

GECCO 2003 Conference Organization

Conference Committee

General Chair: James A. Foster

Proceedings Editor-in-Chief: Erick Cantú-Paz

Business Committee: David E. Goldberg, John Koza, J.A. Foster

Chairs of Program Policy Committees:

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, Mitchell A. Potter and Alan C. Schultz

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 and Joachim Wegener

Workshops Chair: Alwyn Barry

Late-Breaking Papers Chair: Bart Rylander

Workshop Organizers

Biological Applications for Genetic and Evolutionary Computation (Bio GEC 2003), Wolfgang Banzhaf, James A. Foster

Application of Hybrid Evolutionary Algorithms to NP-Complete Problems, Francisco Baptista Pereira, Ernesto Costa, Günther Raidl

Evolutionary Algorithms for Dynamic Optimization Problems, Jürgen Branke

Hardware Evolutionary Algorithms and Evolvable Hardware (HEAEH 2003), John C. Gallagher

Graduate Student Workshop, Maarten Keijzer, Sean Luke, Terry Riopka

Workshop on Memetic Algorithms 2003 (WOMA-IV), Peter Merz, William E. Hart, Natalio Krasnogor, Jim E. Smith

Undergraduate Student Workshop, Mark M. Meysenburg

Learning, Adaptation, and Approximation in Evolutionary Computation, Sibylle Mueller, Petros Koumoutsakos, Marc Schoenauer, Yaochu Jin, Sushil Louis, Khaled Rasheed

Grammatical Evolution Workshop (GEWS 2003), Michael O'Neill, Conor Ryan

Interactive Evolutionary Search and Exploration Systems, Ian Parmee

Analysis and Design of Representations and Operators (ADoRo 2003), Franz Rothlauf, Dirk Thierens

Challenges in Real-World Optimisation Using Evolutionary Computing, Rajkumar Roy, Ashutosh Tiwari

International Workshop on Learning Classifier Systems, Wolfgang Stolzmann, Pier-Luca Lanzi, Stewart Wilson

Tutorial Speakers

Parallel Genetic Algorithms, Erick Cantú-Paz

Using Appropriate Statistics, Steffan Christensen

Multiobjective Optimization with EC, Carlos Coello

Making a Living with EC, Yuval Davidor

A Unified Approach to EC, Ken DeJong

Evolutionary Robotics, Dario Floreano

Immune System Computing, Stephanie Forrest

The Design of Innovation & Competent GAs, David E. Goldberg

Genetic Algorithms, Robert Heckendorn

Evolvable Hardware Applications, Tetsuya Higuchi

Bioinformatics with EC, Daniel Howard

Visualization in Evolutionary Computation, Christian Jacob

Data Mining and Machine Learning, Hillol Kargupta

Evolvable Hardware, Didier Keymeulen

Genetic Programming, John Koza

Genetic Programming Theory I & II, William B. Langdon, Riccardo Poli

Ant Colony Optimization, Martin Middendorf

Bionics: Building on Biological Evolution, Ingo Rechenberg

Grammatical Evolution, C. Ryan, M. O'Neill

Evolution Strategies, Hans-Paul Schwefel

Quantum Computing, Lee Spector

Anticipatory Classifier Systems, Wolfgang Stolzmann

Mathematical Theory of EC, Michael Vose

Computational Complexity and EC, Ingo Wegener

Software Testing via EC, J. Wegener, M. Harman

Testing & Evaluating EC Algorithms, Darrell Whitley

Learning Classifier Systems, Stewart Wilson

Evolving Neural Network Ensembles, Xin Yao

Neutral Evolution in EC, Tina Yu

Genetics, Annie S. Wu

Keynote Speakers

John Holland, "The Future of Genetic Algorithms"

Richard Lenski, "How the Digital Leopard Got His Spots: Thinking About Evolution Inside the Box"

