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Evolutionary Computation in Combinatorial Optimization

10th European Conference, EvoCOP 2010
Istanbul, Turkey, April 7-9, 2010
Proceedings

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Preface

Metaheuristics continue to demonstrate their effectiveness for an ever-broadening range of difficult combinatorial optimization problems appearing in a wide variety of industrial, economic, and scientific domains. Prominent examples of metaheuristics are evolutionary algorithms, tabu search, simulated annealing, scatter search, memetic algorithms, variable neighborhood search, iterated local search, greedy randomized adaptive search procedures, ant colony optimization and estimation of distribution algorithms. Problems solved successfully include scheduling, timetabling, network design, transportation and distribution, vehicle routing, the travelling salesman problem, packing and cutting, satisfiability and general mixed integer programming.

EvoCOP began in 2001 and has been held annually since then. It is the first event specifically dedicated to the application of evolutionary computation and related methods to combinatorial optimization problems. Originally held as a workshop, EvoCOP became a conference in 2004. The events gave researchers an excellent opportunity to present their latest research and to discuss current developments and applications. Following the general trend of hybrid metaheuristics and diminishing boundaries between the different classes of metaheuristics, EvoCOP has broadened its scope in recent years and invited submissions on any kind of metaheuristic for combinatorial optimization.

This volume contains the proceedings of EvoCOP 2010, the 10th European Conference on Evolutionary Computation in Combinatorial Optimization. It was held in Istanbul, Turkey, the 2010 European city of culture, during April 7–9, 2010, jointly with EuroGP 2010, the 13th European Conference on Genetic Programming, EvoBIO 2010, the 8th European Conference on Evolutionary Computation, Machine Learning and Data Mining in Bioinformatics, EvoPHD 2010, the 5th European Graduate Student Workshop on Evolutionary Computation, and EvoApplications 2010 (formerly EvoWorkshops), which consisted of the following 12 individual events: 7th European event on the Application of Nature-Inspired Techniques for Telecommunication Networks and other Parallel and Distributed Systems (EvoCOMNET), First European event on Evolutionary Algorithms and Complex Systems (EvoCOMPLEX), Second European Event on Nature-Inspired Methods for Environmental Issues (EvoENVIRONMENT), 4th European Event on Evolutionary and Natural Computation in Finance and Economics (EvoFIN), Second European Event on Bio-inspired Algorithms in Games (EvoGAMES), 12th European Event on Evolutionary Computation in Image Analysis and Signal Processing (EvoIASP), First European Event on Nature-Inspired Methods for Intelligent Systems (EvoINTELLIGENCE), 8th European Event on Evolutionary and Biologically Inspired Music, Sound, Art and Design (EvoMUSART), Third European Event on Bio-inspired algorithms for continuous parameter optimisation (EvoNUM), 7th European Event on Evolutionary

Algorithms in Stochastic and Dynamic Environments (EvoSTOC), and 4th European Event on Evolutionary Computation in Transportation and Logistics (EvoTRANSLOG). Since 2007, all these events have been grouped under the collective name EvoStar, and constitute Europe's premier co-located meetings on evolutionary computation.

Accepted papers of previous EvoCOP editions were published by Springer in the series *Lecture Notes in Computer Science* (LNCS – Volumes 2037, 2279, 2611, 3004, 3448, 3906, 4446, 4972, 5482). Below we report statistics for each conference:

EvoCOP	Submitted	Accepted	Acceptance ratio
2001	31	23	74.2%
2002	32	18	56.3%
2003	39	19	48.7%
2004	86	23	26.7%
2005	66	24	36.4%
2006	77	24	31.2%
2007	81	21	25.9%
2008	69	24	34.8%
2009	53	21	39.6%
2010	69	24	34.8%

The rigorous, double-blind reviewing process of EvoCOP 2010 resulted in a strong selection among the submitted papers; the acceptance rate was 34.8%. Each paper was reviewed by at least three members of the international Program Committee. All accepted papers were presented orally at the conference and are included in this proceedings volume. We would like to acknowledge the members of our Program Committee: we are very grateful for their thorough work. EvoCOP 2010 contributions consist of new algorithms together with important new insights into how well these algorithms can solve prominent test problems from the literature or real-world problems.

To celebrate the tenth anniversary of EvoCOP, we were very pleased to welcome, as plenary speakers, the founders of the EvoCOP series, Günther Raidl from the Vienna University of Technology, Austria and Jens Gottlieb from SAP, Walldorf, Germany. We would also like to express our sincere gratitude to two further internationally renowned invited speakers, who gave keynote talks at the conference: Kevin Warwick from the University of Reading, UK and Luca Cavalli-Sforza from the Stanford School of Medicine, USA.

The success of the conference resulted from the input of many people to whom we would like to express our appreciation. A. Şima (Etaner) Uyar was Local Chair, assisted by Sanem Sariel-Talay, Şule Gündüz-Öğüdücü, Ayşegül Yaymı, Gülşen Cebiroğlu-Eryiğit, H. Turgut Uyar and others from the Computer Engineering Department of Istanbul Technical University. The local organizers did an extraordinary job for which we are very grateful. We thank Marc Schoenauer from INRIA in France for his support with the MyReview conference

management system. We thank Stephen Dignum of the University of Essex, UK, assisted by Cecilia Di Chio of the University of Strathclyde, UK for an excellent website and publicity material. Thanks are also due to Jennifer Willies and the Centre for Emergent Computing at Napier University in Edinburgh, Scotland for administrative support and event coordination. We gratefully acknowledge sponsorship from Istanbul Technical University, Microsoft, and the Scientific and Technological Research Council of Turkey. Last, but not least, we would like to thank Carlos Cotta, Jens Gottlieb, Jano van Hemert, and Günther Raidl for their hard work and dedication in past editions of EvoCOP, which contributed to making this conference one of the reference events in evolutionary computation and metaheuristics.

April 2010

Peter Cowling
Peter Merz

Organization

EvoCOP 2010 was organized jointly with EuroGP 2010, EvoBIO 2010, EvoPHD 2010, and EvoApplications 2010.

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