

Commenced Publication in 1973

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Genetic Programming

17th European Conference, EuroGP 2014
Granada, Spain, April 23-25, 2014
Revised Selected Papers



Springer

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Cover illustration designed by Laura Pirovano.

ISSN 0302-9743

e-ISSN 1611-3349

ISBN 978-3-662-44302-6

e-ISBN 978-3-662-44303-3

DOI 10.1007/978-3-662-44303-3

Springer Heidelberg New York Dordrecht London

Library of Congress Control Number: 2014944310

LNCS Sublibrary: SL 1 – Theoretical Computer Science and General Issues

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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

The 17th European Conference on Genetic Programming (EuroGP) took place during April 23 and 25, 2015. Granada, Spain, home to ‘The Alhambra’ UNESCO World Heritage Site provided the setting, with the Universidad de Granada, Departamento de Arquitectura y Tecnología de los Computadores representing the venue. EuroGP represents the only conference exclusively devoted to the evolutionary generation of computer programs and attracts scholars from all over the world. The maturity of the event is in part reflected by the fact that ‘Google scholar’ now lists EuroGP as one of the top 20 venues in Evolutionary Computation with an h5 index and median of 14 and 26 respectively.¹ Collectively, over 9000 articles now appear in the online GP bibliography maintained by William B. Langdon.²

The unique character of genetic programming has been recognized from its very beginning. EuroGP has had an essential impact on the success of the field, by serving as an important forum for expressing new ideas, meeting fellow researchers, and starting collaborations. Indeed, EuroGP represents the single largest venue at which genetic programming results are published. Many success stories have been witnessed by the now 17 editions of EuroGP. To date, genetic programming is essentially the only approach that has demonstrated the ability to automatically generate, repair, and improve computer code in a wide variety of problem areas. It is also one of the leading methodologies that can be used to ‘automate’ science, helping researchers to induce hidden complex models from observed phenomena. Furthermore, genetic programming has been applied to many problems of practical significance, and has produced human-competitive solutions.

EuroGP 2014 received 40 submissions from 20 different countries across 5 continents. The papers underwent a rigorous double-blind peer review process, each being reviewed by at least three members of the international Program Committee from 23 countries. The selection process resulted in this volume, with 15 papers accepted for oral presentation (37.5% acceptance rate) and 5 for poster presentation (50% global acceptance rate for talks and posters combined). The wide range of topics in this volume reflects the current state of research in the field. Thus, we see topics as diverse as search-based software engineering, image analysis, dynamical systems, evolutionary robotics and operational research to the foundations of search as characterized through semantic variation operators.

¹ http://scholar.google.com/citations?view_op=top_venues&hl=en&vq=eng_evolutionarycomputation

² <http://www.cs.bham.ac.uk/~wbl/biblio/>

Together with 4 other co-located evolutionary computation conferences (Evo-BIO 2014, EvoCOP 2014, EvoMusArt 2014, and EvoApplications 2014), EuroGP 2014 was part of the Evo* 2014 event. This meeting could not have taken place without the help of many people.

First to be thanked is the great community of researchers and practitioners who contributed to the conference by both submitting their work and reviewing others' as part of the Program Committee. Their hard work, in evolutionary terms, provided both variation and selection, without which progress in the field would not be possible!

The papers were submitted, reviewed and selected using the MyReview conference management software. We are sincerely grateful to Marc Schoenauer of Inria, France, for his great assistance in providing, hosting, and managing the software.

We would like to thank the local organising team: Juan Julián Merelo Guervós, Victor M. Rivas Santos, Pedro A. Castillo Valdivieso, María Isabel García Arenas, Antonio M. Mora García, Pablo García-Sánchez, Antonio Fernández Ares, and Javier Asensio. Moreover, this was the first year in which the proceedings were produced post conference. We are therefore very grateful to the local organizers for taking on the additional role of constructing the web site to host the camera ready papers for distribution to the participants during the event.

We thank Kevin Sim from the Institute for Informatics & Digital Information, Edinburgh Napier University for creating and maintaining the official Evo* 2014 website, and Pablo García-Sánchez (Universidad de Granada, Spain) and Mauro Castelli (Universidade Nova de Lisboa, Portugal) for being responsible for Evo* 2014 publicity.

We would also like to express our sincerest gratitude to our invited speakers, who gave the inspiring keynote talks: Professor Thomas Schmickl of the University of Karl-Franzens University, Graz, Austria, Professor Federico Moran of University Complutense Madrid, Spain, and Professor Susan Stepney of the University of York, UK.

We especially want to express our genuine gratitude to Jennifer Willies of the Institute for Informatics and Digital Innovation at Edinburgh Napier University, UK. Her dedicated and continued involvement in Evo* since 1998 has been and remains essential for building the image, status, and unique atmosphere of this series of events.

April 2014

Miguel Nicolau
 Krzysztof Krawiec
 Malcolm I. Heywood
 Mauro Castelli
 Pablo García-Sánchez
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Administrative details were handled by Jennifer Willies, Edinburgh Napier University, Institute for Informatics and Digital Innovation, Scotland, UK.

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