IEEE Sponsored
7th International Conference
on
Computer Applications in Electrical Engineering - Recent Advances

THEME: SUSTAINABLE TRANSPORTATION SYSTEM

October 27 - 29, 2023
Indian Institute of Technology Roorkee

Organizer: Department of Electrical Engineering, IIT Roorkee

Technical Co-sponsor

Financial Sponsors

IEEE
UP SECTION (INDIA)

IEEE
ROORKEE SUBSECTION

INVITATION FOR CERA 23

The organizing committee is delighted to invite you to participate in the 7th International Conference on Computer Applications in Electrical Engineering-Recent Advances (CERA 23) be held in hybrid mode. It is organized by the Department of Electrical Engineering at the Indian Institute of Technology Roorkee, India. The conference would be a three-day event with technical sessions being held on October 27-29, 2023, including keynote addresses, and paper and poster presentations.

It is the flagship conference of the Department of Electrical Engineering, Indian Institute of Technology Roorkee, which happens once in four year. This time we are at its 7th edition with the theme of "Sustainable Transportation Systems".

CERA 23 aims to provide a platform for bringing together researchers, industry professionals, and policymakers not only to discuss recent advances but also to present their recent original works in the area of smart energy systems, control design for robotics and automated vehicles, advanced signal processing techniques for smart instrumentation systems, smart drive design, power electronics, and smart transportation systems, expert systems, artificial intelligence, neural network etc.

Besides research papers, CERA 23 welcomes application-oriented papers particularly relating to industry as well as papers highlighting applied problems for which appropriate solutions are being currently searched. We welcome you all and hope to see you at CERA 23. The CERA 23 is fianancially sponsored by Department of water resources and development, IIT Roorkee and IEEE Roorkee Subsection. Further, it is technically co-sponsored by IEEE UP Section.

Following are the technical tracks under which research papers are invited:

1. Grid Integrated Renewable Energy Systems

- Grid integration of renewable energy sources
- Smart Grid technologies and its applications
- Renewable integration, DC and AC micro-grid
- Smart Grid and smart cities
- Power network dynamics and stability studies
- Optimal power dispatch and state estimation, security analysis and control
- Power system restructuring and deregulation
- Technical issues in electricity market
- Synchronization stability and restoration of electrical network

2. Smart Grid Monitoring, Control and Protection

- Wide area monitoring, control & protection of power system
- Smart Grid modeling and simulation with the presence of renewable energy sources
- Design, operation and condition monitoring of power apparatus
- Monitoring of electrical networks using SCADA and synchro-phasor Technology
- Wide area measurement system
- Power system protection, distribution system automation and control
- Application of WAMS for power system control, protection and state estimation
- Islanding detection for AC, DC and AC/DC microgrid system
- Flexible AC transmission system, unit commitment and load dispatch
- Optimal operation of energy sources
- Cyber security in power systems

3. Power Electronics Converter Topologies, Devices, and Motor Drives

- Power devices, components, losses and gate drivers
- Power electronics converters and topologies
- Modelling, control and stability analysis of power converters
- EMI, EMC, protection, and fault tolerant operations
- AC, DC, BLDC, and Reluctance motor drives
- Torque and speed control methods
- Power converters and its control for motor drives
- Design and conditioning monitoring of electric machine
- Power converters for renewable integrations
- WBG enabled power electronics converters
- High frequency magnetics

4. Control Systems, Mechatronics and Robotics

- Network and cooperative control; application to physical systems
- Process control
- Robust control
- Model order reduction techniques and applications
- Linear systems theory
- Stochastic systems and estimation
- Non-linear control strategies
- Optimal and model predictive control
- Unmanned systems
- Healthcare, mobile and intelligent robotics
- Sensors, actuators and micro-nano systems
- Resilience and security for industrial applications
- Model free control design

5. Smart Instrumentation and Signal Processing

- Analytical and virtual instrumentation
- Biomedical sensors and instrumentation
- Energy harvesting for sensors
- MEMS and nano sensors
- Imaging and communication
- Medical and instrumentation uncertainty
- Biomedical instrumentation and applications
- Patient monitoring and safety
- Home automation
- Medical signal and Image processing

