Message from SBFT 2023 Program Chairs

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Welcome to the 16th edition of the International Workshop on Search-Based and Fuzz Testing (SBFT), formerly known as the International Workshop on Search-Based Software Testing.

There is a growing realization that optimization techniques benefit the software development process: a research area known as Search-Based Software Engineering (SBSE). Search-Based Software Testing (SBST) leverages meta-heuristics and search-based optimization algorithms to address various problems in software testing. For instance, SBST has been successfully applied to unit, interaction, mutation, and regression testing, to name a few.

Many SBST approaches exist to achieve different testing goals (e.g., structural, functional, non-functional, and state-based properties) in various application domains (e.g., traditional, web, enterprise, mobile applications, and Cyber-physical systems), which makes SBST one of the largest research areas within SBSE.

Fuzz Testing also exploits automation to efficiently generate tests that expose issues in the systems under test (SUT). Traditionally, Fuzz Testing has been used at the system level to expose vulnerabilities and identify defects that result in crashes by generating unexpected inputs.

Ongoing research efforts on SBST and Fuzz Testing are converging toward techniques that follow similar principles (e.g., using coverage to drive the test generation) and address similar testing problems. This observation has led to the decision to rename the workshop to Search-Based and Fuzz Testing (SBFT), thus acknowledging the prominent and complementary role of SBST and Fuzzing in software testing.

Work in SBFT has developed to the point that it is now ripe for combination with other areas of software engineering. The common "lingua franca" that makes these combinations possible is the definition of the fitness function that guides the search and fuzzing algorithms. A fitness function is merely a form of a metric, and metrics exist across the entire software engineering spectrum. Therefore, the central objective of this workshop is to bring together researchers and industrial practitioners from SBST, Fuzzing, and the wider Software Engineering community to share experiences and provide directions for future research on the automation of software testing. A second objective of this workshop is to encourage using search and fuzzing techniques to combine testing with other software engineering areas.

The 16th edition of SBFT is a one-day workshop co-located with the 45th ACM/IEEE International Conference on Software Engineering (ICSE), which takes place in Melbourne, Australia, in May 2023.

In addition to the research and tool competition tracks, the workshop program contains a panel discussion by experts in testing and security for Cyber-physical systems and two keynote talks by **Prof. Jane Cleland-Huang** (University of Notre Dame) and **Prof. Lionel Briand** (University of Ottawa & University of Luxembourg).

The workshop received 5 full paper submissions, all accepted for presentation at the workshop. Moreover, 3 tools participated in the Java testing tool competition, 6 in the Cyber-physical System testing tool competition, and 8 in the Fuzzing tool competition.

We would like to thank all authors and attendees for their contributions and active participation at SBFT 2023. We also wish to thank the distinguished invited speakers and all the SBFT panelists: **Prof. Jane Cleland-Huang** (University of Notre Dame), **Prof. Lionel Briand** (University of Ottawa & University of Luxembourg), **Prof. Aitor Arrieta** (University of Mondragon), **Prof. Annibale Panichella** (Delft University of Technology), **Prof. Mohammad Reza Mousavi** (King's College London), and **Prof. Shaukat Ali** (Simula Research laboratory). We are also grateful to the members of the Program Committee for their effort in making the workshop possible, and the members of the SBFT Steering Committee for their sustained support. Finally, we thank the ICSE Workshop Chairs for guiding and supporting us in organizing the workshop, the Google Open Source Security Team for sponsoring the competitions, and BeamNG GmbH for kindly providing the driving simulation used in the Cyber-physical Systems testing tool competition.

ORGANIZATION

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