Metaheuristics have often been shown to be effective for difficult combinatorial optimization problems appearing in various industrial, economical, and scientific domains. Prominent examples of metaheuristics are evolutionary algorithms, simulated annealing, tabu search, scatter search, memetic algorithms, variable neighborhood search, iterated local search, greedy randomized adaptive search procedures, estimation of distribution algorithms, and ant colony optimization. Successfully solved problems include scheduling, timetabling, network design, transportation and distribution, vehicle routing, the traveling salesman problem, satisfiability, packing and cutting, and general mixed integer programming.

EvoCOP began in 2001 and has been held annually since then. It was 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 as well as providing for improved interaction between members of this scientific community. Following the general trend of hybrid metaheuristics and diminishing boundaries between the different classes of metaheuristics, EvoCOP has broadened its scope over the last years and invited submissions on any kind of metaheuristic for combinatorial optimization.

This volume contains the proceedings of EvoCOP 2007, the seventh European Conference on Evolutionary Computation in Combinatorial Optimization. It was held in Valencia, Spain, April 11–13, 2007, jointly with EuroGP 2007, the Tenth European Conference on Genetic Programming, EvoBIO 2007, the Fifth European Conference on Evolutionary Computation and Machine Learning in Bioinformatics, and EvoWorkshops 2007, which consisted of the following seven individual workshops: EvoCOMNET, the Fourth European Workshop on the Application of Nature-Inspired Techniques to Telecommunication Networks and Other Connected Systems; EvoFIN, the First European Workshop on Evolutionary Computation in Finance and Economics; EvoIASP, the Ninth European Workshop on Evolutionary Computation in Image Analysis and Signal Processing; EvoInteraction, the Second European Workshop on Interactive Evolution and Humanized Computational Intelligence; EvoMUSART, the Fifth European Workshop on Evolutionary Music and Art; EvoSTOC, the Fourth European Workshop on Evolutionary Algorithms in Stochastic and Dynamic Environments, and EvoTransLog, the First European Workshop on Evolutionary Computation in Transportation and Logistics. Since 2007, all these events are 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, and 3906).
The rigorous, double-blind reviewing process of EvoCOP 2007 resulted in a strong selection among the submitted papers; the acceptance rate was 25.9%. 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 credit the members of our Program Committee, to whom we are very grateful for their quick and thorough work and the valuable advice on how to improve papers for the final publication. EvoCOP 2007 contributions deal with representations, heuristics, analysis of problem structures, and comparisons of algorithms. The list of studied combinatorial optimization problems includes prominent examples like graph coloring, knapsack problems, the traveling salesperson problem, scheduling, as well as specific real-world problems.

We would like to express our sincere gratitude to the internationally renowned invited speakers who gave the keynote talks at the conference: Ricard V. Solé, head of the Complex Systems Lab at the University Pompeu Fabra, Chris Adami, head of the Digital Life Lab at the California Institute of Technology, and Alan Bundy, from the Centre for Intelligent Systems and their Applications, School of Informatics at the University of Edinburgh.

The success of the conference resulted from the input of many people, to whom we would like to express our appreciation. We thank Marc Schoenauer for providing the Web-based conference management system. The local organizers, led by Anna Isabel Esparcia-Alcázar, did an extraordinary job for which we are very grateful. We thank the Universidad Politécnica de Valencia, Spain, for their institutional and financial support and for providing premises and administrative assistance, the Instituto Tecnológico de Informática in Valencia for cooperation and help with local arrangements, and the Spanish Ministerio de Educación y Ciencia for their financial support. 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. Last, but not least, we would especially like to thank Jens Gottlieb and Günther Raidl for their support and guidance, to whom we owe a lot. From their hard work and dedication, EvoCOP 2007 has now become one of the reference events in evolutionary computation.

April 2007

Carlos Cotta
Jano van Hemert
Organization

EvoCOP 2007 was organized jointly with EuroGP 2007, EvoBIO 2007, and EvoWorkshops 2007.

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