

Testing Practice and Research

The first ‘Testing: Academic & Industrial Conference - Practice And Research Techniques’ (TAIC PART 2006) was held at Cumberland Lodge Windsor on 29th-31st August, 2006. The general chair was Mark Harman (King’s College London), the programme chair was Phil McMinn (University of Sheffield), and the local arrangements chair was Zheng Li (King’s College London).

TAIC PART is firmly grounded in fostering collaboration between industry and academia. It aims to bring together industrial software developers and users together with academic researchers working on the theory and practice of software testing.

TAIC PART 2006 was a unique, not-for-profit conference that combined what we believe to be the best aspects of three kinds of event: a formal academic conference, a research workshop and a retreat. The aim was not only to act as a forum for the exchange of ideas, but as a vehicle to stimulate, deepen and widen partnership between academia and industry in software testing internationally.

In attendance were 54 delegates from 11 different countries, comprising 32 academics and 22 industrialists. The event featured two keynotes, regular paper sessions, a PhD symposium, and a ‘speed dating’ session devoted to stimulating collaboration between attendees. The first keynote was given by Bill Woodworth, Corporate Director of IBM Quality Software Engineering. Bill spoke on test management at IBM, of which he has over 25 years experience. John Hatcliff, the second keynote, is Professor in the Computing and Information Sciences Department at Kansas State University. John spoke on his internationally leading work on testing and software model checking.

TAIC PART 2006 received a total 50 full paper submissions. After a rigorous reviewing process, 24 papers were accepted, with 8 of those papers from industry, 10 papers containing academic research, and a further 6 short papers accepted for the special PhD program. Accepted papers covered a wide spectrum of state of the art testing practice and research, including fault prediction, model-based testing, test specifications, the testing life cycle, search-based testing, database testing, web service testing, test requirements analysis, integration testing, empirical studies and case studies, and industrial challenges. The conference proceedings were published by IEEE and are available online.

The two papers in this special issue are extended versions of some of the best papers originally presented at the conference. They have also been through a further reviewing process.

The first paper is the result of an academic-industrial collaboration. In their paper “Quality Assurance for TTCN-3 Test Specifications”, Helmut Neukirchen, Benjamin Zeiss and Jens Grabowski, of University of Göttingen and Paul Baker and Dominic Evans, of Motorola Labs, propose a technique to: (1) assess the quality of existing test suites through metrics; (2) improve it through refactoring; and, (3) detect refactoring opportunities by means of rules that are based on the quality metrics. They focus on test suites expressed in the Testing and Test Control Notation TTCN-3, a language designed to support the specification of test suites in the telecommunication domain. The quality attribute considered in this work is maintainability, decomposed into analysability and changeability. Size, complexity and coupling metrics are defined to characterize such quality attributes. The refactoring catalogue includes 23 TTCN-3 specific refactorings and 28 Java refactorings that are applicable to TTCN-3 as well. Eight rules are defined to check the applicability of refactorings automatically. These are implemented in a tool called ‘TRex’.

The second paper, entitled “Automated Discovery of State Transitions and their Functions in Source Code”, by Neil Walkinshaw, Shaukat Ali, Kirill Bogdanov and Mike Holcombe, presents a

technique to reverse engineer source code into a state-machine. It allows a developer to identify the states at a given point and statements that are responsible for state transitions. The technique also combines several ingredients, including symbolic execution and state abstraction, and is demonstrated with examples.

Finally, we are grateful to our sponsors, whose financial contributions made it possible for TAIC PART 2006 to happen. Funding was received from the EPSRC and also from industry; including support from DaimlerChrysler, Ericsson, IPL Ltd., LDRA Ltd., Motorola and Vizuri.

The TAIC PART website (<http://www2006.taicpart.org>) serves as lasting resource to the event, containing the programme, photographs and downloadable presentations of all the talks.

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