6. Transportation Electrification and Energy Storage Systems

- Charging infrastructure, methodology and standards
- Power electronics for EV chargers and motor drives
- V2X and G2V operation of EVs
- Renewable integration with charging infrastructure
- Battery, ultracapacitor, and hydrogen based/hybrid energy storage systems
- Energy management systems
- Wireless power transfer
- Fuel cell power electric and hybrid electric vehicles
- Vehicle dynamics and control
- Inter-vehicle and intra-vehicle Communications, infotainment and testing of EVs
- All-electric and More-electric aircrafts and ships propulsion systems
- Design, optimization and fault tolerant operations of Motors and converters for transportation
- Autonomous vehicle

7. AI/ML, IOT, Big Data Analytics

- Neural networks and fuzzy systems
- Internet of things and applications
- Data science and predictive models
- Deep learning
- Natural language processing
- Pattern recognition and machine learning techniques
- Knowledge based systems

ABOUT IIT ROORKEE

Indian Institute of Technology Roorkee is among the foremost of institutes of national importance in higher technological education and in engineering, basic and applied research. Since its establishment, the Institute has played a vital role in providing the technical manpower and know-how to the country and in pursuit of research. The Institute had celebrated its Sesquicentennial in October 1996 and now completed more than 175 years of its existence.

ABOUT DEPARTMENT Of ELECTRICAL ENGINEERING

The Electrical Engineering Department was part of the Thomson College of Engineering from the year 1897, one of the earliest such specialization in the world when the discipline itself was in its infancy. The first batch in Electrical Engineering passed out of the college in the year 1900. The department was closed down in the year 1923, following the recommendation of a special committee that the college may be converted to purely Civil Engineering Institution. This decision was not to be reversed until on the eve of being converted into a university. The Fortescu committee advised the resumption of instructions in Electrical Engineering and the present department of Electrical Engineering came into being in 1946, and the first graduates of the new department were offered courses with options in both Electrical & Telecommunication Engineering. Subsequently in 1964, the department was bifurcated to form the two departments i.e., Electrical Engineering and Electronics & Communication Engineering.
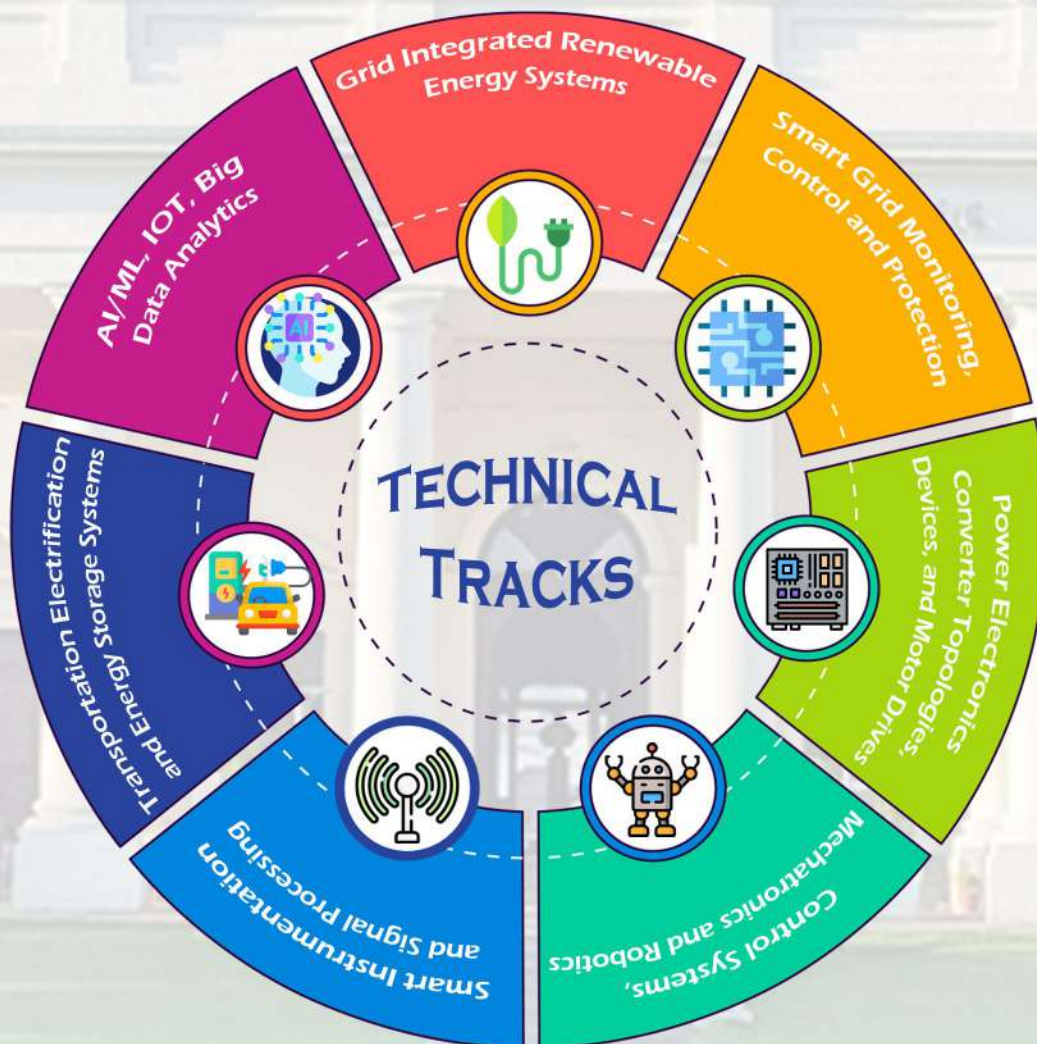

