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Malcolm I. Heywood · James McDermott  
Mauro Castelli · Ernesto Costa  
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# Genetic Programming

19th European Conference, EuroGP 2016  
Porto, Portugal, March 30 – April 1, 2016  
Proceedings

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## Preface

The 19th European Conference on Genetic Programming (EuroGP) took place between March 30 and April 1, 2016. Porto, Portugal, was the setting, and the *Seminário de Vilar Rua Arceiago Van Zeller* was the venue.

The unique character of GP has been recognized from its very beginning. To date, GP 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, GP has been applied to many problems of practical significance, and has produced human-competitive solutions. Collectively, over 11,000 articles now appear in the online GP bibliography<sup>1</sup>.

EuroGP is a mature event, the only conference exclusively devoted to the evolutionary generation of computer programs. It attracts scholars from all over the world. 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 GP results are published. Many success stories have been witnessed by the 18 editions of EuroGP.

EuroGP 2016 received 36 submissions from around the world. 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 overall quality of submissions was very high, and therefore not all good papers could be accepted. The selection process resulted in this volume, with 11 papers accepted for full-length oral presentation (30.6 % acceptance rate) and eight for short talks (52.8 % global acceptance rate for both categories 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 semantic methods, recursive programs, grammatical methods, coevolution, Cartesian GP, feature selection, metaheuristics, evolvability, and fitness predictors; and applications including image processing, one-class classification, SQL injection attacks, numerical modelling, streaming data classification, creation and optimization of circuits, multi-class classification, scheduling in manufacturing and wireless networks. The results presented here represent the state of the art in this exciting field.

Together with three other co-located evolutionary computation conferences (EvoCOP 2016, EvoMusArt 2016, and EvoApplications 2016), EuroGP 2016 was part of the Evo\* 2016 event. This meeting could not have taken place without the help of many people.

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<sup>1</sup> Maintained at <http://iinwww.ira.uka.de/bibliography/Ai/genetic.programming.html> by William B. Langdon

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 organizing team: Penousal Machado and Ernesto Costa, University of Coimbra, Coimbra, Portugal.

We thank Kevin Sim from the Institute for Informatics and Digital Information, Edinburgh Napier University, for creating and maintaining the official Evo\* 2016 website, and Pablo García-Sánchez (Universidad de Granada, Spain) for being responsible for Evo\* 2016 publicity.

We would also like to express our sincerest gratitude to our invited speakers, who gave the inspiring keynote talks: Richard Forsyth, a GP pioneer, and Dr. Kenneth Sorensen, a leader in Operations Research and Metaheuristics and Research Professor at the Faculty of Applied Economics, the University of Antwerp, Belgium.

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 2016

Malcolm I. Heywood  
James McDermott  
Mauro Castelli  
Ernesto Costa  
Kevin Sim

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Administrative details were handled by Jennifer Willies, Institute for Informatics and Digital Innovation, Edinburgh Napier University, Scotland, UK.

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