

**Annual Conference of the IEEE Industrial Electronics Society
(IECON 2021)**

**Special Session on
“Computational intelligence for power system networks and smart grid”
Organized by**

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Call for Papers

Theme: The aim of this special session is to explore the application of computational methods for performance improvement of power system networks and the electrical grid. The advances in technology provide more accurate and fast algorithms. Some of these new algorithms have emerged in the context of artificial intelligence, giving place to a line of research called evolutionary computation. The so-called evolutionary algorithms are mostly nature inspired and are competent enough to face most of the tasks in the new complex paradigm of power and energy systems. The electrical grid has now become smart and has bidirectional communication of information through smart devices. This has motivated the researchers towards the pursuit of solutions to problems with high-dimensionality and huge information. As can be seen, there are many aspects involved in this context and a detailed examination is required for sustainability and efficient performance. In addition, the complexity of such systems needs to be handled for the benefit of customers. This has affected the energy market equally. Thus, technological advancement should be properly met by price adjustments and profits and considering how the electricity market is affected by forecasting accuracy. This leads to machine learning and deep learning based forecasting methods, which are more adaptive and responsive. All these considerations are expected to increase the benefits and reduce unnecessary monetary losses.

Topics of interest include, but are not limited to:

- Energy market price forecasting
- Forecasting methods and its impact on energy management
- Load forecasting using AI/ML/DL.
- Optimization for smart grid and electricity market.
- Computational intelligence for power system protection

- Computation intelligence for smart grid
- Planning and operation of grid resources
- Smart grid and renewables utilization
- Distributed generation and energy price
- Energy market scenario and distribution system planning
- Smart-grid and optimization
- Energy market and renewables
- Flexibility resources in the distribution level
- Aggregator-DSO-TSO coordination in smart grids

Submissions Procedure: All the instructions for paper submission are included in the conference website: <https://attend.ieee.org/iecon-2021/>

Deadlines:

Full paper submission:	*As per Conference schedule
Paper acceptance notification:	As per Conference schedule
Camera-ready paper submission:	As per Conference schedule

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Brief about organizers:

1. **Dr. Vasundhara Mahajan** (MIEEE, MIET, MISTE, MIE): Vasundhara has obtained her doctoral (Ph. D.) in 2014 and master degree (M. Tech.) in 2005 from IIT Roorkee. Graduated in electrical engineering from NIT Raipur (formerly GEC) in 1999. She worked as lecturer at Christian College of Engineering and Technology, Bhilai, Chhatisgarh from Sept. 2000 to Oct.

2007. Then joined Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat, Gujarat. Since October 2007, she is at SVNIT. Vasundhara has 20+ years of teaching and research experience. She has published many papers in International/national journals/conferences. She has organised many short term training programs at SVNIT. She has guided many Ph. D., M.Tech. and B. Tech. projects. Her research areas are power system reliability, cyber security, restructuring/deregulation, energy market, congestion management, power quality improvement, active power filters, FACTS and artificial intelligence, machine/deep learning.

2. **Dr. N. P. Padhy:** Narayana Prasad Padhy (Senior Member, IEEE) received the Ph.D. degree in power systems engineering from Anna University, Chennai, India, in 1997. He is an Institute Chair Professor with the Department of Electrical Engineering, Indian Institute of Technology Roorkee, Roorkee, India. He is heading many national and international projects, such as DSIDES, ID-EDGE, and HEAPD. He is also part of other international projects, namely Indo-US UI-ASSIST and Indo UK ZED-I. His research interests include power system analysis, optimization, demand-side management, and smart grids.,Dr. Padhy is also a Fellow of the Indian National Academy of Engineers, Institution of Engineering and Technology, and Institution of Engineers India.
3. **Dr. Fernando Lezama:** Fernando Lezama received an M.Sc. degree (with Honors) in Electronic Engineering (2011), and a Ph.D. in ICTs (2014) both from the Monterrey Institute of Technology and Higher Education (ITESM), Mexico. Currently, he is a researcher at GECAD, Portugal, where he works in the development of intelligent systems for optimization in smart grids. Dr. Lezama is part of the National System of Researchers of Mexico since 2016, Chair of the IEEE CIS TF 3 on CI in the Energy Domain and has been involved in the organization of special sessions, workshops, and competitions (at IEEE WCCI, IEEE CEC and ACM GECCO), to promote the use of CI to solve complex problems in the energy domain. He is also part of the National System of Researchers (I-Level) of Mexico. He has been author and co-author of more than 50 academic papers published in top-tier journals and conferences in telecommunications, computational intelligence, and power systems. His research interests include computational intelligence, evolutionary computation, network planning, and optimization of smart grids and optical networks.
4. **Dr. Zita Vale** is Full Professor of the Department of Electrical Engineering of the of the Institute of Engineering – Polytechnic of Porto (ISEP). She received her diploma in Electrical Engineering in 1986, her PhD in 1993, and her Habilitation in 2003, from University of Porto. She works in the area of Power and Energy Systems, with special interest in the application of Artificial Intelligence techniques. She has been involved in more than 60 funded projects related to the development and use of Knowledge-Based systems, Multi-Agent systems, Neural networks, Particle Swarm Intelligence, and Data Mining. The main application fields of these projects comprise: Smart Grids, accommodating an intensive use of Renewable Energy Sources, Distributed Energy Resources (DER), namely Distributed Generation (DG), storage, electrical vehicles, including the ones with gridable capability (V2G), and demand flexibility. Real-time management and simulation of energy resources, considering electrical networks, buildings, and diverse Internet of Things (IoT) and Machine to Machine (M2M) approaches are relevant aspects of her work in this field; Electricity markets, addressing decision-support for market participants, prices and tariffs, ancillary services, energy transactions, service

provision, and market simulation in the scope of wholesale and emergent local markets. The integration of DER, demand response, and EVs in electricity markets and Transactive Energy (TE) approaches are important aspects of her work. Her work also focuses on the conception, development and test of new business models for market participants and aggregation models for energy resources and the respective management and operation methods. She published over 900 works, including more than 140 papers in international scientific journals, and more than 600 papers in international scientific conferences. The results of her research are published in more than 140 journal papers. Zita Vale actively participates in several technical working groups and committee, namely from IEEE. She also has regular activity as reviewer and evaluator for papers and for project proposals and monitoring, from different funding agencies around the world.