Sudarmani, Electronics and Communication Engineering , Avinashilingam Institute for Home Science and higher Education for Women, Coimbatore, Tamilnadu

Dr.T.Abirami, Information Technology, Kongu Engineering College, Tamilnadu

Dr.Maheswari R, Vellore Institute of Technology, Vellore, Tamilnadu

Dr.Y.Thiyagarajan, Christ College of Engineering and Technology, Puducherry

Dr.M.L.Bharathi, Electrical and Electronics Engineering, Satyabhama Institute of Science and Technology, Chennai, Tamilnadu

Dr.Prithi Samuel, Computer Science and Engineering, Rajalakshmi Engineering College, Chennai, Tamilnadu

Mr.M.Shanmuganantham, Electrical and Electronics Engineering, Tamilnadu Government Polytechnic College.

Mr.C.Gurunathan, Electrical and Electronics Engineering, Tamilnadu Government Polytechnic College, Madurai, Tamilnadu

Mrs.R.Banupriya, Electrical and Electronics Engineering, PGP College of Engineering and Technology, Tamilnadu, India

Mrs.G.Srividhya, Electrical and Electronics Engineering, Gnanamani College of Technology, Namkkal, Tamilnadu

Mr.R.Guruprasath, Electronics and Communication Engineering, Gnanamani College of Technology, Namkkal, Tamilnadu

Mrs.M.Pandimadevi, Electronics and Communication Engineering, Sethu Institute of Technology, Kariapatti, Tamilnadu, India

Mrs.C.Jishachandra, Electrical and Electronics Engineering, Gnanamani College of Technology, Namkkal, Tamilnadu

J.Manjushree Kumari, Electrical and Electronics Engineering, Gnanamani College of Technology, Namkkal, Tamilnadu

Mr.R.Prabhu, Electronics and Communication Engineering, Gnanamani College of Technology, Namkkal, Tamilnadu

Mr.V.Kannadhasan, Mechanical Engineering, Solaimalai College of Engineering, Madurai, Tamilnadu

Mr. S.Sathish, Computer Science and Engineering , Sri Ranganathar Institute of Engineering and Technology, Coimbatore, Tamilnadu

J.Poongodi, Computer Science and Engineering, Sri Ranganathar Institute of Engineering and Technology, Coimbatore, Tamilnadu

U.Sinthuja, Information Technology, Hindusthan College of Arts and Science, Coimbatore, Tamilnadu

M.Tamilselvi, Mechatronics Engineering, T.S. Srinivasan Centre for Polytechnic College and advanced training, Chennai, Tamilnadu

International Advisory Committee Members

Dr. Xiaolei Wang, Electrical Engineering and Automation, Aalto University, Finland

Dr. Joy long- Zong Chen, Electrical Engineering, Da-Yeh University, Taiwan

Dr.Xavier Fernando, Electrical and Computer Engineering, Ryerson University, Canada

Dr.Basim Alhadidi, Computer Information Systems, Prince Abullah Bin Ghazi Faculty of Information and Communication Technology, Jordan.

Dr. George Ghinea, Computer Science, Brunel University, United Kingdom.

Dr. K.K.Chong, Electrical and Electronics Engineering, Universiti Tunku Abdul Rahman, Malaysia

Mr.Kanagarajvenusamy, Department of Engineering, University of Technology and Applied Sciences-al Mussanah, Muscat, Sultanate of Oman.

Dr.SureshYanan, Department of Engineering, University of Technology and Applied Sciences-al Mussanah, Muscat, Sultanate of Oman.

Dr.Jothibabu k. konidhala, Department of Engineering, University of Technology and Applied Sciences-al Mussanah, Muscat, Sultanate of Oman.

Dr.S.V.TresaSangeetha, Department of Engineering, University of Technology and Applied Sciences-al Mussanah, Muscat, Sultanate of Oman.

Mohammed JubairMeera Hussain, Department of Engineering, University of Technology and Applied Sciences-al Mussanah, Muscat, Sultanate of Oman.

