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# Genetic Programming

13th European Conference, EuroGP 2010
Istanbul, Turkey, April 7-9, 2010
Proceedings

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# Preface

In its lucky 12+1 edition, during April 7–9, 2010, the European Conference on Genetic Programming (EuroGP) travelled to its most easterly location so far, the European City of Culture 2010, Istanbul, Turkey. EuroGP is the only conference worldwide exclusively devoted to genetic programming and the evolutionary generation of computer programs.

For over a decade, genetic programming (GP) has been considered the new form of evolutionary computation. With nearly 7,000 articles in the online GP bibliography maintained by William B. Langdon, we can say that it is now a mature field. EuroGP has contributed to the success of the field substantially, by being a unique forum for expressing new ideas, meeting, and starting up collaborations.

The wide range of topics in this volume reflect the current state of research in the field, including representations, theory, operators and analysis, novel models, performance enhancements, extensions of genetic programming, and various applications. The volume contains contributions in the following areas:

- **Understanding GP behavior** and **GP analysis** include articles on crossover operators and a new way of analyzing results.
- **GP performance** presents work on performance enhancements through phenotypic diversity, simplification, fitness and parallelism.
- **Novel models and their application** present innovative approaches with artificial biochemical networks, genetic regulatory networks and geometric differential evolution.
- **Grammatical evolution** introduces advances in crossover, mutation and phenotype–genotype maps in this relatively new area.
- **Machine learning** and **data mining** include articles that present data mining or machine learning solutions using GP and also combine data mining and machine learning with GP.
- **Applications** range from solving differential equations, routing problems to file type detection, object-oriented testing, agents.

This year we received 48 submissions, of which 47 were sent to the reviewers. The papers underwent a rigorous double-blind peer review process, each being reviewed by at least three members of the International Program Committee from 20 different countries. The selection process resulted in this volume, with 21 papers accepted for oral presentation (43.75% acceptance rate) and seven for poster presentation (58.33% global acceptance rate for talks and posters). 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.

EuroGP 2010 was part of the Evo* 2010 event, which included three additional conferences: EvoCOP 2010, EvoBIO 2010 and EvoApplications 2010

(formerly known as EvoWorkshops). Many people helped to make this event a success. Firstly we would like to thank 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. The hard work of both sides resulted in a high-quality conference. The local team (Gülşen Eryiğit, Şule Gündüz Öğüdücü, Sanem Sarıel Talay, Ayşegül Yayımlı) led by A. Şima Uyar must also be thanked: the smooth development of the conference has been their feat. Also thanks to Cecilia Di Chio for helping maintain the official EvoStar website, and to H. Turgut Uyar, who was in charge of the local information website.

We also thank the following institutions for their financial support: Istanbul Technical University, Microsoft Turkey, and the Scientific and Technological Research Council of Turkey.

We would also like to express our sincerest gratitude to our invited speakers, who gave the inspiring keynote talks: Kevin Warwick, of the University of Reading, UK, and Luigi Cavalli-Sforza of the Stanford School of Medicine, USA.

We especially want to express a heartfelt thanks to Jennifer Willies and the Centre for Emergent Computing at Edinburgh Napier University. Ever since its inaugural meeting in 1998 this event has relied on her dedicated work and continued involvement and we do not exaggerate when we state that without her, Evo* could not have achieved its current status.

April 2010

Anna I Esparcia-Alcázar
Anikó Ekárt
Sara Silva
Stephen Dignum
A. Şima Uyar

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Administrative details were handled by Jennifer Willies, Edinburgh Napier University, Centre for Emergent Computing, Scotland, UK.

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