Members of the Program Committee

Hussein Abbass	Stefano Cagnoni	Stefan Droste
Adam Adamopoulos	Xiaoqiang Cai	Marc Ebner
Alexandru Agapie	Erick Cantú-Paz	R. Timothy Edwards
José Aguilar	Uday Chakraborty	Norberto Eiji Nawa
Jesús Aguilar	Weng-Tat Chan	Aniko Ekart
Hernán Aguirre	Alastair Channon	Christos Emmanouilidis
Chang Wook Ahn	Ying-Ping Chen	Hector Erives
Uwe Aickelin	Shu-Heng Chen	Felipe Espinoza
Enrique Alba	Junghuei Chen	Matthew Evett
Javier Alcaraz Soria	Prabhas Chongstitvatana	Zhun Fan
Dirk Arnold	John Clark	Marco Farina
Tughrul Arslan	Lattaud Claude	Robert Feldt
Atif Azad	Manuel Clergue	Francisco Fernández
Meghna Babbar	Carlos Coello Coello	Sevan Ficici
Vladan Babovic	David Coley	Peter John Fleming
B.V. Babu	Philippe Collard	Stuart Flockton
Thomas Bäck	Pierre Collet	Dario Floreano
Julio Banga	Clare Bates Congdon	Cyril Fonlupt
Francisco Baptista Pereira	David Corne	Carlos Fonseca
Alwyn Barry	Ernesto Costa	Stephanie Forrest
Cem Baydar	Peter Cowling	Alex Freitas
Thomas Beielstein	Bart Craenen	Clemens Frey
Theodore Belding	Jose Cristóbal Riquelme	Chunsheng Fu
Fevzi Belli	Santos	Christian Gagne
Ester Bernardo-Mansilla	Keshav Dahal	M. Gargano
Tom Bersano-Begey	Paul Darwen	Ivan Garibay
Hugues Bersini	Dipankar Dasgupta	Josep Maria Garrell i Guiu
Hans-Georg Beyer	Lawrence Davis	Alessio Gaspar
Filipic Bogdan	Anthony Deakin	Michel Gendreau
Andrea Bonarini	Kalyanmoy Deb	Zhou Gengui
Lashon Booker	Ivanoe De Falco	Pierre Gérard
Peter Bosman	Hugo De Garis	Andreas Geyer-Schulz
Terry Bossomaier	Antonio Della Cioppa	Tushar Goel
Klaus Bothe	A. Santos Del Riego	Fabio Gonzalez
Leonardo Bottaci	Brahma Deo	Jens Gottlieb
Jürgen Branke	Dirk Devogelaere	Kendall Graham
Wilker Bruce	Der-Rong Din	Buster Greene
Peter Brucker	Phillip Dixon	John Grefenstette
Anthony Bucci	Jose Dolado Cosin	Darko Grundler
Dirk Bueche	Marco Dorigo	Dongbing Gu
Magdalena Bugajska	Keith Downing	Steven Gustafson
Larry Bull	Kathryn Dowsland	Charles Guthrie
Edmund Burke	Gerry Dozier	Pauline Haddow
Martin Butz	Rolf Drechsler	Hani Hagras

