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Special track

ATASWARM: Algorithms, Tools and Applications for Swarm Intelligence in Cyber-Physical Systems

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along with

ADAPTIVE 2018, The Tenth International Conference on Adaptive and Self-Adaptive Systems and Applications

http://www.iaria.org/conferences2018/ADAPTIVE18.html

The era of cyber-physical systems has come: computers are embedded in everyday objects, mostly invisible to us. They are able to perform computations on their own with their embedded intelligence. Furthermore, these computers are networked and link the real world to the virtual one with sensors and actuators. Such entities are called Cyber Physical Systems (CPS) – strongly interconnected hardware and software components, being applied in the Internet of things, smart grids, smart mobility- and smart factory concepts. The usage of CPS and systems of CPS comes with many challenges, including increased dynamics, connectivity, and complexity calling for features like adaptability, scalability, robustness, self- configuration, self-healing, etc.

In this regard, swarms of CPS have recently received much attention. These swarms consist of a large set of individual CPS: homogenous or heterogeneous UAVs, ground rovers, and other devices. They use swarm intelligence to solve problems that would be too complex for a single CPS.

Typically, approaches for swarm intelligence come from biological systems, like ant or bee colony behavior, schooling of fishes, flocking of birds, etc. As the agents follow very simple rules without a central controller dictating their activities, the interactions between those agents lead to the emergence of intelligent or complex global behavior. In other words, CPS researchers need to learn how to construct and apply techniques for swarm intelligence, their strengths and challenges, and how to cope with the emerging complexity of networked systems and applications.

Topics include, but not limited to:

- Modelling and designing swarms of CPS
- Tools to design swarms of CPS
- Simulation of emerging behavior
- (Real-world) applications for swarms of CPS
- Swarms: critical reflections on their applicability
- Self-* properties (self-adaptation, self-healing, self-configuration, etc.) related to swarms
- Communication in swarms of CPS
- Resource-awareness in swarms of CPS
- Security/Safety in swarms of CPS

- Human-swarm interaction

Contribution Types
- Regular papers [in the proceedings, digital library]
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- Demos: two pages [posted on www.iaria.org]

Important Datelines

- Inform the Chair: As soon as you decided to contribute
- Submission: Nov 3, 2017
- Notification: Dec 3, 2017
- Registration: Dec 17, 2017
- Camera ready: Jan 15, 2018

Note: *These deadlines are somewhat flexible, providing arrangements are made ahead of time with the chair.*

Paper Format
- See: http://www.iaria.org/format.html
- Before submission, please check and comply with the editorial rules: http://www.iaria.org/editorialrules.html

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Registration
- Each accepted paper needs at least one full registration, before the camera-ready manuscript can be included in the proceedings.
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