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Search Based Software Engineering

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Proceedings



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Volume Editors

Gordon Fraser
The University of Sheffield
Department of Computer Science
Regent Court
211 Portobello
Sheffield S1 4DP, UK
E-mail: gordon.fraser@sheffield.ac.uk

Jerffeson Teixeira de Souza
State University of Ceara
Department of Research and Graduate Studies
Av. Paranjana 1700
60714-903 Fortaleza, CE, Brazil
E-mail: jeff@larces.uece.br

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Preface

Message from the SSBSE 2012 General Chair

Welcome to the proceedings of the 4th Symposium on Search-Based Software Engineering, SSBSE 2012, held in Riva del Garda, in the Province of Trento, in Italy. Riva del Garda is a small city located in the north-western corner of the Garda Lake, in the middle of the Alps, surrounded by Mediterranean vegetation with olive and lemon trees. The symposium was co-located with the 28th IEEE International Conference on Software Maintenance, the premiere international venue in software maintenance and evolution.

The field of search-based software engineering is experiencing a growing interest from the software engineering community. SBSE is more and more influencing all phases of the software engineering process. From requirements engineering, where several works proposing the conjoint use of search-based techniques with other requirements engineering techniques have been presented in previous editions of the RE conference, to the more traditional application areas of search-based techniques such as software testing and maintenance phases, as witnessed by several works presented in the major conferences in these areas. This transversal exploitation of SBSE in the whole software engineering lifecycle is also reflected in the papers presented in this volume.

Many people contributed in different ways to the organization of SSBSE 2012 and to the preparation of the proceedings. Thus, there are many people to thank. First of all, the authors of the papers and their enthusiastic interest in search-based software engineering. The Program Chairs, Gordon Fraser and Jefferson Teixeira de Souza, and the Graduate Students Track Chair, Shin Yoo, that organized a rich and high-quality scientific program; it was a great pleasure for me to work with them sharing the organizational decisions in the last year. The members of the Program Committee, as well as other reviewers, who reviewed the papers with efficacy and accuracy giving valuable feedback to the authors and selecting a pool of high-quality papers. The Steering Committee, chaired by Mark Harman, and the General Chair of SSBSE 2011, Phil McMinn, who provided me with several precious suggestions during the preparation of the event.

I would like to thank the members of the Organizing Committee: the Local Chair, Alessandro Marchetto, and the webmaster, Matthieu Vergne. They were fundamental for the success of the symposium. I would also like to give my appreciation to the Fondazione Bruno Kessler in Trento, Italy, for the encouragement and support in the organization of the symposium, and in particular to Moira Osti and Silvia Malesardi of the “eventi” office of the Fondazione for their help, dedication, and patience.

I am delighted with the two outstanding keynote speakers, Kalyanmoy Deb and Massimiliano di Penta, who focused their attention to multi-objective optimization and to new opportunities for using search-based techniques in software maintenance, respectively. It is also a pleasure to thank the speakers of the tutorials, and the participants of the panel who accepted to share their valuable experiences with all the participants.

Thanks to the sponsors of the symposium: UCL CREST department, Berner & Mattner, and IBM. I would also like to thank the FITTEST project, and in particular Tanja Vos, for her support in the acquisition of the sponsorships for the event. I am grateful to Alfred Hofmann, at Springer, who accepted to publish the proceedings of SSBSE.

My final thanks go to Paolo Tonella, General Chair of the International Conference on Software Maintenance, ICSM 2012, who accepted to host SSBSE 2012 in conjunction with this major conference, giving an occasion to reinforce the cross-fertilization between the two research communities.

I hope this symposium was a great opportunity to create new synergies between research groups from around the world, as well as between different disciplines and cultures. For those who have not personally attended the symposium, I hope that the spirit of the event can be captured thanks to this proceedings volume. See you next year at SSBSE 2013 in St. Petersburg, in Russia.

July 2012

Angelo Susi

Message from the SSBSE 2012 Program Chairs

On behalf of the SSBSE 2012 Program Committee, it is our pleasure to present the proceedings of the 4th International Symposium on Search-Based Software Engineering, held in beautiful Riva del Garda, Trento, Italy. SSBSE 2012 continued a recent tradition of bringing together the international SBSE community in an annual event to discuss and to celebrate progress in the field.

This year, we had 38 papers submitted to the conference (34 to the Research Track and 4 to the Student Track), with authors from 20 different countries (Austria, Brazil, Canada, China, Czech Republic, France, Germany, India, Ireland, Israel, Italy, Luxembourg, New Zealand, Norway, Saudi Arabia, Spain, Sweden, UK, and USA). At the end of the review process, where each submitted paper was refereed by at least three SBSE researchers, 15 papers were accepted as full papers and three were accepted as posters. In the Student Track, two papers were accepted.

We would like to thank the members of the SSBSE 2012 Program Committee. Their continuing support was essential to further improving the quality of accepted submissions and the resulting success of the conference. We also wish to especially thank the General Chair, Angelo Susi, who led a group of wonderful people that managed the organization of every single aspect in order to make the conference special to all of us. In addition, we want to thank Shin Yoo, SSBSE 2012 Student Track Chair, for managing the submissions of the bright young minds who will be responsible for the future of the SBSE field.

Maintaining a successful tradition, SSBSE 2012 attendees had the opportunity to learn from experts both from the research fields of search as well as software engineering, in two outstanding keynote talks. This year, we had the honor of receiving a keynote from Kalyanmoy Deb, who, with his distinguished contributions on evolutionary multi-objective optimization, has influenced many researchers in the SBSE field. Furthermore, we received a keynote from Massimiliano Di Penta, who enlightened us about the state of the art in software maintenance, laying down several research opportunities for SBSE researchers. Finally, we received a tutorial by Simon Poulding on the recently popular topic of exploiting graphics processing units (GPGPU) for search. Finally, we would like to thank all the authors who submitted papers to SSBSE 2012, regardless of acceptance or rejection, and everyone who attended the conference. We hope that with these proceedings, anybody who did not have the chance to be at Riva del Garda will have the opportunity to feel the liveliness of the SBSE community.

July 2012

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