Hisashi Handa	Kalmanje Krishnakumar	Martin Middendorf
Georges Harik	Renato Krohling	Risto Miikkulainen
Mark Harman	Sam Kwong	Julian Miller
Emma Hart	Gary Lamont	Brian Mitchell
William Hart	William Langdon	Chilukuri Mohan
Inman Harvey	Pedro Larrañaga	David Montana
Michael Herdy	Jesper Larse	Byung-Ro Moon
Jeffrey Hermann	Marco Laumanns	Frank Moore
Arturo Hernández	Paul Layzell	Alberto Moraglio
Aguirre	Martin Lefley	Manuel Moreno
Francisco Herrera	Claude Le Pape	Yunjun Mu
Jürgen Hesser	Kwong Sak Leung	Sibylle Mueller
Robert Hierons	Warren Liao	Masaharu Munetomo
Mika Hirvensalo	Derek Linden	Kazuyuki Murase
John Holmes	Michael Littman	William Mydlowec
Tadashi Horiuchi	Xavier Llorca	Zensho Nakao
Daniel Howard	Fernando Lobo	Tomoharu Nakashima
William Hsu	Jason Lohn	Olfa Nasraoui
Jianjun Hu	Michael Lones	Bart Naudts
Jacob Hurst	Sushil Louis	Mark Neal
Hitoshi Iba	Manuel Lozano	Chrystopher Nehaniv
Kosuke Imamura	Jose Antonio Lozano	David Newth
Iñaki Inza	Jose Lozano	Miguel Nicolau
Christian Jacob	Pier Luca Lanzi Sean Luke	Nikolay Nikolaev
Thomas Jansen	John Lusth	Fernando Nino
Segovia Javier	Evelyne Lutton	Stefano Nolfi
Yaochu Jin	Nicholas Macias	Peter Nordin
Bryan Jones	Ana Madureira	Bryan Norman
Natasha Jonoska	Spiros Mancoridis	Wim Nuijten
Hugues Juille	Martin Martin	Leandro Nunes De Castro
Bryant Julstrom	Pete Martin	Gabriela Ochoa
Mahmoud Kaboudan	Arita Masanori	Victor Oduguwa
Charles Karr	Iwata Masaya	Charles Ofria
Balakrishnan Karthik	Keith Mathias	Gustavo Olague
Sanza Kazadi	Dirk Mattfeld	Markus Olhofer
Maarten Keijzer	Giancarlo Mauri	Michael O'Neill
Graham Kendall	David Mayer	Una-May O'Reilly
Didier Keymeulen	Jon McCormack	Franz Oppacher
Michael Kirley	Robert McKay	Jim Ouimette
Joshua Knowles	Nicholas McPhee	Charles Palmer
Gabriella Kokai	Lisa Meeden	Liviu Panait
Arthur Kordon	Jörn Mehnen	Gary Parker
Bogdan Korel	Karlheinz Meier	Anil Patel
Erkan Korkmaz	Ole Mengshoel	Witold Pedrycz
Tim Kovacs	Mark Meysenburg	Martin Pelikan
Natalio Krasnogor	Zbigniew Michalewicz	Marek Perkowski

Sanja Petrovic	Sandip Sen	Paolo Toth
Hartmut Pohlheim	Bernhard Sendhoff	Michael Trick
Riccardo Poli	Kisung Seo	Shigeyoshi Tsutsui
Tom Portegys	Franciszek Seredynski	Andy Tyrrell
Reid Porter	Jane Shaw	Jano Van Hemert
Marie-Claude Portmann	Martin Shepperd	Clarissa Van Hoyweghen
Mitchell A. Potter	Alaa Sheta	Leonardo Vanneschi
Walter Potter	Robert Shipman	David Van Veldhuizen
Jean-Yves Potvin	Olivier Sigaud	Robert Vanyi
Dilip Pratihar	Anabela Simões	Manuel Vazquez-
Alexander Pretschner	Mark Sinclair	Otomuro
Adam Prügel-Bennett	Abhishek Singh	Oswaldo Vélez-Langs
William Punch	Andre Skusa	Hans-Michael Voigt
Günther Raidl	Jim Smith	Roger Wainwright
Khaled Rasheed	Robert Smith	Matthew Wall
Tom Ray	Donald Sofge	Jean-Paul Watson
Tapabrata Ray	Alan Soper	Ingo Wegener
Victor Raymond-Smith	Terence Soule	Joachim Wegener
Patrick Reed	Lee Spector	Karsten Weicker
John Reif	Andreas Spillner	Peter Whigham
Andreas Reinholz	Russell Standish	Ronald While
Rick Riolo	Harmen Sthamer	Darrell Whitley
Jose Riquelme	Adrian Stoica	R. Paul Wiegand
Denis Robilliard	Wolfgang Stolzmann	Kay Wiese
Katya Rodriguez-Vazquez	Matthew Streeter	Dirk Wiesmann
Marc Roper	V. Sundararajan	Janet Wile
Brian Ross	Gil Syswerda	Janet Wiles
Franz Rothlauf	Walter Tackett	Wendy Williams
Jon Rowe	Keiki Takadama	Stewart Wilson
Rajkumar Roy	Uwe Tangen	Mark Wineberg
Günter Rudolph	Alexander Tarakanov	Alden Wright
Thomas Runarsson	Ernesto Tarantino	Annie Wu
Conor Ryan	Gianluca Tempesti	Zheng Wu
Bart Rylander	Hugo Terashima-Marin	Chia-Hsuan Yeh
Kazuhiro Saitou	Sam Thangiah	Ayse Yilmaz
Ralf Salomon	Scott Thayer	Tian-Li Yu
Eugene Santos	Lothar Thiele	Tina Yu
Kumara Sastry	Dirk Thierens	Hongnian Yu
Yuji Sato	Adrian Thompson	Ricardo Zebulum
David Schaffer	Jonathan Thompson	Andreas Zell
Martin Schmidt	Jonathan Timmis	Byoung-Tak Zhang
Thorsten Schnier	Ashutosh Tiwari	Lyudmila A. Zinchenko
Marc Schoenauer	Marco Tomassini	
Sonia Schulenburg	Andy Tomlinson	
Alan C. Schultz	Jim Torresen	

