

WOSP-C 2021: Workshop on Challenges in Performance Methods for Software Development

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ABSTRACT

The sixth ACM Workshop on Challenges in Performance Methods for Software Development is co-located with the 12th ACM/SPEC International Conference on Performance Engineering (ICPE 2021), 19-23 April 2021. The Conference initially hosted in Rennes, France, will be a virtual event due to COVID-19. The purpose of the workshop is to open up new venues of research on methods for software developers to address performance problems. The software world is changing continuously, and there are new challenges every day. The acronym WOSP-C was chosen to recall the original WOSP, the ACM International Workshop on Software and Performance, which has been a co-organizer of ICPE since 2010.

CCS CONCEPTS

• **Software and its engineering** → **Software performance.**

KEYWORDS

Software Performance Engineering

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1 INTRODUCTION

The WOSP-C series has taken place at every ICPE, except ICPE 2019, since ICPE 2015. It provides a forum for the discussion of emerging or unaddressed challenges in software and performance, including challenges in developing software to be performant, concurrent programming issues, performance and architecture, performance measurement, cloud performance, and testing. Its purpose was to open up new avenues of research on methods for software developers to address performance challenges.

The workshop welcomes contributions that discuss and/or address emerging performance problems and challenges that arise anywhere across the life cycle, from requirements to design, testing and evolution of the product. In this sixth edition, we emphasize contributions on software performance challenges in Cyber-Physical

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Systems (CPS). CPS combine software and physical components in an infrastructure that is responsible for computation and interaction with the physical world, with humans, and with other CPS. New advances in computing and networking make that the software part in CPS gets more and more responsibilities, raising new performance challenges.

2 TECHNICAL PROGRAM

2.1 Keynote Speakers

The Workshop is proud to announce to outstanding Keynote speakers

- Dr. Stefano Marrone, Università della Campania “Luigi Vanvitelli”, Italy
– <http://www.dimat.unina2.it/marrone/index.html>
- Prof. Jean-Marc Jézéquel, IRISA, France
– <http://people.irisa.fr/Jean-Marc.Jezequel/>

Dr. Stefano Marrone will offer a talk entitle “Performance and safety challenges of the next generation railways”.

Summary of the keynote: As a part of its Green Deal, EU has set the objective to shift the 75% of inland freight carried today by road to rail and inland waterways. Such a goal requires new railway transportation paradigms (e.g., moving block and virtual coupling) that must face cutting-edge ICT-related technologies (e.g., fast and reliable communication and networking, fail-safe positioning, data-driven techniques). This talk introduces these railway paradigms, focusing on the non-functional and safety requirements future railways demand.

Prof. Jean-Marc Jézéquel will offer a talk entitle “Performance modeling using ML”.

Summary of the keynote: The talk is about to show how performances, for even the most trivial software, such as a video encoder, depends on a myriads of expected and unexpected parameters. This fact would defy any ‘a priori’ performance modeling, then leaving ML as the only reasonable approach to do performance modeling.

2.2 Technical Papers

We are also proud to announce the papers that will be presented in the workshop.

“On Preventively Minimizing the Performance Impact of Black Swans” is a position paper that discusses how modeling and performance testing and known processes for evaluating architectures can be used to identify potential performance issues that would be caused by sudden increases in load or changes in load patterns.

The paper “Towards extraction of message-based communication in mixed-technology architectures for performance model” discusses the opportunities and challenges in applying existing

architecture extraction approaches to support model-driven performance prediction for technology-mixed software.

“Performance Evaluation and Improvement of Real-Time Computer Vision Applications for Edge Computing Devices” expands the capabilities of the Vega framework to improve responsiveness and enable real-time performance.

“Performance Models of Event-Driven Architectures” describes a method for combining event-driven behaviour and synchronous behaviour in a layered queueing model. Models to predict the performance of pure Event-Driven Architectures are relatively easy to make, systems with a combination of event-driven components and legacy components with blocking service requests (synchronous interactions) require special treatment.

“Performance Modelling of Intelligent Transportation Systems: Experience Report” describes an experience on the usage of different performance modelling notations to analyze Intelligent Transportation Systems. More specifically, Queueing Networks and Petri Nets have been adopted and interesting insights are derived.

3 PROGRAM COMMITTEE

Chairs:

- Diego Perez-Palacin, Linnaeus University, Sweden (Co-Chair)
- José Merseguer, Universidad de Zaragoza, Spain (Co-Chair)

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