Message from the Program Chairs

On behalf of the Program Committee, it is our pleasure to present the proceedings of the 12th International Symposium on Search-Based Software Engineering (SSBSE 2020).

The field of Search-Based Software Engineering has grown tremendously in the last few years, with research covering a wide range of topics in the intersection of software engineering and search algorithms. As in the previous years, SSBSE 2020 continued to bring together the international SBSE community to present innovations, discuss new ideas, and celebrate progress in the field. This year, we faced an unprecedented challenge brought upon us by the global pandemic, which impacted our lives significantly. Hence, it is more important than ever that we stay connected and support each other through these times, even if virtually. Despite these challenges, this year we received a record number of papers; 34 papers in total across four tracks: 24 full research papers, 2 Challenge solutions, 2 New Ideas and Emerging Results (NIER) papers, 5 Replications and Negative Results (RENE) papers, and 1 Challenge case. We would like to thank the authors for their submissions and express our appreciation for their efforts in advancing the SBSE field.

The success of SSBSE depends completely on the effort, talent, and energy of researchers in the field of Search-Based Software Engineering who have written and submitted papers on a variety of topics. Following a strict review process, where each submission received three reviews, we accepted 18 papers: 10 papers in the Research Track, 4 papers in the RENE Track, 1 paper in the NIER Track, 2 papers in the Challenge solutions, and 1 paper in the Challenge cases. Thanks also go to the Program Committee members and external reviewers who invested significant time in assessing multiple papers, and who hold and maintain a high standard of quality for this conference. Their dedicated work and support makes this symposium possible and results in a stronger community.

Finally, the symposium would not have been possible without the efforts of the Organizing Committee, hence we would like to thank:

- NIER Track co-chairs: Jin Guo and Gregory Gay
- Replications and Negative Results Track co-chairs: Bonita Sharif and Juan Pablo Galeotti
- Challenge Track co-chair: Wesley K. G. Assuncao and Ruchika Malhotra
- Publicity co-chairs: Rebecca Moussa, Nobukazu Yoshioka, Jinghui Cheng and Rodrigo Morales
- Virtualization Chair: Marios-Eleftherios Fokaefs
- Journal First Track chair: Tim Menzies
- Publication chair: Bruno Lima
- Web chair: Luigi Quaranta

In addition to a full program of research talks, SSBSE 2020 attendees had the opportunity to listen to an outstanding keynote by Shiva Nejati on "Search-Based Software Testing for Formal Software Verification, and Vice Versa." In this keynote, Shiva presented recent research that combines ideas from SBST research and the formal verification area to improve the analysis of cyber-physical systems (CPS). Next, the keynote focused on an empirical study that compares CPS model testing and verification. While SBST and formal verification communities pursue the common goal of ensuring the correctness of software systems, the interaction between the two communities is sparse. Hence, this keynote provided an exciting opportunity to reflect on the advancements of these two areas and help the software engineering community to reach a common understanding of the problem of testing software systems, to develop common benchmarks and evaluation criteria, and to build more effective software tools.

We hope you enjoy the work contained in this volume and you can apply it to your own work. We are proud of the program assembled this year, and are thankful for the opportunity to present these proceedings to the SBSE research community.

July 2020   Aldeida Aleti
                                                                                           Annibale Panichella