



## Conference Committees



### Steering Committee

Shri. M. Sri Bharat, President, GITAM  
Prof. K. Ramakrishna Rao, Chancellor, GITAM

### Local Advisory Committee

Prof. Jayasankar Variyar, Pro Vice-Chancellor, Academics, GITAM  
Prof. D. Gunasekaran, Registrar, GITAM

### Core Organizing Committee

Prof. J. Beatrice Seventline (Chair), EECE, GIT  
Prof. R. Sireesha (Chair), CSE, GIT  
Prof. P.V.Y. Jayasree (Co-Chair), HoD, EECE, GIT  
Prof. K. Thammi Reddy (Co-Chair), HoD, CSE, GIT  
Dr. V. Abraham (Co-Chair), Vice-Chair, IEEE Vizag Bay Section  
Prof. Shaik Rafi Ahmed, IIT Guwahati  
Prof. N. Sreenivasa Rao, Matrusri Engineering college  
Prof. G. Sree Lakshmi, CVR Engineering College  
Mr. Md. K M Chisti, EECE, GIT, Secretary, IEEE Vizag Bay Section

### Publication Committee

Prof. Y. Srinivas (Chair), CSE, GIT  
Prof. G.V.K. Sharma (Co-Chair), EECE, GIT  
Prof. VVSSS Chakravarthy, IEEE Vizag Bay Section  
Prof. Th. Sumanth Kumar, EECE, GIT  
Prof. Jay Prakash Ravindra Bhatnagar, EECE, GIT  
Dr. B. Uday Kumar, EECE, GIT  
Dr. M. Kranthi Kiran, CSE, GIT  
Dr. R. Prasanthi, EECE, GIT

### Honorary Chair

Prof. K. Siva Rama Krishna, Vice-Chancellor, GITAM

### General Chair(s)

Prof. C. Vijaysekhar, Dean Engineering, GITAM  
Prof. C. Dharma Raj, Principal, GIT, GITAM  
Prof. S. Lakshmi Narayana, Chair, IEEE Vizag Bay Section

### Technical Program Committee

Prof. V.B.S. Srilatha Indira Dutt (Chair), EECE, GIT  
Prof. R. Bhraramamba (Co-Chair), CSE, GIT  
Prof. Surya S. Durbha (Co-Chair), IIT Bombay  
Prof. Radha Krishna Ganti (Co-Chair), IIT Madras  
Prof. Aditya K Jagannatham, IIT Kanpur  
Prof. D. Sriram kumar, NIT Tiruchirapalli  
Prof. V. Sandeep, NIT AP  
Prof. M. Naresh Babu, NIT Silchar  
Prof. M. Syamala Devi, Panjab University  
Prof. G. Florence Sudha, Pondicherry Engineering College  
Prof. PSR Chowdary, IEEE Vizag Bay Section  
Dr. U. Salma, EECE, GIT  
Dr. S. Neeraja, EECE, GIT  
Dr. B. Rajesh Kumar, EECE, GIT  
Dr. Srinivas Chakravarthi Lade, CSE, GIT  
Dr. Tusar Kanti Mishra, CSE, GIT

### Organizing Committee

All faculty and staff of EECE & CSE, GIT

### Advisory Committee

### National Advisory Committee

Prof. Surya S. Durbha, IIT Bombay  
Prof. Kiran Kumar Kuchi, IIT Hyderabad  
Prof. Radha Krishna Ganti, IIT Madras  
Prof. Aditya K. Jagannatham, IIT Kanpur  
Prof. D. Sriram Kumar, NIT Tiruchirapalli  
Prof. Subrata Dutta, NIT Jamshedpur  
Prof. Narasimha Sarma N V S, IIIT Trichy  
Dr. Merugu Lakshminarayana, DRDO  
Dr. MVKV. Prasad, Chief Scientist, GITAM  
Prof. G. Sasi Bhushan Rao, Andhra University  
Prof. L. Pratap Reddy, JNTU Hyderabad  
Prof. Himadri Nath Saha, Calcutta University  
Prof. Somnath Mukhopadhyay, Assam University  
Prof. Tuhin Utsab Paul, St. Xavier's University