The department is a recognized centre for under-graduate, postgraduate and Ph.D. programmes. It is offering Ph.D. programme since 1964 and currently has more than 150 research scholars working in various field of electrical engineering. The Department is very active in industry-institution interaction and is providing consultancy services to the industry over the last 45 years. Number of prestigious sponsored and consultancy projects for different organisations have also been completed by the Department.

ABOUT THE CONFERENCE

The conference would be a three-day event with technical sessions being held on October 27-29, 2023, including keynote addresses, and paper and poster presentations.

IMPORTANT DATES

Last Date of Paper Submission (Extended)	25th July, 2023
Notification of Paper Acceptance	15th Aug, 2023
Early Bird Registration Start Date	30th Aug, 2023
Camera - Ready Paper Submission	10th Sept, 2023

TECHNICAL TRACKS

- Grid Integrated Renewable Energy Systems
- Smart Grid Monitoring, Control and Protection
- Power Electronics, Converter Topologies, Devices, and Motor Drives
- Control Systems, Mechatronics and Robotics
- Smart Instrumentation and Signal Processing
- Transportation Electrification and Energy Storage Systems
- AI/ML, IOT, Big Data Analytics

ADVISORY COMMITTEE

* Prof. Deepak Mathur, IEEE- Region 10 Director
* Prof. Bhim Singh, IIT Delhi
* Prof. Mohan Kolhe, University of Agder, Norway
* Prof. Lalit Kr Goel, NTU, Singapore
* Prof. S.N. Singh, IIT Kanpur
* Prof. S.V. Kulkarni, IIT Bombay
* Prof. A. K. Pradhan, IIT Kharagpur
* Prof. K Gopakumar, IISc Bangalore
* Prof. Prabodh Bajpai, IIT Kharagpur
* Prof. Sukumar Mishra, IIT Delhi
* Prof. S.C. Srivastava, IIT Kanpur
* Prof. S P Singh, IIT BHU
* Prof. Anil Pahwa, Kansas State University, USA
* Prof. N. P. Padhy, IIT Roorkee
* Prof. Amit Gupta, NTU Singapore
* Prof. Bijnan Bandopadhyay, IIT Bombay
* Prof. Mahesh Krishnamurthy, IIT, Illinois, USA
* Dr. Kumud Wadhwa, Powergrid India
* Mr. A.K. Tripathi, PRDC Pvt. Ltd.
* Prof. Alireza Khaligh, University of Maryland, USA
* Prof. Innocent Kamwa, Université Laval, Canada
* Mr. S.K. Soonee, Former Advisor, GCI (Formerly POSCO)
* Prof. Pramod Agrawal, IIT Roorkee
* Prof. Barjeev Tyagi, IIT Roorkee
* Prof. Siddhartha Sen , IIT Kharagpur
* Prof. G.K. Singh, IIT Roorkee
* Prof. S R Samanatray, IIT Bhubhaneswar
* Prof. Bidyadhar Subodhi, IIT Goa
* Prof. B. K. Panigrahi, IIT Delhi

