

Fundamentals of Software Engineering 2007: Selected Contributions

Preface

This special issue contains the extended versions of the selected papers presented at the second IPM International Symposium on Fundamentals of Software Engineering, Tehran, Iran, April 17-19, 2007. This event, FSEN07, was organized by the School of Computer Science at the Institute for Studies in Fundamental Sciences (IPM) in Iran, in cooperation with the ACM SIGSOFT and IFIP WG2.2.

Ingo Brckner, Klaus Drager, Bernd Finkbeiner and Heike Wehrheim present a new model checking procedure for infinite-state concurrent systems that interleaves automatic abstraction refinement with slicing. The abstraction refinement splits states according to new predicates obtained by Craig interpolation, and slicing removes irrelevant states and transitions from the abstraction.

Mohammad Torabi Dashti, Srijith Krishnan Nair and Hugo L. Jonker introduce Nuovo DRM, a digital rights management scheme aimed to provide formal and practical security. They formalize such security requirements as effectiveness, secrecy, and resistance to content masquerading in the CRL process algebraic language. The authors address several security weaknesses uncovered in their verification step and introduce several procedural practices to enhance the practical security of the scheme.

Parosh Aziz Abdulla, Johann Deneux, Joel Ouaknine, Karin Quaas and James Worrell present new results on the universality problem for timed Automata. Their results complement earlier work by Alur and Dill on the universality problem of timed automata with two clocks. The authors focus on the one-clock universality problem and show that it is undecidable. They further examine the special cases of this problem where it is decidable. They present a zone-based algorithm for solving the universality problem for single-clock timed automata, prove its termination, and describe their experience with a prototype tool implementing their method.

Mario Bravetti and Gianluigi Zavattaro propose a new theory of contracts for multi-party service composition. Their theory assumes that the choice to perform an output may not depend on the environment and addresses the problem of composition of multiple services (not only one client with one service). Interpreting the theory of must-testing pre-order as a subcontract relation, they show that a compliant group of contracts is still compliant if every contract is replaced by one of its subcontracts.

Behavioral equivalence is at the heart of advanced methods for discovery of Web services. Filippo Bonchi, Antonio Brogi, Sara Corfini and Fabio Gadducci define a new compositional and decidable behavioral equivalence for Web services, based on bisimilarity.

Carlo Montangero, Stephan Reiff-Marganiec and Laura Semini propose a logic-based conflict detection scheme for distributed policies. They present a formal semantics for distributed policies expressed in the APPEL language and use it to develop semantics based techniques to detect policy conflicts.

Seyyed Vahid Hashemian and Farhad Mavaddat use logical reasoning to find a solution for automatic composition of stateless components. They provide concrete algorithms to find possible component compositions for a requested behavior and validate the returned composition using composition algebraic rules.

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