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Genetic Programming

21st European Conference, EuroGP 2018
Parma, Italy, April 4–6, 2018
Proceedings

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Preface

The 21st European Conference on Genetic Programming (EuroGP) took place in the historical central building of the University of Parma, via Università 1, Parma, Italy, April 4–6, 2018.

Genetic programming (GP) is a unique field of research. It uses the principles of Darwinian evolution, already well-known in genetic algorithms and other areas of evolutionary computation, to approach problems in the synthesis, improvement, and repair of computer programs. The universality of computer programs, and their importance in so many areas of our lives, means that the automation of these tasks is an exceptionally ambitious challenge with far-reaching implications. It has attracted a very large number of researchers and a vast amount of theoretical and practical contributions are available by consulting the GP bibliography¹.

Since the first EuroGP event in Paris in 1998, EuroGP has been the only conference exclusively devoted to the evolutionary generation of computer programs. Indeed, EuroGP represents the single largest venue at which GP results are published. It plays an important role in the success of the field, by serving as a forum for expressing new ideas, meeting fellow researchers, and initiating collaborations. It attracts scholars from all over the world. In a friendly and welcoming atmosphere authors present the latest advances in the field, also presenting GP-based solutions to complex real-world problems.

EuroGP 2018 received 36 submissions from around world. The papers underwent a rigorous double-blind peer review process, each being reviewed by at least three members of the international Program Committee.

The members of the Program Committee encountered an exceptionally high standard this year, with papers proposing innovative and disruptive ideas. Among the papers presented in this volume, 11 were accepted for full-length oral presentation (30.6% acceptance rate) and eight for short talks (52.8% acceptance rate for both categories of papers combined). Authors of both categories of papers also had the opportunity to present their work in poster sessions.

The wide range of topics in this volume reflects the current state of research in the field. Thus, we see topics and applications including analysis of feature importance for metabolomics, semantic methods, evolution of Boolean networks, generation of redundant features, ensembles of GP models, automatic design of grammatical representations, GP and neuroevolution, visual reinforcement learning, evolution of deep neural networks, evolution of graphs, and scheduling in heterogeneous networks.

Together with three other co-located evolutionary computation conferences (EvoCOP 2018, EvoMusArt 2018, and EvoApplications 2018), EuroGP 2018 was part of the Evo* 2018 event. This meeting could not have taken place without the help of

¹ <http://iinwww.ira.uka.de/bibliography/Ai/genetic.programming.html>.

many people. The EuroGP Organizing Committee is particularly grateful to the following.

- SPECIES, the Society for the Promotion of Evolutionary Computation in Europe and Its Surroundings, aiming to promote evolutionary algorithmic thinking within Europe and beyond, and more generally to promote inspiration of parallel algorithms derived from natural processes.
- The high-quality and diverse EuroGP Program Committee. Each year the members give freely of their time and expertise, in order to maintain high standards in EuroGP and provide constructive feedback to help authors improve their papers.
- Marc Schoenauer of Inria-Saclay, France, for his continued hosting and maintaining of the MyReview conference management system.
- Stefano Cagnoni, Monica Mordonini, and the local organizing team from the University of Parma, Italy.
- Pablo García-Sánchez (University of Cádiz, Spain) for the Evo* 2018 publicity and website.
- Our invited speakers, Una May O’Reilly and Penousal Machado, who gave inspiring, enlightening, and entertaining keynote talks.
- The Evo* coordinators: Anna I Esparcia-Alcázar, from Universitat Politècnica de València, Spain, and Jennifer Willies.

April 2018

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