The 3rd International Workshop on Data-driven Self-regulating Systems

at the 11th IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO), part of FAS* - Foundations and Applications of Self* Systems Conferences

University of Arizona, Tucson, AZ, September 18-22, 2017

CALL FOR PAPERS

The emergence of pervasive and ubiquitous technologies together with social media has resulted in unprecedented opportunities to reason about the complexity of our society based on magnitudes of data. Embedded ICT technologies mandate the functionality and operations of several techno-socio-economic systems such as traffic systems, transportation systems, Smart Grids, power/gas/water networks, etc. It is estimated that over 50 billion connected smart devices will be online by the year 2020. Moreover, social media provide invaluable insights about the complexity of social interactions and how these interactions influence the sustainability of several ICT-enabled techno-socio-economic systems. These observations show that regulating online the complex systems of our nowadays digital society is a grand challenge. Regulation concerns trade-offs such as the alignment of technical requirements, e.g. robustness, fault-tolerance, safety and security, with social or environmental requirements, for instance, fairness in the utilization of energy resources. The scale of nowadays data cannot tackle the challenge by itself as data may convey ungrounded correlations and biased predictions. Smart, autonomic and self-regulating mechanisms are required for filtering data streams in real-time and transform them to valuable information based on which intelligent adaptive decisions can be made in a decentralized fashion under a plethora of operational scenarios.

TOPICS

- self-regulation
- autonomic computing
- pervasive/ubiquitous computing
- Internet of Things
- big data analytics
- cloud computing
- online policy-making
- privacy & security
- multi-agent & P2P systems
- self-organization
- adaptive mechanisms
- complex systems & (social) networks
- mechanism design & game theory
- quality of experience

KEYNOTE SPEAKER

Orchestration of Electrical Power Grid with Transactive Distributed Energy Resources (DER)

Dr. Mark Yao, Utopus Insights, Spinoff of Smarter Energy, IBM T.J. Watson Research Center

Abstract With the capabilities of dynamic, real-time and networked automation, distributed energy resources (DER) have become one game-changing driving force to transform electrical power systems into flexible, resilient, cost-effective and greener Cyber-Physical System infrastructure. DERs represent suite of smart-grid assets across value-chain of electricity demand-supply: from distributed renewable generation (solar PV, wind) to electricity storage systems (battery, EV) and flexibility, responsive demand (DR). Meanwhile, with all the advantages and benefits, fast growth of DERs also bring many unseen challenges for utilities and system operators due to the complexities caused by the distributed nature of DER and the diversified business, social, economic and operational objectives of DER owner from both sides of demand and supply. Transactive energy (TE), emerged originally as innovative method to balance electrical demand-and-supply with value-based economic/incentive signal, has become one of smart-grid technology standards to manage various system objectives, constraints and uncertainties in a distributed fashion. Combined with advanced technology from IoT and cloud computing, TE provides an ideal distributed and data/information driven platform to manage and orchestrate DER for utilities and grid operator, and even energy users. The objectives of this talk are 1) to give a brief and informative introduction of current trends and challenges of DER and TE, and 2) to introduce how-to and sample use-cases of Transactive Energy technology to manage DER at large internet-scale in the landscape of ever digitized and data-driven network-connected smart energy grid.

IMPORTANT DATES

Submission deadline: **July 17, 2017**

Authors notification: **July 30, 2017**

Final manuscript: **August 4, 2017**

Workshop dates: **Sept. 18-22, 2017**

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SUBMISSION INSTRUCTIONS

You are invited to submit original and unpublished research works on above and other topics related to self-regulating systems. Submitted papers must not have been published or simultaneously submitted elsewhere. Please, indicate clearly the corresponding author and include up to 6 keywords and an abstract of no more than 400 words. Submissions have to be formatted according to the IEEE Computer Society Press proceedings style guide. Papers are submitted as PDF files via

https://easychair.org/conferences/?conf=dss2017

Authors of distinguished workshop papers may be invited to extend their workshop papers for their possible publication in a special issue of an international journal.

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