TECHNICAL COMMITTEE

* Prof. Deepak Fulwani, IIT Jodhpur
* Prof. Sourav Patra, IIT Kharagpur
* Prof. Sumit Pramanick, IIT Delhi
* Prof. Arun Kumar Verma, IIT Jammu
* Prof. Shreyam Sinha, IIT Delhi
* Dr. O.D. Naidu, Hitachi India
* Prof. Anamika Dubey, WSU, USA
* Prof. Ashu Verma, IIT Delhi
* Prof. Ayan Mallik, Arizona State University, USA
* Prof. Akhilesh Tiwari, IIIT Allahabad
* Prof. Satish Kumar Singh, IIIT Allahabad
* Prof. Asheesh Singh, MNNIT Allahabad
* Prof. Bhavesh Bhalja, IIT Roorkee
* Prof. Rohit Bhakar, MNIT Jaipur
* Prof. S. R. Mohanty, IIT BHU
* Prof. N. N. Pandoriya, IIT Gandhinagar
* Prof. Sudharshan Kaarthik, IIST Trivandrum
* Prof. Suryanarayana Doolla, IIT Bombay
* Prof. Prasun Mishra, IIT Kharagpur
* Prof. Twinkle Tripathy, IIT kanpur
* Prof. Kiran Kumari, IISc Bangalore
* Prof. Ramkrishna Pasumathy, IIT Madras
* Prof. Soumayaranjan Sahoo, IIT Kanpur
* Prof. Debasattam Pal, IIT Bombay
* Prof. Dwaipayan Mukherjee, IIT Bombay
* Prof. Pavankumar Tallapragada, IISc Bangalore
* Prof. Karabi Biswas, IIT Kharagpur
* Prof. Thanga Raj Chelliah, IIT Roorkee
* Prof. Prabhakar Tiwari, MMMUT Gorakhpur
* Prof. Yogesh Kr. Sharma, IIT Roorkee
* Prof. Soumitra Satapathi, IIT Roorkee

ORGANIZING COMMITTEE

Patron
Prof. K. K. Pant, Director, IIT Roorkee

Head of the Department
Prof. M. K. Pathak

Chairman
Prof. M. K. Pathak

Convener
Prof. R. S. Anand

Organizing Secretary
Prof. Premalata Jena

Joint Organizing Secretary
Prof. M. Felix Orlando | Prof. Apurv Kumar Yadav

Treasurer
Prof. Manoj Tripathy

LOCAL ORGANIZING COMMITTEE

TECHNICAL ADVISORY COMMITTEE

Prof.. Biswarup Das (Chairman)
Prof. P. Sumathi
Prof. Avik Bhattacharya

LOGISTIC AND REGISTRATION COMMITTEE

Prof. R. S. Anand (Chairman)
Prof. Sharmili Das
Prof. E. Fernandez
Prof. Sumit G. Choudhuri
Prof. Sohom Chakrabarty
Prof. Ashish Kothyari
Prof. Siba Kumar Patro

TECHNICAL COMMITTEE

Prof. Y. V. Hote (Chairman)
Prof. Vishal Kumar
Prof. G. B. Kumbhar
Prof. Sharmili Das
Prof. Arnab Dey
Prof. Abdul Saleem Mir
Prof. Ashish Kothyari
Prof. Deep Kiran
Prof. Meenakshi Rawat
Prof. Dharmendra Pradhan
Prof. Ekant Sharma
Prof. Ashish Pandey

PUBLICATION COMMITTEE

Prof. Manoj Tripathy (Chairman)
Prof. Jishnu K K
Prof. Abhisek K. Behera
Prof. Abdul Saleem Mir

SESSION MANAGEMENT COMMITTEE

Prof. G. N. Pillai (Chairman)
Prof. Ambalika Sharma
Prof. Deep Kiran

PLENARY SESSIONS COMMITTEE

Prof. Barjeev Tyagi (Chairman)
Prof. M. K. Pathak
Prof. P. Sumathi
Prof. Bhavesh Bhalija
Prof. Sohom Chakrabarty

SPONSORSHIP COMMITTEE

Prof. Premalata Jena (Chairman)
Prof. Vishal Kumar
Prof. Bhavesh Bhalija
Prof. G. B. Kumbhar
Prof. Avik Bhattacharya

