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Search Based Software Engineering

4th International Symposium, SSBSE 2012
Riva del Garda, Italy, September 28-30, 2012
Proceedings



Springer

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ISSN 0302-9743
ISBN 978-3-642-33118-3
DOI 10.1007/978-3-642-33119-0
Springer Heidelberg Dordrecht London New York

e-ISSN 1611-3349
e-ISBN 978-3-642-33119-0

Library of Congress Control Number: 2012945433

CR Subject Classification (1998): D.2, D.4, D.1, F.1

LNCS Sublibrary: SL 2 – Programming and Software Engineering

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Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

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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Table of Contents

Keynote Addresses

Advances in Evolutionary Multi-objective Optimization	1
<i>Kalyanmoy Deb</i>	
SBSE Meets Software Maintenance: Achievements and Open Problems	27
<i>Massimiliano Di Penta</i>	

Tutorials

Tutorial: High Performance SBSE Using Commodity Graphics Cards . . .	29
<i>Simon Poulding</i>	

Full Papers

Evolving Robust Networks for Systems-of-Systems	30
<i>Jonathan M. Aitken, Rob Alexander, Tim Kelly, and Simon Poulding</i>	
On the Application of SAT Solvers to the Test Suite Minimization Problem	45
<i>Franco Arito, Francisco Chicano, and Enrique Alba</i>	
Evaluating the Importance of Randomness in Search-Based Software Engineering	60
<i>Márcio de Oliveira Barros</i>	
Putting the Developer in-the-Loop: An Interactive GA for Software Re-modularization	75
<i>Gabriele Bavota, Filomena Carnevale, Andrea De Lucia, Massimiliano Di Penta, and Rocco Oliveto</i>	
Optimizing Threads Schedule Alignments to Expose the Interference Bug Pattern	90
<i>Neelesh Bhattacharya, Olfat El-Mahi, Etienne Duclos, Giovanni Beltrame, Giuliano Antoniol, Sébastien Le Digabel, and Yann-Gaël Guéhéneuc</i>	
Optimised Realistic Test Input Generation Using Web Services	105
<i>Mustafa Bozkurt and Mark Harman</i>	

Improving Software Security Using Search-Based Refactoring	121
<i>Shadi Ghaith and Mel Ó Cinnéide</i>	
Combining Search-Based and Adaptive Random Testing Strategies for Environment Model-Based Testing of Real-Time Embedded Systems . . .	136
<i>Muhammad Zohaib Iqbal, Andrea Arcuri, and Lionel Briand</i>	
Testing of Concurrent Programs Using Genetic Algorithms	152
<i>Vendula Hrubá, Bohuslav Křena, Zdeněk Letko, Shmuel Ur, and Tomáš Vojnar</i>	
Reverse Engineering Feature Models with Evolutionary Algorithms: An Exploratory Study	168
<i>Roberto Erick Lopez-Herrejon, José A. Galindo, David Benavides, Sergio Segura, and Alexander Egyed</i>	
Searching for Pareto-optimal Randomised Algorithms	183
<i>Alan G. Millard, David R. White, and John A. Clark</i>	
Automatically RELAXing a Goal Model to Cope with Uncertainty	198
<i>Andres J. Ramirez, Erik M. Fredericks, Adam C. Jensen, and Betty H.C. Cheng</i>	
Boosting Search Based Testing by Using Constraint Based Testing	213
<i>Abdelilah Sakti, Yann-Gaël Guéhéneuc, and Gilles Pesant</i>	
Domain-Driven Reduction Optimization of Recovered Business Processes	228
<i>Alex Tomasi, Alessandro Marchetto, and Chiara Di Francescomarino</i>	
Evolving Human Competitive Spectra-Based Fault Localisation Techniques	244
<i>Shin Yoo</i>	

Short Papers

Applying Search Based Optimization to Software Product Line Architectures: Lessons Learned	259
<i>Thelma Elita Colanzi and Silvia Regina Vergilio</i>	
Problem-Specific Search Operators for Metaheuristic Software Architecture Design	267
<i>Ramin Etemaadi, Michael T.M. Emmerich, and Michel R.V. Chaudron</i>	
A Concept for an Interactive Search-Based Software Testing System . . .	273
<i>Bogdan Marculescu, Robert Feldt, and Richard Torkar</i>	

Graduate Track Papers

A Search-Based Framework for Failure Reproduction 279
 Fitsum Meshesha Kifetew

Evolutionary Testing of PHP Web Applications with WETT 285
 *Francesco Bolis, Angelo Gargantini, Marco Guarnieri, and
 Eros Magri*

Author Index 293