Guest Editors’ Introduction to the Special Section from the International Conference on Software Maintenance

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Since it started in 1983, the International Conference on Software Maintenance (ICSM) has grown into the leading research conference on software maintenance and evolution. Every year, it provides a widely recognized international forum for software maintenance researchers and practitioners to examine key issues facing the software maintenance community.

ICSM ’07 was held in the beautiful city of Paris, France, on 2-5 October 2007. The conference hosted several colocated events, including the Seventh IEEE International Workshop on Source Code Analysis and Manipulation (SCAM), the Ninth IEEE International Symposium on Web Site Evolution (WSE), the Third IEEE Workshop on Software Evolvability (SE), and the ERCIM Software Evolution (Evol) Workshop. For ICSM ’07, 214 research papers were submitted, out of which the program committee selected 46 full papers for inclusion in the proceedings. The program also included keynote addresses from two distinguished speakers: Gail Murphy and Paola Traverso.

This special section of the IEEE Transactions on Software Engineering (TSE) contains papers based on two of the best papers of ICSM ’07. These papers were accepted from a set of seven papers we invited for this special section based on selections made by the ICSM Program Committee from the papers presented at the conference. The invited papers, extended and enhanced from their conference version, went through the rigorous TSE review process, overseen by us as guest editors.

The first paper, “Recomputing Coverage Information to Assist Regression Testing” by Pavan Kumar Chittimalli and Mary Jean Harrold, addresses a very important topic in the field of software maintenance, namely that of regression testing. The authors present an algorithm for recomputing updated coverage data for a changed program version with respect to a set of test cases without rerunning any test cases that do not execute the change. The algorithm is accurate as it gives the same results as would be obtained by rerunning the entire test suite.

The second paper, “How Software Developers Use Tagging to Support Reminding and Refinding” by Margaret-Anne Storey, Jody Ryall, Janice Singer, Del Myers, Li-Te Cheng, and Michael Muller, reports on two empirical studies that investigated how professional programmers and open source developers used tags to support their exploration and navigation of the source code. The studies are focused on the adoption of TagSEA, Tags for Software Engineering Activities, a tool that combines the notion of way pointing—a mechanism for marking locations in spatial navigation—with social tagging, to support programmers in defining semantic annotations to source code.

This special section is the result of tremendous effort from many volunteers in our community. First of all, we would like to thank Françoise Balmas, the General Chair of ICSM ’07, for the excellent organization of the conference. The members of the ICSM ’07 Program Committee helped to form the conference program through their efforts in reviewing the submitted papers and selecting the invited papers for this special section. Many thanks to all of the authors and to the reviewers for their hard work. We appreciate the excellent support and the cooperation of Joyce Arnold, TSE Publications Coordinator, during the whole process of preparing this special section.

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Guest Editors

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Gerardo Canfora is a full professor of computer science on the Faculty of Engineering at the University of Sannio and a member of the Executive Board of CerICT, a consortium for ICT innovation and technology. He serves on the program and organizing committees of a number of international conferences. He was general chair of WCRE ’06 and CSMR ’03, and program cochair of ICSM ’01 and ICSM ’07, IWPESE ’05, CSMR ’04, and IWPC ’97. From 2000 to 2004, he was an associate editor for the IEEE Transactions on Software Engineering and currently he is a member of the editorial boards of the Journal of Software Maintenance and Evolution: Research and Practice, Advances in Software Engineering, and The Open Software Engineering Journal. He led several national and international research projects, served as a reviewer and an evaluator for the European Commission, and was a consultant for public bodies and ICT companies. His research interests include software maintenance and evolution, data privacy, and service-oriented computing. He is a member of the IEEE Computer Society and ACM.

Ladan Tahvildari is an assistant professor in the Department of Electrical and Computer Engineering at the University of Waterloo, a visiting scientist with the Centre for Advanced Studies at the IBM Toronto Laboratory, and the founder of the Software Technologies Applied Research (STAR) Laboratory. Together with her research team, she investigates methods, models, architectures, and techniques to develop self-adaptive software systems with a higher quality in a cost-effective manner. Her research has appeared in more than 50 scientific publications. She has been on the program and organization committees of many international IEEE/ACM conferences. She is publications chair of ACM/IEEE ICSE ’09 in Vancouver. She was workshops chair of IEEE ICSM ’08 in Beijing, program cochair of IEEE ICPC 2006 in Greece, program cochair of IEEE STEP ’04 in Chicago, and workshops chair of IEEE WCRE ’04 in The Netherlands. She has served as chair of the Computer Society (CS) in the IEEE Local Chapter since 2004. Her accomplishments have been recognized by various awards. Recently, she has been honored with the prestigious Ontario’s Early Researcher Award (ERA) to recognize her work in self-adaptive software. She is a member of the IEEE Computer Society.

Hausi A. Müller is a professor in the Department of Computer Science at the University of Victoria, British Columbia. He is a visiting scientist at CAS, the Center for Advanced Studies at the IBM Toronto Laboratory CA Inc., and SEI, the Carnegie Mellon Software Engineering Institute. For more than a decade, he has been a principal investigator and chair of the Technical Steering Committee of CSER, a Canadian Consortium for Software Engineering Research. In 2006, he received the IBM CAS Faculty Fellow of the Year Award, the CSER Outstanding Leadership Award, and the Stevens Citation for his many contributions to the software reverse engineering community. His research interests include software engineering, software evolution, autonomic computing, monitoring and diagnostics, service-oriented architectures, adoption-centric software engineering, software architecture, software reverse engineering, software reengineering, program understanding, visualization, and software engineering tool evaluation. He is general chair for VISSOFT ’09 in Edmonton. He was chair of the Frontiers of Software Maintenance (FoSM ’08) Track at ICSM in Beijing. He was workshops cochair for ACM/IEEE ICSE ’08 in Leipzig, Germany. He was coorganizer of SEAMS ’09, SEAMS ’08, SEAMS ’07, SEAMS ’06, and DEAS ’05, ICSE workshops on Software Engineering for Adaptive and Self-Managing Systems. He coorganized ACSE workshops at ICSE ’04 and ICSE ’03. He was program cochair of IBM CASCON ’03 and general chair for IEEE IWPC ’03 in Portland, Oregon. He was general chair for ICSE ’01 in Toronto and program cochair for ICSM ’94 in Victoria. He serves on the editorial board of the IEEE Transactions on Software Engineering. He is vice-chair of the IEEE Technical Council on Software Engineering (TCSE). He is a member of the IEEE Computer Society.