

Message from the SEsCPS 2018 Chairs

Welcome to the 4th International Workshop on Software Engineering for Smart Cyber-Physical Systems (SEsCPS 2018), which is held in conjunction with the 39th International Conference on Software Engineering (ICSE 2018) in Gothenburg, Sweden.

Recent years have seen a growing interest in Cyber-Physical Systems (CPS), which are distributed systems of systems that control the physical environment by means of collaborative sensing and actuating. We observe a trend to equip these systems with more “smartness” to deal with emergent situations, be more efficient and tolerant to threats, etc. Such “Smart” Cyber-Physical Systems (sCPS) rely heavily on software to provide the embedded intelligence to the extent that software becomes the most important and most complex constituent. This calls for systematic software engineering (SE) of sCPS, not only to address individual SE challenges, but to provide synergistic solutions that are resource efficient and respect the sCPS specifics, such as mobility, limited connectivity, partially uncertain environment, etc.

Building upon the success of the previous three editions of SEsCPS (at ICSE 2015–2017), the workshop aims to bring together academics and practitioners from several disciplines with the overall objectives of: (i) increasing the understanding of problems of software engineering for sCPS, (ii) studying the underlying foundational principles for engineering sCPS, and (iii) identifying and defining promising SE solutions for sCPS.

Based on the interest shown by participants at the previous edition of the workshop and research interest shown at related venues, the special themes of SEsCPS’18 are: (1) social aspects of sCPS, (2) diversity and cooperation in sCPS, and (3) analysis and enforcement of quality properties.

This year, SEsCPS attracted 15 submission, each of which went through a careful review process, receiving three reviews. Of the submissions, which 4 were accepted as full papers (7 pages) and 2 as short papers (4 pages). New to this year’s edition is also our inclusion of 4 reference problem papers (4 pages), which suggests gradual maturing of the SEsCPS’s topics. The accepted submissions provide a rich coverage of sCPS SE topics including: security and trustworthiness, requirements engineering, modelling, verification and validation, networking, planning, and adaptivity.

The workshop program is highly interactive. After a keynote by Hans Vangheluwe on “Multi-Paradigm Modelling of Cyber-Physical Systems”, presentations and group discussions centered on three guiding 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? As in previous years, the plan is to consolidate the insights and results derived at the workshop in a joint report that will be made available after the workshop.

The success and quality of a workshop such as SEsCPS depends heavily on active involvement of all the participants. We have been lucky to have highly qualified researchers and practitioners from the areas of software engineering and cyber-physical systems in the program committee. We would like to thank them all for their thorough work in reviewing the submissions and providing valuable feedback to the authors. Further, we would like to thank the ICSE Workshop Co-Chairs – Dimitra Giannakopoulou and Paul Grünbacher – and ICSE Publication Co-Chairs – Bára Búhnová and Patrizio Pelliccione – for their excellent organization and handling of all the agenda around ICSE workshops and the their proceedings. Our appreciation also goes to the ICSE

Workshops Committee. Last but not least, we would like to thank the authors and participants without whose contributions SEsCPS 2018 would not be possible.

We hope that your time at SEsCPS 2018 will be productive and enjoyable and that you will continue to support SEsCPS in future years with your submissions and attendance.



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