

## Tentative Outline

### Special Thematic Issue for the journal: Recent Advances in Electrical & Electronic Engineering

#### Title of the Thematic Issue: Smart IoT in Renewable Energy Systems

Guest Editors: *Dr. Praveen Kumar, Dr. Sudhakar Babu, Dr. Ali Q. Al-Shetwi, Prof. Nnamdi Nwulu*

- **Scope of the Thematic Issue:**

Renewable energy systems (RES) are used as distributed generation (DG) units and installed near to where the energy is converted and consumed. Further, the integration of renewable energy source at home is very important. IoT helps smart grids to support various network functions throughout the generation, distribution, and consumption of energy by incorporating IoT devices (such as sensors, actuators, and smart meters), as well as by providing the connectivity, automation, and tracking for such devices.

The integration of alternative energies (photovoltaic solar, wind energy, biomass energy, hydroelectric energy, and other sources) in smart grids implies the monitoring of households, cities, industries, and electric vehicles at all times. In this sense, the development of monitoring and control applications using mobile devices is a fundamental tool in this type of systems, which complements all the possibilities offered by the IoT. Smart energy meters are used to allow for communication between consumers and utility command centers to exchange messages about electrical consumption. Thus, it is essential to have access from any location and instant access to information using mobile devices or computers.

The development and expansion of the electric vehicle requires monitoring the state of charge of the batteries, the storage energy system, other electrical parameters, and the vehicle altogether. In this sense, the use of long-range networks such as LoRa and NB-IoT provides the basis for the development of all these functionalities.

This Special Thematic Issue is therefore aimed at increasing value in IoT-based RES characterization and usage domains through enhanced scientific, inter-, and multi-disciplinarily knowledge focused on scientific, technologic, and financial aspects. Therefore, the editors invite academic and industry researchers to send innovative research papers, reviews or case studies related to IoT technologies applied for/using RES.

**Keywords:** Renewable Energy Systems, Internet of Things

#### Sub-topics:

- IoT technologies used for monitoring and characterization of RES
- Network architectures and platforms for IoT-based RES
- Sensors and devices for IoT-based RES
- Edge computing and cloud computing for IoT-based RES
- Artificial Intelligence and machine learning applied in RES
- Energy harvesting for IoT-based applications
- Smart cities and smart buildings applications using IoT-based powered with RES

#### Tentative titles of the articles and list of contributors:

- Business model and cost analysis for IoT-based renewable energy systems
- Artificial Intelligence and machine learning applied in renewable energy systems for better performance
- Outdoor and indoor applications IoT-based powered with renewable energy systems
- Edge computing and cloud computing for IoT-based RES

- Smart agriculture and environment applications IoT-based powered with renewable energy systems
- Smart cities and smart buildings applications using IoT-based powered with renewable energy systems
- Energy harvesting for IoT-based applications
- IoT technologies used for monitoring and characterization of RES
- Digital Twinning technologies for better performance of renewable energy systems

### Schedule:

- ✧ Thematic issue submission deadline: July 2023

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