A Word from the Chair of ISGEC

You may have just picked up your proceedings, in hard copy and CD-ROM, at GECCO 2003, or purchased it after the conference. You've doubtless already noticed the new format – publishing our proceedings as part of Springer's Lecture Notes in Computer Science (LNCS) series will make them available in many more libraries, broadening the impact of the GECCO conference dramatically!

If you attended GECCO 2003, we, the organizers, hope your experience was memorable and productive, and you have found these proceedings to be of continuing value. The opportunity for first-hand interaction among authors and other participants in GECCO is a big part of what makes it exciting, and we all hope you came away with many new insights and ideas.

If you were unable to come to GECCO 2003 in person, I hope you'll find many stimulating ideas from the world's leading researchers in evolutionary computation reported in these proceedings, and that you'll be able to participate in a future GECCO – for example, next year, in Seattle!

The International Society for Genetic and Evolutionary Computation, the sponsoring organization of the annual GECCO conferences, is a young organization, formed through the merger of the International Society for Genetic Algorithms (sponsor of the ICGA conferences) and the organization responsible for the annual Genetic Programming conferences. It depends strongly on the voluntary efforts of many of its members. It is designed to promote not only the exchange of ideas among innovators and practitioners of well-known methods such as genetic algorithms, genetic programming, evolution strategies, evolutionary programming, learning classifier systems, etc., but also the growth of newer areas such as artificial immune systems, evolvable hardware, agentbased search, and others. One of the founding principles is that ISGEC operates as a confederation of groups with related but distinct approaches and interests, and their mutual prosperity is assured by their representation in the program committees, editorial boards, etc., of the conferences and journals with which ISGEC is associated. This also insures that ISGEC and its functions continue to improve and evolve with the diversity of innovation that has characterized our field.

ISGEC has seen many changes this year, in addition to its growth in membership. We have completed the formalities for recognition as a tax-exempt charitable organization. We have created the new designations of Fellow and Senior Fellow of ISGEC to recognize the achievements of leaders in the field, and by the time you read this, we expect to have elected the first cohort. Additional Fellows and Senior Fellows will be added annually. GECCO continues to be subject to dynamic development – the many new tutorials, workshop topics, and tracks will evolve again next year, seeking to follow and encourage the developments of the many fields represented at GECCO. The best paper awards were presented for the second time at GECCO 2003, and we hope many of you participated in the balloting. This year, for the first time, most presentations at GECCO

were electronic, displayed with the LCD projectors that ISGEC has recently purchased. Our journals, *Evolutionary Computation* and *Genetic Programming and Evolvable Machines*, continue to prosper, and we are exploring ways to make them even more widely available. The inclusion of the proceedings in Springer's Lecture Notes in Computer Science series, making them available in many more libraries worldwide, should have a strong positive impact on our field.

ISGEC is your society, and we urge you to become involved or continue your involvement in its activities, to the mutual benefit of the whole evolutionary computation community. Three members were elected to new five-year terms on the Executive Board at GECCO 2002 – Wolfgang Banzhaf, Marco Dorigo, and Annie Wu.

