3rd International Workshop on Software Engineering for Smart Cyber-Physical Systems (SEsCPS'17)

In conjunction with ICSE 2017, May 20-28, 2017, Buenos Aires, Argentina

http://d3s.mff.cuni.cz/conferences/sescps2017/

IMPORTANT DATES

Paper submissions: Jan 27, 2017 (extended deadline)

Notification of authors: Feb 17, 2017

Camera-ready copies: Feb 27, 2017

Workshop: May 21, 2017

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INTRODUCTION

Cyber-Physical Systems (CPS) are "engineered systems that are built from, and depend upon, the seamless integration of computational and physical components". With the proliferation of smart embedded and mobile devices, CPS are becoming large-scale pervasive systems, which combine various data sources to control real-world ecosystems (e.g., intelligent traffic control, smart manufacturing). Modern CPS have to deal effectively with environment dynamicity, control their emergent behavior, be scalable and tolerant to threats, hence CPS have to be smart (sCPS). sCPS feature a number of specifics that render traditional software engineering approaches not directly applicable. This calls for innovative approaches that jointly reflect and address the specifics of such systems.

GOALS

SEsCPS aims to bring together academics and practitioners from several disciplines with the overall objectives: (i) to increase the understanding of problems of Software Engineering (SE) for sCPS, (ii) to study the underlying foundational principles for engineering sCPS, and (iii) to identify and define promising SE solutions for sCPS.

The special themes of SEsCPS'17 are: (1) model-based engineering of secure, reliable and resilient sCPS, (2) engineering processes for sCPS, and (3) consequences of smartness of CPS and emergence in system of systems context.

WORKSHOP STRUCTURE AND PLANNED OUTCOMES

The workshop will be highly interactive, involving participants with and without accepted paper. The workshop will center presentations and group discussions on the following three general research questions: (1) What are the promising synergies of SE with other disciplines in the domain of sCPS? (2) What are the ways to handle uncertainty in the development and operation of sCPS? (3) What are suitable model problems that can be used in the evaluation of different sCPS solutions?

After the workshop, we will consolidate the results from the workshop and prepare a joint report to be submitted to Software Engineering Notes. A formal follow-up publication will be considered in which interested attendees can be involved.

TOPICS

In addition to its special themes, SEsCPS'17 will focus on (but not limit itself to) the following topics:

- Engineering principles of sCPS
- Multi-paradigm modeling in sCPS
- Inter-disciplinary approaches for building sCPS
- Computational models for sCPS
- Stakeholders, barriers and requirements for sCPS
- Architectures and design approaches for sCPS
- Dependability of sCPS
- Blending design and runtime models and techniques
- Smart sensing in sCPS
- Distributed algorithms, monitoring and control
- Smart networking and 5G in sCPS
- Timing aspects and timing analysis of sCPS
- Handling emergent behavior in sCPS
- Handling uncertainty in sCPS environments
- Human in the loop in sCPS
- Big data processing in sCPS
- Simulation of sCPS.
- Development lifecycle management
- Assurance for sCPS
- Scalability and evolvability of sCPS
- Convergence of sCPS, IoT and cloud
- Eco-systems and systems of systems of sCPS
- Case studies and experience reports in building large-scale sCPS
- Empirical studies for sCPS
- Security and verification of sCPS
- Reference problems for sCPS

PAPER SUBMISSION

We solicit four types of submissions:

1. **Full papers**, reporting innovative and original research and experience reports, presenting industrial case studies, experiments, and experiences with particular synergies in SE practices, methods or techniques for building sCPS. Full papers are limited to 7 pages.
2. **Position papers and future-trends papers**, describing ongoing research, new results, and future emerging trends. This type of submissions is limited to 4 pages.
3. **Demos from academic or industrial environments**, that may range from early prototypes (that support research) to pre-commercialized products (that demonstrate advances to the state of the practice). Demos papers should include a link to the demo material and are limited to 4 pages.
4. **Reference problem papers**, describing and exemplifying problems coming from real-life settings (industrial cases, etc.) that pose fundamental or characteristic challenges that sCPS should address. Reference problem papers are limited to 4 pages.

Every paper submission will be peer-reviewed by at least three reviewers. Emphasis will be given on originality, usefulness, practicality, and overall quality. Papers must not have been previously published or be currently submitted elsewhere. If accepted, the paper must be presented at the workshop by one of the authors. Workshop papers must follow the ICSE 2017 Format and Submission Guidelines.

Accepted papers will be published as an ICSE 2017 Workshop Proceedings in the ACM and IEEE Digital Libraries. The official publication date of the workshop proceedings is the date the proceedings are made available in the ACM Digital Library. This date may be up to two weeks prior to the first day of ICSE 2017. The official publication date affects the deadline for any patent filings related to published work.

Submission link: https://easychair.org/conferences/?conf=sescps2017