CALL FOR PAPERS
Special Section on Software Systems 2020

Introduction

Software systems have played critical roles in scientific research, business and society. Research on software systems focuses on construction, operation, maintenance, and assessment of software systems. This special section is an effort to encourage and promote research to address challenges from the software systems perspective. The goal of this special section is to present the state-of-the-art and high-quality original research papers in the area of software systems. Extended versions of papers published in conferences, symposiums, or workshop proceedings may be submitted with new contributions. Especially, we welcome the extended versions of papers published in first class software systems conferences. However, survey papers will not be considered.

This special section focuses on the themes of *Internetware and Beyond* and *Dependable Software Engineering*. However, this special section also welcomes all other aspects of research on software systems. Past articles from the JCST Special Section on Software Systems are at: http://jcst.ict.ac.cn, published in: Vol. 30, No. 5; Vol. 31, No. 5; Vol. 32, No.6; Vol. 33, No.5; Vol.34, No.5.

Theme: Internetware and Beyond

The Internet, not only of computers, but also of things and human users, has been rapidly and profoundly changing how software applications are constructed, deployed and used. To achieve their application goals, software systems on this Internet platform need to coordinate autonomous third-party services and resources, adapt to constant changes in the environment where they are situated and in the requirements they must satisfy, and continuously maintain for a level of service quality satisfactory to users. This theme aims to provide a forum where researchers and professionals from multiple disciplines and domains share ideas to explore and address the challenges brought by Internetware. It solicits submissions describing results of theoretical, empirical, conceptual, and experimental software engineering research related to Internetware. Topics of interests include but are not limited to:

*Novel software paradigm for Internetware

*Modeling and implementation of Internetware

*Requirements engineering for Internetware

*Software analysis, verification and testing

*Mining software repositories

*Software dependability, trustworthiness and confidence
*Software architecture and design
*Crowd-based methods, techniques and tools for Internetware
*Socio-technical models and techniques
*Software ecosystem practices and experiences
*Software models and techniques for Internet-based systems, such as:
cloud computing, service computing, social computing, mobile Internet, Internet of Things, and cyber-physical systems
*Software engineering for/with Big data
*Software engineering for/with artificial intelligence

Theme: Dependable Software Engineering

Formal methods emerged as an important area in computer science and software engineering about half a century ago. An international community is formed researching, developing and teaching formal theories, techniques and tools for software modeling, specification, design and verification. However, the impact of formal methods on the quality improvement of software systems in practice is lagging behind. This is for instance reflected by the challenges in applying formal techniques and tools to engineering large-scale systems such as Cyber-Physical Systems (CPS), Internet-of-Things (IoT), Enterprise Systems, Cloud-Based Systems, and so forth.

The theme of Dependable Software Engineering solicits submissions describing theoretical results, tools, and applications, related to applying formal methods in improving the quality of computer software and systems. Topics of interests include but are not limited to:

*Requirements specification and analysis
*Formalisms for modeling, design and implementation
*Model checking, theorem proving, and decision procedures
*Scalable approaches to formal system analysis
*Formal approaches to simulation, run-time verification, and testing
*Integration of formal methods into software engineering practice
*Contract-based engineering of components, systems, and systems of systems
*Formal and engineering aspects of software evolution and maintenance
*Parallel and multicore programming
*Embedded, real-time, hybrid, probabilistic, and cyber-physical systems
*Mixed-critical applications and systems
*Formal aspects of service-oriented and cloud computing
*Safety, reliability, robustness, and fault-tolerance
*Dependability of smart software and systems
*Empirical analysis techniques and integration with formal methods
*Applications and industrial experience reports
*Software tools to assist the construction or analysis of software systems

Accepted papers to this theme will be presented and discussed at the conference SETTA 2020, hosted at Peking University, in co-location with LICS 2020 and ICALP 2020. The purpose of the SETTA Symposium (Dependable Software Engineering: Theories, Tools and Application) is to bring international researchers together to exchange research results and ideas on bridging the gap between formal methods and software engineering. The interaction with the Chinese computer science and software engineering community is a central focus point. The aim is to show research interests and results from different groups so as to initiate interest-driven research collaboration.

Important Dates
Submission Deadline: ~~March 27~~**April 10**, 2020 (AoE)
Tentative Acceptance Decision (Theme of Dependable Software Engineering Only): May 18, 2020
Acceptance Decision: June 30, 2020
Paper Presentations at Conference SETTA 2020 (Theme of Dependable Software Engineering Only): July 8-11, 2020
Publication: September 2020

Submission Procedure
All submissions must be done electronically through JCST's e-submission system at: https://mc03.manuscriptcentral.com/jcst, with manuscript type: "Special Section on Software Systems 2020". In the cover letter, please indicate which theme the submission is intended to.

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