Since that time, ISGEC has been active on many issues, through actions of the Board and the three Councils – the Council of Authors, Council of Editors, and Council of Conferences.

The organizers of GECCO 2003 are listed in this frontmatter, but special thanks are due to James Foster, General Chair, and Erick Cantú-Paz, Editor-in-Chief of the Proceedings, as well as to John Koza and Dave Goldberg, the Business Committee. All of the changes this year, particularly in the publication of the proceedings, have meant a lot of additional work for this excellent team, and we owe them our thanks for a job well done.

Of course, we all owe a great debt to those who chaired or served on the various core and special program committees that reviewed all of the papers for GECCO 2003. Without their effort it would not have been possible to put on a meeting of this quality.

Another group also deserves the thanks of GECCO participants and ISGEC members – the members of the ISGEC Executive Board and Councils, who are listed below. I am particularly indebted to them for their thoughtful contributions to the organization and their continuing demonstrations of concern for the welfare of ISGEC.

I invite you to communicate with me (goodman@egr.msu.edu) if you have questions or suggestions for ways ISGEC can be of greater service to its members, or if you would like to get more involved in ISGEC and its functions.

Don't forget about the 8th Foundations of Genetic Algorithms (FOGA) workshop, also sponsored by ISGEC, the biennial event that brings together the world's leading theorists on evolutionary computation, which will be held in 2004.

Finally, I hope you will join us at GECCO 2004 in Seattle. Get your ideas to Ricardo Poli, the General Chair of GECCO 2004, when you see him at GECCO 2003, and please check the ISGEC Website, www.isgtec.org, regularly for details as the planning for GECCO 2004 continues.

Erik D. Goodman

ISGEC Executive Board

Erik D. Goodman (Chair)
David Andre
Wolfgang Banzhaf
Kalyanmoy Deb
Kenneth De Jong
Marco Dorigo
David E. Goldberg
John H. Holland
John R. Koza
Una-May O'Reilly
Ingo Rechenberg
Marc Schoenauer
Lee Spector
Darrell Whitley
Annie S. Wu

Council of Authors

Erick Cantú-Paz (chair), Lawrence Livermore National Laboratory
David Andre, University of California – Berkeley
Plamen P. Angelov, Loughborough University
Vladan Babovic, Danish Hydraulic Institute
Wolfgang Banzhaf, University of Dortmund
Forrest H. Bennett III, FX Palo Alto Laboratory, Inc.
Hans-Georg Beyer, University of Dortmund
Jergen Branke, University of Karlsruhe
Martin Butz, University of Illinois at Urbana-Champaign
Runwei Cheng, Ashikaga Institute of Technology
David A. Coley, University of Exeter
Marco Dorigo, IRIDIA, Université Libre de Bruxelles
Rolf Drechsler, University of Freiburg
Emanuel Falkenauer, Optimal Design and Brussels University (ULB)
Stephanie Forrest, University of New Mexico
Mitsuo Gen, Ashikaga Institute of Technology
Andreas Geyer-Schulz, Abteilung fuer Informationswirtschaft
David E. Goldberg, University of Illinois at Urbana-Champaign
Jens Gottlieb, SAP, AG
Wolfgang A. Halang, Fernuniversitaet
John H. Holland, University of Michigan and Sante Fe Institute
Hitoshi Iba, University of Tokyo
Christian Jacob, University of Calgary
Robert E. Keller, University of Dortmund
Dimitri Knjazew, SAP, AG

John R. Koza, Stanford University
Sam Kwong, City University of Hong Kong
William B. Langdon, University College, London
Dirk C. Mattfeld, University of Bremen
Pinaki Mazumder, University of Michigan
Zbigniew Michalewicz, University of North Carolina at Charlotte
Melanie Mitchell, Oregon Health and Science University
Ian Parmee, University of North Carolina at Charlotte
Frederick E. Petry, University of North Carolina at Charlotte
Riccardo Poli, University of Essex
Moshe Sipper, Swiss Federal Institute of Technology
William M. Spears, University of Wyoming
Wallace K.S. Tang, Swiss Federal Institute of Technology
Adrian Thompson, University of Sussex
Michael D. Vose, University of Tennessee
Man Leung Wong, Lingnan University

