Preface

These proceedings contain the papers presented at the 9th *Annual Genetic and Evolutionary Computation COnference* (GECCO-2007), held in London, UK, July 7-11, 2007.

For the first time GECCO was held outside the US. This clearly proved to be a success: a record number of 577 papers were submitted for review, an increase of nearly 30% when compared to last year. Of these 577 papers, 266 were accepted as an 8-page publication and a 25 minutes oral presentation at the conference. This represents an acceptance rate of 46.1%. In addition, 210 papers were accepted as poster presentation with a single-page abstract included in the proceedings. Initially, we had planned for two-page abstracts but the number of submissions made this impossible. We have reached the physical limit on the number of pages in 2-volume printed proceedings.

GECCO is a somewhat unusual conference with its concept of *one conference, many mini-conferences*. This year, there were 14 separate tracks that operated independently from each other. All tracks have their own track chair(s) and program committee. A member of a track's program committee is not allowed to simultaneously be a member of another track's committee. To reduce any bias reviewers might have all reviews were conducted double blind. No author's names were included in the reviewed papers. About 475 researchers participated in the reviewing process. Their work is much appreciated and it is absolutely vital for the quality of the conference.

GECCO-2007 welcomed two new tracks: one on Generative and Developmental Systems and another on Formal Theory. In addition to the presentation of the papers contained in these proceedings, GECCO-2007 also included 16 workshops, 41 free tutorials, a series of sessions on Evolutionary Computation in Practice, late-breaking papers, and awards in human-competitive results.

The 21 track chairs deserve special thanks for their efforts in assembling their program committee, performing the paper assignments, and finally making the difficult acceptance or rejection decisions. Track chairs were not allowed to accept more than 50% of the track's submissions as full paper. This upper bound on the acceptance rate represents a healthy selection pressure in order to preserve the quality of the conference. In addition to the track chairs mentioned below a special word of thanks goes to Pat Cattolico whose help was invaluable for getting all the non-scientific issues right, and of course to Hod Lipson, the general chair of GECCO-2007. A

The scientific quality of the conference as well as that of the proceedings is ensured by principles laid down in the GECCO by-laws of SIGEVO:

(i)   The GECCO conference shall be a broad-based conference encompassing the whole field of genetic and evolutionary computation.

(ii)   Papers will be published and presented as part of the main conference proceedings only after being peer reviewed. No invited papers shall be published (except for those of up to three invited plenary speakers).

(iii)   The peer review process shall be conducted consistent with the principle of division of powers performed by a multiplicity of independent program committees, each with expertise in the area of the paper being reviewed.

(iv)   The determination of the policy for the peer review process for each of the conference's independent program committees and the reviewing of papers for each program committee shall be performed by persons who occupy their positions by virtue of meeting objective and explicitly stated qualifications based on their previous scientific research activity or applications activity.

(v) Emerging areas within the field of genetic and evolutionary computation shall be actively encouraged and incorporated in the activities of the conference by providing a semi-automatic method for their inclusion into the activities of the conference (with some procedural flexibility being extended to such emerging new areas).

(vi) The percentage of submitted papers that are accepted as regular papers (i.e., papers other than poster papers) shall not exceed 50%.

Track Name	*Track Chair(s)*
Ant Colony Optimization, Swarm Intelligence, and Artificial Immune Systems	**Mauro Birattari and Thomas Stützle**
Artificial Life, Evolutionary Robotics, Adaptive Behavior, Evolvable Hardware	**Josh Bongard**
Biological Applications	**Clare Bates Congdon and Jason H. Moore**
Coevolution	**Richard Watson**
Estimation of Distribution Algorithms	**Martin Pelikan**
Evolutionary Multiobjective Optimization	**Kalyanmoy Deb**
Evolutionary Strategies, Evolutionary Programming	**Hans-Georg Beyer**
Formal Theory	**Benjamin Doerr, Frank Neumann and Ingo Wegener**
Generative and Developmental Systems	**Sanjeev Kumar, Julian Miller and Ken Stanley**
Genetic Algorithms	**Jürgen Branke and Kumara Sastry**
Genetic Programming	**Riccardo Poli**
Genetics-Based Machine Learning and Learning Classifier Systems	**Tim Kovacs**
Real-World Application	**Dave Cliff**
Search-based Software Engineering	**John Clark**

Finally, special thanks are due to the numerous researchers and practitioners, who submitted their best work to GECCO-2007, presented a tutorial, organized a workshop, or volunteered their time in any other way.

Dirk Thierens
Editor-in-Chief