### International Advisory Committee

Prof. Lipo Wang, NTU, Singapore  
Prof. Raghu Korrapati, Walden University, USA  
Prof. Prasad Ponnappalli, University of Manchester, UK  
Prof. Ravi Vatrappu, Ryerson University, Canada  
Dr. Nhu Gia Nyugen, Duy Tan University, Vietnam  
Dr. Le Hoang Son, Vietnam National University, Vietnam  
Dr. Sangeet Saha, University of Essex, UK  
Dr. Vitoantonio Bevilacqua, Polytechnic University of Bari, Italy  
Prof. C. Jagadish (AC), Australian National University, Australia

### Industry Advisory Committee

Er. H.S. Jatana, Group head, SCL Mohali  
Mr. G. Sreenivasa Rao, VP, R&D, Accenture, Hyderabad  
Shri. K.V. Sriram, ED, Andhra Electronics Pvt. Ltd.  
Shri. I. Srinivas, AWS Sage Maker Engineering Team, USA  
Mr. S. Chandra Sekhar Reddy, Synopsys Inc, USA  
Dr. Ashok Challa, ON Semiconductor, California, USA



## Tutorials / Workshops



Proposals for organizing Tutorials / Workshops to be co-located with BHARAT - 22.

### Submission Instructions

Submit a single PDF document containing the following:

1. Tutorial / Workshop title
2. Names and contact information for main organizers
3. Brief description of Tutorial / Workshop topic
4. Brief motivation of why the Tutorial / Workshop would be beneficial
5. Desired length of the Tutorial / Workshop
6. Description of proposed Tutorial / Workshop activities
7. Tentative list of program committee members
8. For Workshops, potential invited speakers (if the workshop intends to have invited speakers), indicating if there are any that have confirmed they would participate if the proposal is accepted
9. For Tutorials, summary of any related tutorials held in the past, including explicitly indicating whether this is a continuation of past tutorial.

### Contact:

[bharat22@gitam.edu](mailto:bharat22@gitam.edu)

Notification of Tutorials/Workshops acceptance : December 1<sup>st</sup>, 2021

## Address for Correspondence

### Organizing Chair

#### BHARAT - 22

GITAM Institute of Technology  
GITAM Deemed to be University  
Visakhapatnam - 530045  
INDIA

Phone : +91-9440993290

+91-9848503365

+91-9573412381

Email : [bharat22@gitam.edu](mailto:bharat22@gitam.edu)

Website : [bharat22.gitam.edu](http://bharat22.gitam.edu)



# BHARAT - 22

International Conference  
on  
Breakthrough in Heuristics And  
Reciprocation of Advanced Technologies

(IEEE Conference Record : 53139)

Theme : Access to Future Technologies for Empowering Mankind

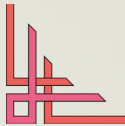
4<sup>th</sup> & 5<sup>th</sup> MARCH, 2022



### Organized by

Department of EECE, Department of CSE  
GITAM Institute of Technology  
GITAM Deemed to be University  
Visakhapatnam - 530045  
Andhra Pradesh  
INDIA  
&  
IEEE Vizag Bay Section

<https://bharat22.gitam.edu/>



## About IEEE Vizag Bay Section

IEEE Vizag Bay Section with the geographical boundaries of Srikakulam Dist, Vijayanagaram Dist, Visakhapatnam Dist, East Godavari Dist, West Godavari Dist, and Krishna Dist of Andhra Pradesh, India. The section has six active Chapters, namely the IEEE Computer Society (CS) Chapter, IEEE Communication Society (COMSOC)/Signal Processing Society (SPS) Joint. Chapter, IEEE Education Society Chapter, IEEE MTT/AP/EMC Societies Chapter, IEEE Power Electronics Society(PELS)/ Power and Energy Society (PES)/Industry Applications Society (IAS) Joint Chapter, IEEE Technology and Engineering Management Society (TEMS) and TWO Affinity Groups – Women in Engineering (WiE) and Young Professionals (YP). Since the formation, it is the most active small section in IEEE India.