Council of Editors

Erick Cantú-Paz (chair), Lawrence Livermore National Laboratory
Karthik Balakrishnan, Fireman's Fund Insurance Company
Wolfgang Banzhaf, University of Dortmund
Peter Bentley, University College, London
Lance D. Chambers, Western Australian Department of Transport
Dipankar Dasgupta, University of Memphis
Kenneth De Jong, George Mason University
Francisco Herrera, University of Granada
William B. Langdon, University College, London
Pinaki Mazumder, University of Michigan
Eric Michielssen, University of Illinois at Urbana-Champaign
Witold Pedrycz, University of Alberta
Rajkumar Roy, Cranfield University
Elizabeth M. Rudnick, University of Illinois at Urbana-Champaign
Marc Schoenauer, INRIA Rocquencourt
Lee Spector, Hampshire College
Jose L. Verdegay, University of Granada, Spain

Council of Conferences, Riccardo Poli (Chair)

The purpose of the Council of Conferences is to provide information about the numerous conferences that are available to researchers in the field of Genetic and Evolutionary Computation, and to encourage them to coordinate their meetings to maximize our collective impact on science.

- ACDM, Adaptive Computing in Design and Manufacture, 2004, Ian Parmee (Ian.Parmee@uwe.ac.uk)
- EuroGP, European Conference on Genetic Programming, Portugal, April 2004, Ernesto Costa (ernesto@dei.uc.pt)
- EvoWorkshops, European Evolutionary Computing Workshops, Portugal, April 2004, Stefano Cagnoni (cagnoni@ce.unipr.it)
- FOGA, Foundations of Genetic Algorithms Workshop, 2004
- GECCO 2004, Genetic and Evolutionary Computation Conference, Seattle, June 2004, Riccardo Poli (rpoli@essex.ac.uk)
- INTROS, INtroductory TutoRials in Optimization, Search and Decision Support Methodologies, August 12, 2003, Nottingham, UK, Edmund Burke (ekb@cs.nott.ac.uk)
- MISTA, 1st Multidisciplinary International Conference on Scheduling: Theory and Applications August 8-12, 2003, Nottingham, UK, Graham Kendall (gzk@cs.nott.ac.uk)
- PATAT 2004, 5th International Conference on the Practice and Theory of Automated Timetabling, Pittsburgh, USA, August 18-20, 2004, Edmund Burke (ekb@cs.nott.ac.uk)
- WSC8, 8th Online World Conference on Soft Computing in Industrial Applications, September 29th - October 10th, 2003, Internet (hosted by University of Dortmund), Frank Hoffmann (hoffmann@esr.e-technik.uni-dortmund.de)
- An up-to-date roster of the Council of Conferences is available online at <http://www.isgec.org/conferences.html>.

Please contact the COC chair Riccardo Poli (rpoli@essex.ac.uk) for additions to this list.

Papers Nominated for Best Paper Awards

In 2002, ISGEC created a best paper award for GECCO. As part of the double blind peer review, the reviewers were asked to nominate papers for best paper awards. The chairs of core and special program committees selected the papers that received the most nominations for consideration by the conference. One winner for each program track was chosen by secret ballot of the GECCO attendees after the papers were presented in Chicago. The titles and authors of the winning papers are available at the GECCO 2003 website (www.isgec.org/GECCO-2003).

