



(15th – 17th June, 2023)

ICEPE 2023 Special Session on

Recent advances in Information and Communication Technologies for Integrated and Sustainable Transportation

Aims and scope of the session:

Heterogeneous computing is widely applied for further accelerating scientific computations. Meanwhile, power systems are quickly evolving to carbon-neutral and smart grids that integrate massive amounts of renewable energy sources. To realize a green, secure, and low-emission transportation, the seamless integration of renewable energy and electrical transportation (especially railway and electric vehicles) is becoming a priority in both energy and transportation sectors. Constructing a highly self-consistent and resilient trans-energy system is a long-term goal of transportation system. By integrating the transportation infrastructure with the renewable energy, using flexible energy storage to support renewable energy generation, connecting the electric transportation with the grid in bi-direction, trans-energy system can significantly increase the ability to accommodate higher penetration of renewable energy. Immensely integrated energy and transportation system will be a new ecosystem of distributed energy source, large scale micro grid and volatile transportation load. Thus, novel views and technologies are urgently needed to analyze the potential of energized transportation, construct a flexible, stable and strong energy storage system to balance the volatile renewable energy with the volatile transportation load, monitor the three-way energy, transportation and information flow freely, efficiently and securely, discuss the trans-energy network economic problems and etc.

The aim of this Special session is to collate original research and review articles describing advances in this field.

Potential topics include but are not limited to the following:

- Computation, communication and other methodologies for trans-energy system
- Energy-economic analyzation and value assessment for trans-energy systems.
- Coordination and interoperability of interconnected energy systems
- Interactions between urban energy systems and large energy systems
- Data-driven and artificial intelligence approaches to enhancing flexibility and resilience of urban energy systems
- Energy management policy planning and decision making

- IoT-based coordinated control solution to improve Renewable Energy Sources (RES) hosting capacity.
- Accelerated simulations and analyses of renewables, distribution grids, and integrated energy systems based on heterogeneous computing.
- High-performance computing solutions using heterogeneous computing for advanced big data analytics of power systems.
- Heterogeneous computing environment and practices for accelerated simulations and deep learning tasks of power systems, etc.
- Planning of flexible and resilient urban energy systems
- Robust and resilient operation and control of urban energy systems.

Special session organize

<p>Dr. Malabika Basu Senior Lecturer, Technological University Dublin, Ireland</p> <p>Dr. Malabika Basu graduated from Bengal Engineering College, Shibpur, India (Now IIST Shibpur) in 1995 with a B.E. in Electrical Engineering. She topped the University among all branches of Engineering in her Masters in 1997, with specialization in Electrical Machines. She then joined the Department of Electrical Engineering at Indian Institute of Technology, Kanpur, India as a research scholar, where she received her Ph.D. in January, 2003, for her work on unified power quality conditioner.</p> <p>In, February, 2001 Malabika joined the Department of Electrical Engineering, Jadavpur University at Calcutta as a lecturer. In 2003, she joined the School of Electrical Engineering Systems of Dublin Institute of Technology in Ireland as Arnold. F. Graves postdoctoral fellow. Since October 2006, Malabika joined the school as permanent academic staff member.</p>	
<p>Dr. Diptendu Sinha Roy Associate Professor, Computer Science and Engineering, National Institute of Technology Meghalaya, India diptendu.sr@nitm.ac.in, Mob:+91 9556635368</p> <p>Diptendu Sinha Roy was born in Hooghly, India. He received the B.Tech. degree from Kalyani University, Kalyani, India, in 2003, and the M.Tech. and Ph.D. degrees from the Birla Institute of Technology Mesra, Ranchi, India, in 2005 and 2010, respectively. He is currently with the National Institute of Technology Meghalaya, where he is the Head of the Department of Computer Science and Engineering. His current research interests include distributed, grid computing, cloud computing, fog computing, software reliability, and optimization in engineering. He also performs research on design and analysis of distributed infrastructure of power systems.</p>	
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<p>(JIFS). Received best research award from Biju Patnaik university of Technology for the year of 2020 in computer science and engineering. His research interests include distributed and grid computing, cloud computing, fog computing, and service oriented architectures.</p>	
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