## About GITAM Deemed to be University

During the past 41 years, GITAM has been committed to excellence in higher education foraying into diversified disciplines of learning. It has steadily evolved into a world class university recognized for the experiential learning it offers, the competent and compassionate faculty, the stellar research laboratories, academic vibrancy and cosmopolitan culture. Founded by Late. Dr. M.V.V.S. Murthi, visionary, industrialist, educationist, philanthropist and former parliamentarian, GITAM is in the fruitful fourth decade of its service to higher education. GITAM has become a diverse and dynamic and undergraduate, postgraduate research institution and its now led by Hounorable President Shri. M. Sri Bharat. The university has three campuses - its main campus at Visakhapatnam, off campuses at Hyderabad and Bengaluru. Known for its creative dynamism and flexibility, the university offers varied programs blending skill development and value orientation to shape the career of students and develop holistic personality to be privileged members of the civil society. The university also offers several programs through distance learning to increase access to higher education with an emphasis on reaching the unreached. The university has been accredited by NAAC as A+ grade university and recognized by UGC - MHRD as category - '1' Deemed to be University.

## About GITAM Institute of Technology

GITAM Institute of Technology (GIT) was established in the year 1980. Over the years, the institute made a niche in engineering education at the all India level as certified by various bodies over a period of time. With a complement of highly qualified teachers, skilled technical staff, state-of-the-art laboratories and learning resources, GIT is globally recognized as a premier institute in technology and engineering. At present, there are strongly dedicated and committed faculty in various branches of engineering. Many faculty members have made significant contributions both at the National and International levels.

## About EECE

The department started in 1981 with a four-year undergraduate program in ECE, EEE & EI. This program had become autonomous in 2003-04. The department is NBA accredited twice. The department offers a four-year B.Tech program and also provides full-time M.Tech programs in Embedded Systems, EDT, Power Systems & Automation and VLSI design. The department also offers Ph.D Programme to carry out research in the areas of Microwave Engineering, Wireless Communication, VLSI Design, Signal Processing and related areas. The department frequently organizes workshops, conferences and certificate courses in Communication Systems, VLSI Design, MATLAB, Microwave Circuit Design etc. All the faculty members are active in pursuing research and publish their research findings in referred journals and conferences very frequently.

## About CSE

The department of Computer Science and Engineering, founded in 1986, is committed to imparting quality education & research in Computer Science and Engineering education. The department offers B.Tech. degree in Computer Science & Engineering with specializations in Artificial Intelligence & Machine Learning, Cyber Security, Data Science and Internet-of-Things. The department also provides an industry-aligned program B.Tech. Computer Science and Business Systems (CSBS) in association with Tata Consultancy Services (TCS). M.Tech. programs include Computer Science & Engineering, Data Science as well as Cyber Forensics and Information Security. Both full-time and part-time doctoral degree programs are offered in cutting edge areas of research. The curriculum is designed as per the Choice-Based Credit System (CBCS), which offers students the flexibility to choose from a wide variety of courses. The thrust areas of research include machine learning, image processing, big data analytics and network security.

## About the Conference

The aim of this conference is to highlight the efforts of researchers who have harnessed the power of technology in order to help solve society's most pressing problems and to discuss the challenges faced in due course. With the growth of technology and social media, more focus is being laid on the application of ICTs for the enhancement of the lives of people and communities. Research has already forayed into developing solutions such as tools for analysis and management of disasters/crises, use of mobile computing for emergencies, eradicating poverty etc.

## Registration Fee

### Early Bird Registration - Authors [ Before 31<sup>st</sup>-January-2022 ]

BHARAT - 22 Categories	IEEE Member		Non IEEE Member	
	National	International	National	International
Professional/Academician/Industrialist	₹6,500	\$250	₹7,000	\$400
Student	₹3,000	\$50	₹4,000	\$150

### Registration - Authors [ After 1<sup>st</sup>-February-2022 ]

BHARAT - 22 Categories	IEEE Member		Non IEEE Member	
	National	International	National	International
Professional/Academician/Industrialist	₹7,500	\$300	₹9,000	\$500
Student	₹4,000	\$100	₹4,500	\$150

### Registration - Non-Authors/Participants

BHARAT - 22 Categories	IEEE Member		Non IEEE Member	
	National	International	National	International
Professional/Academician/Industrialist	₹3,000	\$100	₹4,000	\$150
Student	₹1500	\$75	₹2,000	\$125

