

Preface

These proceedings contain the papers presented at the 5th Annual Genetic and Evolutionary Computation Conference (GECCO 2003). The conference was held in Chicago, USA, July 12–16, 2003.

A total of 417 papers were submitted to GECCO 2003. After a rigorous doubleblind reviewing process, 194 papers were accepted for full publication and oral presentation at the conference, resulting in an acceptance rate of 46.5%. An additional 92 submissions were accepted as posters with two-page extended abstracts included in these proceedings.

This edition of GECCO was the union of the 8th Annual Genetic Programming Conference (which has met annually since 1996) and the 12th International Conference on Genetic Algorithms (which, with its first meeting in 1985, is the longest running conference in the field). Since 1999, these conferences have merged to produce a single large meeting that welcomes an increasingly wide array of topics related to genetic and evolutionary computation.

Possibly the most visible innovation in GECCO 2003 was the publication of the proceedings with Springer-Verlag as part of their Lecture Notes in Computer Science series. This will make the proceedings available in many libraries as well as online, widening the dissemination of the research presented at the conference.

Other innovations included a new track on Coevolution and Artificial Immune Systems and the expansion of the DNA and Molecular Computing track to include quantum computation.

In addition to the presentation of the papers contained in these proceedings, the conference included 13 workshops, 32 tutorials by leading specialists, and presentation of late-breaking papers.

GECCO is sponsored by the International Society for Genetic and Evolutionary Computation (ISGEC). The ISGEC by-laws contain explicit guidance on the organization of the conference, including the following principles:

(i) GECCO should 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 consistently 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 research 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 semiautomatic method for their inclusion (with some procedural flexibility extended to such emerging new areas).

(vi) The percentage of submitted papers that are accepted as regular full-length papers (i.e., not posters) shall not exceed 50%.

These principles help ensure that GECCO maintains high quality across the diverse range of topics it includes.

Besides sponsoring the conference, ISGEC supports the field in other ways. ISGEC sponsors the biennial Foundations of Genetic Algorithms workshop on theoretical aspects of all evolutionary algorithms. The journals *Evolutionary Computation* and *Genetic Programming and Evolvable Machines* are also supported by ISGEC. All ISGEC members (including students) receive subscriptions to these journals as part of their membership. ISGEC membership also includes discounts on GECCO and FOGA registration rates as well as discounts on other journals. More details on ISGEC can be found online at <http://www.isgec.org>.

Many people volunteered their time and energy to make this conference a success. The following people in particular deserve the gratitude of the entire community for their outstanding contributions to GECCO:

James A. Foster, the General Chair of GECCO for his tireless efforts in organizing every aspect of the conference.

David E. Goldberg and John Koza, members of the Business Committee, for their guidance and financial oversight.

Alwyn Barry, for coordinating the workshops.

Bart Rylander, for editing the late-breaking papers.

Past conference organizers, William B. Langdon, Erik Goodman, and Darrell Whitley, for their advice.

Elizabeth Ericson, Carol Hamilton, Ann Stolberg, and the rest of the AAAI staff for their outstanding efforts administering the conference.

Gerardo Valencia and Gabriela Coronado, for Web programming and design.

Jennifer Ballentine, Lee Ballentine and the staff of Professional Book Center, for assisting in the production of the proceedings.

Alfred Hofmann and Ursula Barth of Springer-Verlag for helping to ease the transition to a new publisher.

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Air Force Office of Scientific Research

DaimlerChrysler

National Science Foundation

Naval Research Laboratory

New Light Industries

Philips Research

Sun Microsystems

The track chairs deserve special thanks. Their efforts in recruiting program committees, assigning papers to reviewers, and making difficult acceptance decisions in relatively short times, were critical to the success of the conference:

A-Life, Adaptive Behavior, Agents, and Ant Colony Optimization,
 Russell Standish
 Artificial Immune Systems, Dipankar Dasgupta
 Coevolution, Graham Kendall
 DNA, Molecular, and Quantum Computing, Natasha Jonoska
 Evolution Strategies, Evolutionary Programming, Hans-Georg Beyer
 Evolutionary Robotics, Alan Schultz, Mitch Potter
 Evolutionary Scheduling and Routing, Kathryn A. Dowsland
 Evolvable Hardware, Julian Miller
 Genetic Algorithms, Kalyanmoy Deb
 Genetic Programming, Una-May O'Reilly
 Learning Classifier Systems, Stewart Wilson
 Real-World Applications, David Davis, Rajkumar Roy
 Search-Based Software Engineering, Mark Harman, Joachim Wegener

The conference was held in cooperation and/or affiliation with:

American Association for Artificial Intelligence (AAAI)
 Evonet: the Network of Excellence in Evolutionary Computation
 5th NASA/DoD Workshop on Evolvable Hardware
Evolutionary Computation
Genetic Programming and Evolvable Machines
Journal of Scheduling
Journal of Hydroinformatics
Applied Soft Computing

Of course, special thanks are due to the numerous researchers who submitted their best work to GECCO, reviewed the work of others, presented a tutorial, organized a workshop, or volunteered their time in any other way. I am sure you will be proud of the results of your efforts.

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