

**International Conference on
Sustainable Energy Technologies and Computational Intelligence
(SETCOM 2025)**

**Department of Electrical Engineering, SoET
Pandit Deendayal Energy University (PDEU), Gandhinagar, Gujarat, India |**

February 21 – 23, 2025



SETCOM 2025 Special Sessions on

“Optimization Algorithms for Energy Resource Management”

Aims & Scope of the Session (100-200 words):

Aim:

Optimization Algorithms for Energy Resource Management focuses on new, high-level optimization techniques applicable to enhance energy systems in terms of efficiency, reliability, and sustainability. With increased complexity and demand in energy resources, there is an immediate need to develop intelligent solutions that are scalable and dynamic-solutions capable of making effective use of available energy sources and reducing wastes with decreasing costs.

This session focuses on nature-inspired algorithm development and their application in optimization, applied to complex challenges in the energy resource management using machine learning techniques, multi-objective optimization, and hybrid methods. The session is interested in efficient energy resource allocation, demand-side management, integration of renewable energy systems, optimization of DER, energy storage systems, and smart grids.

Scope:

The scope of this session ranges from optimization in energy production, distribution, and consumption in smart cities and the industrial sector to management and integration of renewable energy systems with traditional power grids, to application of optimization algorithms to energy storage, transmission, and resilience within the grids.

The session invites researchers, practitioners, and industrial experts to present advanced solutions and discuss their views on the future of energy resource optimization.

The special session, Recent Trends in Information Systems and Information Technologies, brings together research, industry experts, and academicians to focus on the latest innovations, trends, challenges, and applications of information systems (IS) and information technologies (IT) in this fastmoving era. It could enable participants to exchange ideas and the latest research findings in this area leading to the shaping of future digital ecosystems, business processes, and technologyenabled organizations.

Topics of interest include, but are not limited to:

1. NatureInspired Optimization Algorithms for Energy Efficiency

This category is dedicated to articles that explore the use of natureinspired algorithms such as genetic algorithm, particle swarm optimization, and ant colony optimization to optimize energy usage in all sectors.

2. Machine Learning and AI for Optimal Energy Resource Allocation

Research on AI and machine learning models for smart grids, renewable energy systems, or industrial applications in the optimal distribution of energy resources.

3. Optimization for Sustainable Energy Systems: MultiObjective Optimization

Studies that look into multiobjective optimization methods that address the balance between energy efficiency, cost, and sustainability in managing energy resources.

4. Optimization Algorithms for Distributed Energy Resources (DER)

Papers on the application of optimization algorithms for optimizing management and integration of distributed resources: solar, wind, and battery storage sources.

5. Energy Storage Optimization to Ensure Grid Stability

Optimization algorithms for ESSs, like batteries, flywheels, and capacitors for ensuring stability of grids using optimal energy utilization.

6. Dynamic Optimization in RealTime Markets

Researches related to the application of dynamic optimization algorithms and realtime algorithms for managing supply and demand in energy markets focusing on costeffectiveness and reliability.

7. DemandSide Management via Optimization Algorithms

Research works on DSM approaches for utilities, which incorporate optimization algorithms to smooth peak demand, balance load, and improve supply and demand reliability for energy systems.

8. Hybrid Optimization Models for Renewable Energy Systems

Hybrid optimization models with a mix of several algorithms in hybrid forms, that is, deterministic and heuristic methods to optimize renewable energy systems.

9. Energy Resource Forecasting using Optimization Algorithms

Studies which focus on adding the model for forecasting followed by optimization algorithms in order to predict and guide energy resources more optimally.

10.Optimisation Algorithms to handle Microgrid Energy Management

The development of optimization techniques for the management of microgrids by optimizing local energy production, storage, and consumption balance.

11. Optimization of Energy Transmission and Distribution Networks

Research articles on developing optimization techniques for the energy transmission and distribution network by minimizing losses and improving efficiency with new algorithms.

12. Optimization of Energy Systems in Smart Cities

Studies to discover the optimization algorithms used for efficient control of energy systems in smart cities, from transportation, lighting, heating to everything else.