### Registration for Workshop/Tutorials for Authors/Non-Authors

BHARAT - 22 Categories	IEEE Member		Non IEEE Member	
	National	International	National	International
Professional/Academician/Industrialist	₹1,000	\$50	₹1500	\$75
Student	₹600	\$25	₹800	\$50

## Important Dates

Deadline for paper submission	October 11 <sup>th</sup> , 2021
Notification of paper acceptance	January 10 <sup>th</sup> , 2022
Deadline for camera ready format	January 31 <sup>st</sup> , 2022
Deadline for early bird registration	January 31 <sup>st</sup> , 2022
Registration deadline	February 15 <sup>th</sup> , 2022
Pre-conference Tutorials / Work shops	March 2 <sup>nd</sup> - 3 <sup>rd</sup> , 2022
Conference dates	March 4 <sup>th</sup> - 5 <sup>th</sup> , 2022

## Topics of Interest

The conference invites original research contributions in the following and other related areas.

### Artificial Intelligence

- Machine Intelligence
- Deep Learning
- Computer Vision
- Computational Intelligence
- Bioinformatics
- Bigdata Analytics

### Communications & Networks

- Wireless communications & Networks
- RF and Microwave communications
- Optical communications & Networks
- Cognitive Radio
- 5G and beyond communication systems & Networks
- Edge communication systems
- Satellite and space communications

### Cyber Physical Systems

- Wireless Sensor Networks
- Internet of Things
- Edge Computing
- Computer Networks
- Cyber Security

### Signal Processing

- Signal processing for communications
- Image and Video signal processing
- DSP algorithms and architecture
- Speech and Audio processing
- Stochastic optimization
- Compressive sensing and sparse signal processing
- Biomedical signal processing
- MIMO and space time signal processing

### Next Gen Technologies

- Quantum Computing
- Block Chain Technology
- Augmented/Virtual Reality
- Biometrics

### Electronic Devices, Circuits and Systems

- Analog/ Mixed signal/ RF/ Microwave circuits
- Millimeter wave circuits
- Biomedical and Bio inspired circuits and systems
- VLSI systems and applications
- Digital circuits and systems
- Low power and low voltage design
- Nano and THz devices/ technologies

### Electrical Systems

- Computational intelligence applications in power systems
- Energy policies in power sector
- Hybrid electric vehicles
- Renewable and sustainable energy
- Micro grid and smart grids

### Instrumentation

- Robotics and Automation
- MEMS and Nanotechnology
- Real-time Data acquisition Systems
- Networked Embedded Sensors
- Biomedical Instrumentation

### RF, Microwave and Millimeter waves

- Antenna theory ,design and measurements
- EM interference and compatibility
- RF,Microwave and Millimeter wave Technologies
- MIMO antenna systems for communications
- Smart antennas
- Radar techniques, systems and applications

## Instructions to Authors

1. Authors are invited to submit manuscripts in not more than 6 pages in English and in double column IEEE format. Please follow the instructions from the following pages.  
Manuscript templates are located at <https://www.ieee.org/conferences/publishing/templates.html>  
Plagiarism details <https://www.ieee.org/publications/rights/author-rights-responsibilities.html>  
Copy right information at <https://www.ieee.org/publications/rights/copyright-policy.html>
2. Only electronic submission in PDF format will be accepted through easy chair.  
Paper Submission Link: <https://easychair.org/conferences/?conf=bharat22>
3. There should be only one corresponding author. He /She should not change the email id all through the conference process.
4. All the paper's submitted will be carefully reviewed by at least two/three experts and reviews will be returned to the author to ensure the high quality of the accepted papers.
5. The authors of accepted papers must guarantee that their papers will be presented at the conference and register for conference.
6. Upon acceptance, at least one of the authors listed in the paper must attend the conference and present the paper according to the schedule. In the event that the presenter is unable to attend the conference for any reasons, your accepted paper will not be considered for submission of the proceeding to the IEEE Xplore.
7. All accepted papers will be submitted for inclusion into IEEE Xplore subject to meeting IEEE Xplore's scope and quality requirements.
8. All contributions must be original, should not have been published elsewhere and should not be intended to be published elsewhere during the review period.