2015 IEEE/ACM 37th IEEE International Conference on Software Engineering

10th International Workshop on Automation of Software Test (AST 2015)

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***Abstract*—This paper is a report on The 10th IEEE/ACM International Workshop on Automation of Software Test (AST 2015) at the 37th International Conference on Software Engineering (ICSE 2015). It sets a special theme on testing oracles. Keynote speeches and charette discussions are organized around this special theme. 16 full research papers and 2 keynotes will be presented in the two-day workshop. The report will give the background of the workshop and the selection of the special theme, and report on the organization of the workshop. The provisional program will be presented with a list of the sessions and papers to be presented at the workshop.**

***Index Terms*—Automation of Software Test, Software Testing, Software Tools, Test Oracle.**

I. Background

Software test automation has long been considered as a prominent solution to reduce the cost of software testing and to improve the dependability of software products. It has been an active research topic for many years. This edition of the IEEE/ACM International Workshop on Automation of Software Test (AST 2015) marks the 10th of the series of the events that focuses on this topic at ICSE conferences since 2006. Same as in the previous years, the workshop received a large number of submissions of high quality from all over the world.

A test oracle is a means of checking the correctness of programs behavior on test cases. It is one of the most important but also most difficult aspects of test automation. In recent years, there is a rapid growth in the research on this topic and a number of breakthroughs have been made, for example, in the employment of formal specification and model-based testing. In this setting, AST 2015 takes place with a special emphasis on the theme of Test Oracles.

II. Organisation of the Event

Continuing the tradition of AST workshops, two types of contributions were sought after, which are

- *Regular research papers* that report the current state of art in research on any aspect of software test automation.
- *Industrial case study papers* aiming at an in-depth discussion on specific open problems in the practice and experiences from the industry in order to identify the difficulties and specific issues of the problem, to evaluate potential solutions, and to share experiences.

Submissions on the special theme of Test Oracle were encouraged but not limited to it. An open call for papers was made together consolidation efforts by the workshop program committee members. The response to the call-for-papers was very positive. We received a total of 34 submissions from 98 authors of 21 countries.

Each paper was reviewed by at least 3 PC members and evaluated according to the criteria of relevance, originality, soundness, maturity and presentation quality. Online discussions about the reviews took place in order to resolve conflict opinions after the reviews were completed. Decisions were made based on the reviews as well as the outcomes of the online discussions. 16 submissions were accepted as full papers. An additional 2 eminent experts were invited as keynote speakers.

The provisional program of the two-day workshop is organized around the special theme on Test Oracle. Prof. Mauro Pezzè from University of Lugano, Switzerland, and Prof. Tsong Yueh Chen from Swinburne University of Technology, Australia, will give invited keynote speeches on Test Oracles. A charette discussion session is set so that the workshop participants can work together, first, to identify the key research questions from both academic and practical points of view, and then to brainstorm for a roadmap of the research on these problems. 2 paper presentation sessions are also devoted to the special theme on Test Oracle. Papers on other topics will be presented in various sessions shown in the provisional program below. Each full paper will be given 30 minutes for presentation, including a discussion of 5 minutes. Keynote speakers have 60 minutes, also including 15 minutes for discussion.

III. Provisional Program

The provisional program is as follows.

Session 1: Test Oracles (I)

- Mauro Pezzè. ***Keynote: Towards Cost-effective Oracles***
- Rafig Almaghairbe; Marc Roper. *Building Test Oracles by Clustering Failures*

Session 2: GUI and Web Service Testing

- Dessislava Petrova-Antonova; Sylvia Ilieva; Denitsa Manova. *TASSA: Testing Framework for Web Service Orchestrations*
- Santo Carino; James Andrews. *Evaluating the Effect of Test Case Length on GUI Test Suite Performance*

978-1-4799-1934-5/15 $31.00 © 2015 IEEE
DOI 10.1109/ICSE.2015.307

- He Zhi-Wei; Bai Cheng-Gang. *GUI Test Case Prioritization by State-coverage Criterion*

Session 3: Test Case Generation

- Koushik Sen; Haruto Tanno; Xiaojing Zhang; Takashi Hoshino. *GUIDESE: Annotations for Guiding Concolic Testing*
- Korosh Koochekian Sabor. *Adaptive Random Testing By Static Partitioning*
- Ali Khalili; Massimo Narizzano; Armando Tacchella; Enrico Giunchiglia. *Automatic Test-Pattern Generation for Grey-Box Programs* (Short paper)

Session 4: Performance, Concurrency and Security Testing

- Alexander Wert; Henning Schulz; Christoph Heger. *AIM: Adaptable Instrumentation and Monitoring for Automated Software Performance Analysis*
- Jochen Schimmel; Korbinian Molitorisz; Ali Jannesari. *Combining Unit Tests for Data Race Detection*
- Bindu Madhavi Padmanabhuni; Hee Beng Kuan Tan. *Light-Weight Rule-Based Test Case Generation for Detecting Buffer Overflow Vulnerabilities* (Short paper)

Session 5: Test Oracles (II)

- Tsong Yueh Chen. ***Keynote: Metamorphic Testing: A Simple Method for Alleviating the Test Oracle Problem***
- Fang-Hsiang Su; Jonathan Bell; Christian Murphy; Gail Kaiser. *Dynamic Inference of Likely Metamorphic Properties to Support Differential Testing*

Session 6: Program Analysis

- Andrea Stocco; Maurizio Leotta; Filippo Ricca; Paolo Tonella. *Why Creating Web Page Objects Manually If It Can Be Done Automatically?*
- Vincenzo Musco; Martin Monperrus; Philippe Preux. *An Experimental Protocol for Analyzing the Accuracy of Software Error Impact Analysis*
- Sun Ding; Hee Beng Kuan Tan; Lwin Khin Shar. *Mining Patterns of Unsatisfiable Constraints to Detect Infeasible Paths*

Session 7: Fault Injection and Empirical Studies

- Stefan Winter; Thorsten Piper; Oliver Schwahn; Roberto Natella; Neeraj Suri; Domenico Cotroneo. *GRINDER: On Reusability of Fault Injection Tools*
- Lei Ma; Cheng Zhang; Bing Yu; Hiroyuki Sato. *An Empirical Study on Effects of Code Visibility on Code Coverage of Software Testing*

Session 8: Charette Discussion

Discussions on the special theme of Test Oracles