Dr.VanithaMahadevan, Department of Engineering, University of Technology and Applied Sciences-al Mussanah, Muscat, Sultanate of Oman.

BinduPuthentharayilVikraman, Department of Engineering, University of Technology and Applied Sciences-al Mussanah, Muscat, Sultanate of Oman.

Mayasa Al kindi, Department of Engineering, University of Technology and Applied Sciences-al Mussanah, Muscat, Sultanate of Oman.

SulochananKarthichRamanathan, Department of Engineering, University of Technology and Applied Sciences-al Mussanah, Muscat, Sultanate of Oman.

Sumesh Malayan, Department of Engineering, University of Technology and Applied Sciences-al Mussanah, Muscat, Sultanate of Oman.

BetzyBabu, Department of Engineering, University of Technology and Applied Sciences-al Mussanah, Muscat, Sultanate of Oman.

AsanBanu Jinnah Sheik Mohamed, Department of Engineering, University of Technology and Applied Sciences-al Mussanah, Muscat, Sultanate of Oman.

Antony Judice, Department of Engineering , University of Technology and Applied Sciences-Ibri, Muscat, Sultanate of Oman

Dr.RaniFathima Kamal Basha, Department of Engineering, University of Technology and Applied Sciences-al Mussanah, Muscat, Sultanate of Oman.

Dr.Navaneetha Krishnan Rajagopal, Department of Engineering , University of Technology and Applied Sciences- Salalah, Muscat, Sultanate of Oman

Dr.R.Dhaya, Computer Science, King Khalid University, Abha, KSA

Prof. Srinath Doss, Bothouniversity, Botswana

Gabriel Gomes de Oliveira, Electrical Engineering, State University of Campinas, UNICAMP, Brazil

Samuel Ogunniyi, Chemical Engineering, University of Ilorin, Nigeria

Dr.S.Manoharan, Computer Science, Hachalu Hundesa Institute of Technology, Ambo University (Awaro Campus), Ethiopia

Proceeding of the conference has been published with **ISBN: 978-93-91535-15-5**.

International Conference on Soft Computing and Intelligent Technologies (ICSCIT 2021) held at Cheran College of Engineering in Karur, Tamil Nadu through both the mode offline as well as online with the collaboration of AR Research Publication and Conference World on **24th of** December 2021

Total 110 papers were received for the conference and 70 papers were shortlisted by the committee.

1. Accepted papers will be published in the peer reviewed international journals having ISSN & High Impact factor.
2. Selected Papers will be published in the **UGC Care listed** international journals having ISSN & High Impact factor.
3. Few very good quality Papers will be published in the **Scopus indexed journal** having ISSN & High Impact factor.

All the accepted and presented papers of the duly registered authors will be published in the UGC Approved International Journals

Published by

AR Research Publication,

3/186 Santpura Govindpuri Modinagar- 201201 . Dist: Ghaziabad

International Conference on Soft Computing and Intelligent Technologies (ICSCIT 2021) (Vol-01) Copyright © 2021, by AR Research Publication (India)

No part of this publication may be reproduced or distributed in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise or stored in a database or retrieval system without the prior written permission of the publishers. The program listing (if any) may be entered, stored and executed in a computer system, but they may not be reproduced for publication.

This edition can be exported from India only by the publishers, AR Research Publication (India) ISBN: 978-93-91535-15-5

Managing Director: Gauri Sharma

Senior Researcher—Product Development: Ms. Pratima Singh

Head—Production (Higher Education and Professional): Satinder Kulkarni

Information contained in this work has been obtained by AR Research Publication (India), from sources believed to be reliable. However, neither AR Research Publication (India) nor its authors guarantee the accuracy or completeness of any information published herein, and neither AR Research Publication (India) nor its authors shall be responsible for any errors, omissions, or damages arising out of use of this information. This work is published with the understanding that AR Research Publication (India) and its authors are supplying information but are not attempting to render engineering or other professional services. If such services are required, the assistance of an appropriate professional should be sought.

Cover Design: Rishab Kumar