CEMiSG 2018

5th International Workshop on Computational Energy Management in Smart Grids

<http://www.cemisg.org>

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**SCOPE**

The sustainable usage of energy resources is actually an issue that humanity and technology have been seriously facing in the last decade, as a consequence of the increasing energy demand and the dependence on oil-based fuels. This shoved scientists and technicians worldwide to intensify their studies on renewable energy resources, especially in the Electrical Energy sector. At the same time, a remarkable increment in complexity of the electrical grid has been also registered, due to the need of integrating variegated and distributed generation and storage sites, resulting in strong engineering challenges in terms of energy distribution, management and system maintenance. Many sophisticated algorithms and systems aimed at introducing intelligence within the electrical energy grid have already appeared in the recent scientific literature, accompanied by some effective market products.

The different needs coming from heterogeneous grid customers, at diverse operating levels, and the different peculiarities of energy sources to be included in the grid itself, make the task challenging and multi-faceted. Moreover, a large variety of interventions can be applied into the grid to increase the inherent degree of automation, optimal functioning, security and reliability. All these aspects must be seen from the raising Transactive Energy and Energy Internet perspectives, according to which advanced ICT solutions are employed to coordinate and optimize the complex interactions between producers and consumers on distributed energy networks.

In the light of this analysis, a multi-disciplinary coordinated action is therefore required to the Electrical and Electronic Engineering, Computational Intelligence, Digital Signal Processing and Telecommunications scientific communities, taking the stringent environmental sustainability constraints into account. Focalizing to the interests of our scientific community, the organizers of this Workshop wants to explore the new frontiers and challenges within the Computational Intelligence research area, including Neural Networks and Evolutionary Computation based solutions, for the optimal usage and management of energy resources in Smart Grid scenarios. Indeed, the adoption of distributed sensor networks in many grid contexts enabled the availability of data to be used to develop suitable expert systems with the aim of supporting the humans in dealing with the complex problems in grid management, as mentioned above. Research in this field is undoubtedly already florid, but many open issues need to be addressed and innovative intelligent systems investigated.

By moving from the success obtained by the CEMiSG2014 Workshop organized within the IJCNN2014 conference in Beijing (China), by the CEMiSG2015 Workshop organized within the IJCNN2015 conference in Killarney (Ireland), by the CEMiSG2016 Workshop organized within the IEEE CEC2016 in Vancouver (Canada), by the CEMiSG2017 Workshop organized within the IEEE CEC2017 in San Sebastian (Spain), the intention is to propose a proficient discussion table for scientists joining the IEEE WCCI 2018 conference: a fifth International Workshop, specifically targeted to these topics, surely represents a great opportunity from this perspective.

**TOPICS**

Workshop topics include, but are not limited to:

* *Computational Intelligence for Smart Grids Applications*
* *Neural Networks for Complex Energy Systems*
* *Soft Computing based Algorithms for Transactive Energy*
* *Expert Systems for Smart Grid Optimization*
* *Computational methods for the Energy Internet*
* *Transactive Control strategies in Power System Operations*
* *Smart Grids and Big Data*
* *Automatic Fault Detection Algorithms in Smart Grids*
* *Smart Grid Self-Healing strategies*
* *Learning-based Control of Renewable Energy Generators*
* *Smart Building Energy Management*
* *Collaborative Algorithmic solutions for Demand-side Management*
* *Deep Learning for Energy Efficiency*
* *Energy Resource Allocation and Task Scheduling*
* *Learning Systems for Smart AMIs*
* *Time Series Prediction in Smart Grids*
* *Non-Intrusive Load Monitoring*
* *Hybrid Battery Management*
* *Algorithms for Electric Vehicles Integration in the Smart Grid*

**Workshop details**

The 5th International Workshop on Computational Energy Management in Smart Grids (CEMiSG 2018) will be held on July 8-13, 2018 in Rio de Janeiro, Brazil, as inside the 2017 IEEE Congress on Evolutionary Computation (IEEE WCCI 2018).

**Important Dates**

Submission deadline: January 15, 2018

Notification of acceptance: March 15, 2018

Camera-ready deadline: May 1, 2018

Workshop date: to be defined within the IEEE WCCI 2018 dates (July 08-13, 2018)

**Submission guidelines**

Prospective authors are invited to submit papers according to the IEEE format. All submissions should be according to the specifications of IEEE WCCI 2018.

**CEMiSG2018 Website**

A dedicated website has been developed. The URL is the following: <http://www.cemisg.org/cemisg2018/>. The website has not been published yet: this will be done if and once the proposal is accepted.

**Workshop Program**

* Audience: Scientists and technicians working in the Computational Intelligence field and interested in applications to Smart Grids. The estimated number of participants is equal to 30-40 people.
* Duration: 1 Day
* Format: 20-mins long oral presentations will be given during the Workshop
* Activities and Schedule: 2 regular sessions (2 hours each – we expect to have 10-15 presentations) and 1 Panel Session (1 hour). A Keynote (1 hour) will be likely included.
* Panel Session: It is titled “*Challenges and Trends in Computational Energy Management*”, and it will moderated by the CEMiSG2018 Organizers. The following scientists have already confirmed their participation to the panel:
  + Prof. N Kumarappan, Annamalai University, India
  + Dr. Zhen Ni, South Dakota University, USA
  + Prof. Antonello Rizzi, La Sapienza University, Italy
  + Prof. Kumar Venayagamoorthy, Clemson University, USA

**Technical Program Committee**

* **Kouzou Abdellah**, Djelfa University, Algeria
* **Lucio Ciabattoni,** Polytechnic University of Marche, Italy
* **Rajit Ghad,** Carnegie Mellon University, USA
* **Nelson Kagan,** University of Sao Paulo, Brazil
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