13. Renewable Energy Integration and Optimization for Grid Resilience

Studies about algorithms for optimal integration of renewable energy into power grids in order to ensure resilience and stability in times of fluctuation.

14. Optimization based Load Forecasting and Energy Scheduling

Research in optimization algorithms for forecasting load demands and scheduling the generation of energy for those loads in the most efficient manner.

15. Blockchain and Optimization in Decentralized Energy Markets

Papers on the topic of using blockchain technology with optimization algorithms to manage decentralized, peertopeer energy trading systems.

16. Optimization Techniques for Energy Harvesting Systems

Optimisation algorithms regarding energyharvesting approaches: solar panels or wind turbines based on geographical locations.

17. Optimization of Resource Scheduling for Renewable Energy Plants

Resource scheduling algorithms regarding optimizing the operational and maintenance activities of renewable plants, such as a wind farm or a solar power station.

18. Optimisation Strategies for Energy Management in EVs

Research on optimization methods for the consumption of energy in electric vehicles and optimized charge schedules based on demand and supply.

19. Optimization Algorithms with Reduction of Energy Losses in Power Systems

Exploration on the algorithms that focus on reducing the loss in energy during transmission and distribution in the power systems.

20. Optimization of Hybrid Systems for Energy Maximum Efficiency

Papers on optimization in hybrid energy systemsan aggregate of several sources of energy, either solar and wind and thermal, aimed at achieving maximum efficiency and sustainability.

Special Session Organizers (names and contact emails):

1) Dr Balajee Maram,
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SR University, Warangal, Telangana, 506371.
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Special Session Organizers (short bios with photo):

	<p>Dr Balajee Maram, earned his doctorate from Bharathiar University, Coimbatore, Master Degree in Computer Science and Engineering from Anna University, Chennai, Master of Business Administration from Alagappa University, Karaikudi, MA (Master of Communication and Journalism) from Alagappa University, Karaikudi. He is currently working as an Professor in the Department of Computer Science and Artificial Intelligence, SR University, Warangal.</p> <p>I have more than 19 years of Teaching, 5 years of industry and 6 years of Research experience. I have 100 research publications in reputed journals where 32 papers are indexed by SCIE and 37 papers indexed by SCOPUS. I have guided 14 UG projects and 2 PG projects. I have filed 4 Indian patents and been granted 2 Australian patents. I have organized one National workshop and one National Conference. I have published 3 book chapters indexed by SCOPUS. I have authored for 8 books titled "Data Communication and Networking" and "XML & Web-Services".</p> <p>I have received "Best Researcher Award 2018" from DK International Research Foundation, "Best Researcher Award 2018" from 117th International Research Awards on Engineering, Science and Management, "Outstanding Researcher" from International Institute of Organized Research (I2OR), India Australia in Dec, 2018. I have professional memberships of CSI, ISTE, CRSI, IACSIT, UACEE and CSTA. He has completed 165 online certification courses from reputed universities and organizations like Coursera, edx, saylor etc. Apart from research, administration he has implemented OBE based teaching in class-room, flipped learning etc. My research interests are Cryptography, Cloud Computing, Bigdata Analytics and Security in IoT.</p>
	<p>Dr T. Venkatakrishnamoorthy, obtain doctorate from Sri Venkateswara University, Tirupathi. Master of Technology in specialization of Communication and Signal Processing from Sri Krishna Devaraya University, Ananthapuram. And B.Tech in Electronics and Communication from JNTU, Hyderabad. He is currently working as an Professor in the Department of Electronics and communication Engineering from Sasi Institute of Technology & Engineering and have more than 15 years of Teaching and Research experience. I have published more than 25 publications including National/International UGC, SCOPUS, SCIE, WOS and participated National/International Conferences in the field of Signal & Image processing, 5G & 6G Networks, Remote Sensing, VLSI design. I have guided UG projects and PG projects. I have filed 6 Indian patents & design Grants. I have professional memberships of ISTE and Senior IEEE.</p>