Summary of the 14th edition of the IEEE/ACM Workshop on Automation of Software Test (AST)

Testing and Continuous Deployment

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Effective and efficient testing with reduced costs and a high fault detection capability is the desirable goal in industry which can be achieved only through automation of all parts of the testing process. In the past decades, a great amount of research effort has been spent on automating all various parts of the testing process such as test case derivation, test selection, test oracle construction, test execution, and others. In addition, there has been a rapid growth in automated software testing tools which is stimulated in part through the shift towards agile development practices in industry that demands a high level of automation. Work on this topic has long been published as an important part of software engineering. In recent years, testing has been consistently among the top-most popular topics in submissions to software engineering conferences. The practice of software test automation (TA) has also moved forward significantly in the past few years. However, progress in TA is still required. Software systems have become more and more complicated through the integration of components developed by different vendors and using different techniques in different programming languages running on different platforms. The advent of cloud computing, mobile computing and the Internet of Things has imposed grave new challenges to TA. Those systems become increasingly reactive to changes in their environment, requiring equally adaptive TA approaches. Few software testing tools can currently handle the needed requirements to test such systems.

This year we have celebrated the 14th edition of the IEEE/ACM Workshop on Automation of Software Test (AST). The theme of AST is on "*Testing and Continuous Deployment*". Continuous deployment has become a major strategy in industry even for large software projects and continues to be a relevant topic in research. As one of the main strategies in modern DevOps environments, continuous deployment aims to increase code velocity—the time between making a code change and shipping the change to customers. At the same time, DevOps and continuous deployment impose heavy constraints onto testing: (a) testing must be completely automated and act as the last safeguard against customer incidents; (b) testing should be fast without slowing down code velocity; and (c) testing is happening within the engineering teams (DevOps)

rather than dedicated testing teams. In other words, test automation may have become more wanted than ever before and we seek contributions to highlight solutions, challenges, and problem statements for test automation in a continuous deployment world. Choosing this special theme, our goal was to spark interest from industry partners to show and describe issues and solutions in this area and thus to foster the communication between researchers and industry and thus to reduce the gap between both worlds.

This edition of AST is organized under the umbrella of the 41st International Conference on Software Engineering (ICSE) which takes place in Montreal, Canada in May 2019. The program committee worked hard to make sure that AST will still have a compelling program and lineup of great research papers, industrial case studies, and industry talks. We invited Andrés Leonardo Martínez Ortiz who is leading the Google Cloud Ecosystem program in Europe.

The workshop chairs received twenty paper submissions, from which nine regular papers and one industry talk abstract were selected. The acceptance rate of 50% was maintained to insure the quality of the AST workshop as a selective presentation and publication venue. Some of them report about using testing in continuous deployment settings including challenge and solutions. Accepted papers will be invited to submit extended versions to the Journal of Software: Evolution and Process. We would like to thank all authors for their contributions and active participations at AST 2019. We also wish to thank the distinguished invited keynote speaker Andres-Leonardo Martinez-Ortiz for sharing us his insights. We are grateful to the members of the Program Committee and additional reviewers for their efforts in promoting the AST workshop and reviewing all submitted papers accordingly. We appreciate their competent handling of the submissions within a short reviewing period. We would like to thank Dr. Antonia Bertolino for her support in managing the AST website and the Steering Committee support in managing the AST website and the Steering Committee for their sustained support. Our special thanks go to the ICSE Workshop and Publication Chairs for guiding and supporting us in the organization of the workshop.