Special Issue: Software Analysis, Evolution, and Reengineering: a selection of papers from SANER 2015

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FOREWORD

Foreword to the SANER 2015 special issue

Alexander Serebrenik[1] | **Bram Adams**[2]

[1] Eindhoven University of Technology, Eindhoven, The Netherlands

[2] Polytechnique Montreal, Montreal, Québec, Canada

Correspondence
Bram Adams, Polytechnique Montreal, Montreal, Québec, Canada.
Email: bram.adams@polymtl.ca

We are delighted to present the JSEP special issue of the 22nd IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER 2015)! The product of the merger of the popular CSMR and WCRE conferences, SANER, has become one of the major international venues for research on understanding software, ie, how it is developed, built and maintained. Paper topics vary from empirical studies on re(verse)-engineering, over program analysis and comprehension, to software quality and evolution of cloud systems.

The SANER 2015 was the first postmerger edition under the new "SANER" moniker and took place in snowy Montreal (Quebec, Canada) in the 2nd week of March, 2015. Out of 144 full paper submissions, 46 papers were accepted, yielding an acceptance ratio of 31.9%. These papers were presented in the discussion-oriented style inherited from SANER's WCRE roots, valuing medium length presentations and extensive group discussions over long talks. A record attendance of 221 participants made sure those group discussions covered a wide range of topics, providing ample, constructive feedback to young and established SANER researchers alike.

One SANER 2015 paper in particular was singled out by the program committee and awarded the best paper award. However, competition was strong, with 4 other papers ending close in the best paper award selection. The resulting set of 5 papers subsequently were invited for this JSEP special issue, with the idea of extending their excellent paper with at least 33% new content, in the form of additional research questions, case studies, discussion, etc. Four of the 5 papers have accepted our invitation.

The submissions underwent up to 3 rounds of review, in which the submissions progressively improved in quality. For each paper, 2 of the original SANER 2015 reviewers were reinvited, together with 1 additional reviewer. We would like to thank the authors of these papers, as well as the reviewers, for the excellent collaboration and interaction, helping us bring a solid and high-quality special issue to the reader, ie, you! Of course, we would also like to thank JSEP for the support and opportunity to bring extended versions of SANER 2015 papers to its reader base, as well as all SANER 2015 participants and committee members.

The accepted papers cover a wide range of topics:

*In "Understanding Systematic and Collaborative Code Changes by Mining Evolutionary Trajectory Patterns," Jiang et al propose and evaluate the SETGA approach for summarization of code changes into higher-level "trajectory patterns," ie, sets of related code changes that likely represent larger development efforts. Going beyond the conference paper, this article provides more detailed descriptions of the algorithms and an extended empirical study.

*Cruz et al's "Work Fragmentation in Developer Interaction Data" studies the impact of fragmenting one's work into many smaller activities between which frequent context switches occur. They focus especially on the impact on developer productivity of different fragmentation-related properties, such as the duration of fragments. While the conference paper focused on the Mylyn dataset, the journal article complements this work with the Eclipse Usage Data Collector dataset, resulting in a larger sample of users and a finer-grained classification of events.

*Aggarwal et al, in "Detecting Duplicate Bug Reports using a Hierarchy of Domain Knowledge Contexts", exploit textual corpora semi-automatically extracted from software engineering text books and documentation of major open source projects to improve their earlier approach for detecting duplicate bug reports. While in the conference paper, the authors have focused on the impact of project-specific context or a combination of project-specific and general software-engineering context, in the journal extension, the authors show that inclusion of domain-specific context improves on the conference paper results.

*Finally, the JCHARMING approach proposed by Nayrolles et al in "A Bug Reproduction Approach Based on Directed Model Checking and Crash Traces" combines the power of model checking with pruning techniques on the basis of backward static slicing and crash trace data to reproduce crashes. Such reproduction supports subsequent crash resolution. Compared to the conference paper, the journal article presents a new technique for JUnit test case generation and reports on the validation study of JCHARMING.

We hope that you will appreciate these article extensions of the best papers presented at SANER 2015 and cordially invite you to participate in and get involved with the welcoming SANER community!