- Finite Population Models of Co-evolution and Their Application to Haploidy versus Diploidy, Anthony M.L. Liekens, Huub M.M. ten Eikelder, and Peter A.J. Hilbers
- A Game-Theoretic Memory Mechanism for Coevolution, Sevan G. Ficici and Jordan B. Pollack
- A Non-dominated Sorting Particle Swarm Optimizer for Multiobjective Optimization, Xiaodong Li
- Emergence of Collective Behavior in Evolving Populations of Flying Agents, Lee Spector, Jon Klein, Chris Perry, and Mark Feinstein

- Immune Inspired Somatic Contiguous Hypermutation for Function Optimisation, Johnny Kelsey and Jon Timmis
- Efficiency and Reliability of DNA-Based Memories, Max H. Garzon, Andrew Neel, and Hui Chen
- Hardware Evolution of Analog Speed Controllers for a DC Motor, D.A. Gwaltney and M.I. Ferguson
- Integration of Genetic Programming and Reinforcement Learning for Real Robots, Shotaro Kamio, Hideyuki Mitsuhashi, and Hitoshi Iba
- Co-evolving Task-Dependent Visual Morphologies in Predator-Prey Experiments, Gunnar Buason and Tom Ziemke
- The Steady State Behavior of $(\mu/\mu_I, \lambda)$ -ES on Ellipsoidal Fitness Models Disturbed by Noise, Hans-Georg Beyer and Dirk V. Arnold
- On the Optimization of Monotone Polynomials by the (1+1) EA and Randomized Local Search, Ingo Wegener and Carsten Witt
- Ruin and Recreate Principle Based Approach for the Quadratic Assignment Problem, Alfonsas Misevicius
- Evolutionary Computing as a tool for Grammar Development, Guy De Pauw
- Adaptive Elitist-Population Based Genetic Algorithm for Multimodal Function Optimization, Kwong-Sak Leung and Yong Liang
- Scalability of Selectorecombinative Genetic Algorithms for Problems with Tight Linkage, Kumara Sastry and David E. Goldberg
- Effective Use of Directional Information in Multi-objective Evolutionary Computation, Martin Brown and R.E. Smith
- Are Multiple Runs of Genetic Algorithms Better Than One? Erick Cantú-Paz and David E. Goldberg
- Selection in the Presence of Noise, Jürgen Branke and Christian Schmidt
- Difficulty of Unimodal and Multimodal Landscapes in Genetic Programming, Leonardo Vanneschi, Marco Tomassini, Manuel Clergue, and Philippe Collard
- Dynamic Maximum Tree Depth: a Simple Technique for Avoiding Bloat in Tree-Based GP, Sara Silva and Jonas Almeida
- Generative Representations for Evolving Families of Designs, Gregory S. Hornby
- Identifying Structural Mechanisms in Standard Genetic Programming, Jason M. Daida and Adam M. Hilss
- Visualizing Tree Structures in Genetic Programming, Jason M. Daida, Adam M. Hilss, David J. Ward, and Stephen L. Long
- Methods for Evolving Robust Programs, Liviu Panait and Sean Luke
- Population Implosion in Genetic Programming, Sean Luke, Gabriel Catalin Balan, and Liviu Panait
- Designing Efficient Exploration with MACS: Modules and Function Approximation, Pierre Gérard and Olivier Sigaud
- Tournament Selection: Stable Fitness Pressure in XCS, Martin V. Butz, Kumara Sastry, and David E. Goldberg
- Towards Building Block Propagation in XCS: a Negative Result and Its Implications, Kurian K. Tharakunnel, Martin V. Butz, and David E. Goldberg

- Quantum-Inspired Evolutionary Algorithm-Based Face Verification, Jun-Su Jang, Kuk-Hyun Han, and Jong-Hwan Kim
- Mining Comprehensive Clustering Rules with an Evolutionary Algorithm, Ioannis Sarafis, Phil Trinder and Ali Zalzal
- System-Level Synthesis of MEMS via Genetic Programming and Bond Graphs, Zhun Fan, Kisung Seo, Jianjun Hu, Ronald C. Rosenberg, and Erik D. Goodman
- Active Guidance for a Finless Rocket Using Neuroevolution, Faustino J. Gomez and Risto Miikkulainen
- Extracting Test Sequences from a Markov Software Usage Model by ACO, Karl Doerner and Walter J. Gutjahr
- Modeling the Search Landscape of Metaheuristic Software Clustering Algorithms, Brian S. Mitchell and Spiros Mancoridis