

# Preface

Evolutionary Computation (EC) is a rapidly expanding field of computer science in which problem solving, optimization, and machine learning techniques inspired by genetics and natural selection are studied.

In recent years, a number of studies and results have been reported in the literature which have disclosed the potentials of EC techniques and shown their capability to solve hard problems in several domains.

This volume contains the proceedings of EvoWorkshops 2001, an event including the First European Workshop on Evolutionary Computation in Combinatorial Optimization (EvoCOP), the Second European Workshop on Evolutionary Aeronautics (EvoFlight), the Third European Workshop on Evolutionary Computation in Image Analysis and Signal Processing (EvoIASP), the First European Workshop on Evolutionary Learning (EvoLearn), and the Second European Workshop on Evolutionary Scheduling and Timetabling (EvoSTIM). These workshops were held in Como, Italy, on 18 and 19 April 2001, as part of EuroGP 2001, the Fourth European Conference on Genetic Programming.

EvoCOP focuses on applications of evolutionary algorithms and related heuristic search methods to various combinatorial optimization problems. It also covers general methodological aspects of such algorithms like operator analyses, search dynamics, fitness landscapes, and algorithmic comparisons, which are the driving force in gaining a better understanding of evolutionary search and hence support the design of effective evolutionary algorithms for combinatorial optimization problems of practical relevance.

EvoFlight is aimed at bringing together researchers and industrial parties to discuss the use of evolutionary computation in aerospace.

EvoIASP, held in 2001 for the third time, was the first event ever specifically dedicated to the applications of EC to image analysis and signal processing.

The aim of EvoLearn is to provide an opportunity for people interested in algorithms which “learn through evolution” to share ideas, discuss the current state of research, and to discuss the future directions of this particular area of Evolutionary Computation.

EvoSTIM presents the latest results in the fields of scheduling and timetabling, that are amongst the most successful applications of evolutionary techniques.

It was the aim of all workshops to give European and non-European researchers in these fields, as well as people from industry, an opportunity to present their latest research, discuss current developments and applications, besides fostering closer future interaction between members of all scientific communities that may benefit from the application of EC techniques.

EvoWorkshops 2001 were sponsored by EvoNet, the European Network of Excellence in Evolutionary Computation, as activities of EvoFlight, EvoIASP, EvoStim, the working groups on Evolutionary Aeronautics, on Evolutionary Image

Analysis and Signal Processing, on Evolutionary Scheduling and Timetabling of EvoNet, and of several other EvoNet members.

Fifty-two papers were accepted for publication out of 75 submissions, making EvoWorkshops 2001 the largest of the three events held since 1999. We are extremely grateful to all members of the program committee for their quick and thorough work.

April 2001

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Stefano Cagnoni  
Jens Gottlieb  
Emma Hart  
Pier Luca Lanzi  
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Robert E. Smith  
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# Organization

EvoWorkshops 2001 was organized by EvoNet as part of EuroGP 2001.

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EvoCOP co-chair:	Günther R. Raidl, Vienna University of Technology, Austria
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EvoFlight co-chair:	Harald Tijink, NLR, The Netherlands
EvoIASP chair:	Stefano Cagnoni, University of Parma, Italy
EvoLearn chair:	Pier Luca Lanzi, Polytechnic of Milan, Italy
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## Sponsoring Institution

EvoNet, the Network of Excellence on Evolutionary Computing.

Applications of Evolutionary Computing

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