CATERING COMMITTEE

Prof. Anubrata Dey (Chairman)
Prof. Vinay Pant
Prof. Indra Gupta

LOCAL SIGHTSEEING COMMITTEE

Prof. E. Fernandez
Prof. C.P. Gupta
Prof. Ambalika Sharma

CULTURAL COMMITTEE

Prof. Vinay Pant (Chairman)
Prof. Indra Gupta
Prof. C. P. Gupta
Prof. Sumit G. Chaudhary

IEEE SPONSORSHIP AND WEB MANAGEMENT COMMITTEE

Prof. Deep Kiran (Chairman)
Prof. S. Jeevanand
Prof. Anubrata Dey
Prof. Arnab Dey

PAPER SUBMISSION

CERA 23 invites prospective researchers, practitioners, and students world-wide to electronically submit regular paper of their original work for consideration to be presented at the conference. Prospective authors, intending to present their research papers, are requested to submit their regular papers restricted to 6-pages with IEEE double column format. The paper may be submitted in A-4 size. The author(s) should indicate the track under which paper would be considered in the conference. The research paper will be reviewed by a panel of experts from different fields. After recommendation of the reviewers, the acceptance of the paper will be sent along with the instructions for preparing the final manuscript. For paper to be published in conference, it will be obligatory for at least one of the authors to register and present the paper in the conference. All the papers presented in CERA 23 will be included in conference proceeding (soft bound) and will appear in the IEEE explorer. The template of the submitted paper can be found from https://www.ieee.org/conferences/publishing/templates.html

AWARDS

The Best paper and poster in each technical session will be facilitated with the certificates during the CERA 2023 valedictory function. Further, each participant will be given participation certificates at the end of each session by the session chairs.

HOW TO UPLOAD A RESEARCH PAPER

The research paper needs to be uploaded using the following link https://cmt3.research.microsoft.com/CERA2023/Submission/Index The paper needs to be in IEEE double column pdf format, with a maximum size of 10Mb. Maximum page length is restricted up to six pages.

CERA 23 Expo

The industries and startup companies will be invited to participate in the exhibition being organized during the conference. They will showcase or demonstrate their products and developments during the conference which will help the attendees to enhance their research ideology and exposure towards industry oriented research.

REGISTRATION INFORMATION

The registration fee which covers the cost of conference registration kit, participation in all the activities of the conference, lunch, intersession tea and banquet is as follows:

Attendees	Indian	International	SAARC
Industries/Corporate Sector	INR. 16500	USD 650	USD 325
Teaching/ Research Organization	INR. 12000	USD 450	USD 225
IEEE Members	INR. 10000	USD 350	USD 225
Students/Research Scholars	INR. 5500	USD 225	USD 120
IEEE Student Member	INR. 4500	USD 180	USD 85
Accompanying person	INR. 2500	USD 100	USD 50

** Note: Prices are GST included

MODE OF PAYMENT

The payment of registration fee should be made online using the link below
https://www.onlinesbi.sbi/sbicollect/icollecthome.htm?corpID=365641

SPONSORSHIP

The CERA 2023 is an IEEE sponsored conference, which is financially sponsored by IEEE Roorkee subsection and techincally co-sponsored by IEEE UP section. Further, the conference is likely to be sponsored by many international and national agencies such as DST, DOE, U-COST, PSUs, etc. The Indian Industry, Academia and Utilities are also invited to sponsor the conference by providing the financial support.

CULTURAL TOUR

The site seeing tours to nearby places such as Mussoorie, Haridwar & Rishikesh will be available for the participants and accompanying persons on payment basis. The industries are invited to participate in the exhibition being organized during the conference.

GANGA AARTI   HARIDWAR   RISHIKESH

Prof. R. S. Anand
Convener, CERA 23
Phone :   +91 1332 284331
Email Id   : cera23@iitr.ac.in

Prof. Premalata Jena
Organizing Secretary
Tel: +911332284757

Prof. M. Felix Orlando
Joint Organizing Secretary
Mob: +918979897211

Prof. Apurv Kumar Yadav
Joint Organizing Secretary
Mob: +919480559015

YEARS OF
175
IIT ROORKEE
Estd. 1847

DEPARTMENT OF ELECTRICAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
ROORKEE, UTTARAKHAND, INDIA - 247667