CALL FOR PAPERS
1996 IEEE International Conference on
Evolutionary Computation (ICEC'96)
May 20-22, 1996, Nagoya, Japan

Co-sponsored by
IEEE Neural Network Council (NNC) and Society of Instrument and Control Engineers (SICE)

Technically Co-sponsored by
Robotics Society of Japan(RSJ), Japan Society for Fuzzy Theory and Systems(SOFT)
Japan Society of Mechanical Engineers(JSME)

Topics: : Theory of evolutionary computation, Applications of evolutionary computation, Efficiency / robustness comparisons with other direct search algorithms, Parallel computer implementations, Artificial life and biologically inspired evolutionary computation, Evolutionary algorithms for computational intelligence, Comparisons between difference variants of evolutionary algorithms, Machine learning applications, Genetic algorithm and selforganization, Evolutionary computation for neural networks, Fuzzy logic in evolutionary algorithms

Submission Procedure: : Prospective authors are invited to submit papers related to the listed topics for oral or poster presentation. Five(5) copies of the paper must be submitted for review. Papers should be printed on letter size white paper, written in English in two-column format in Times or similar font style, 10 points or larger with 2.5 cm margins on all four sides. A length of four pages is encouraged, and a limit of six pages, including figures, tables and references will be enforced. Centered at the top of the first page should be the complete title of the paper and the name(s), affiliation(s) and address(es) of the author(s). All papers (except those submitted for special sessions - which may have different deadlines - see information on special sessions below) should be sent to:

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Phone: +81-52-789-2792   Fax: +81-52-789-3166   E-mail: furuhashi@nuee.nagoya-u.ac.jp

Important Dates:

Proposal for tutorial/exhibits	:November 15, 1995
Submission of Papers (except for special sessions)	:December 20, 1995
Notification of acceptance	:February 20, 1996
Submission of camera-ready papers	:April 10, 1996

Special Sessions:
"Constrained Optimization, Constraint Satisfaction and EC" organized by Gusz Eiben, chair (Utrecht University)
"Evolutionary Artificial Neural Networks" organized by X. Yao (The University of New South Wales)
"Evolutionary Robotics and Automation" organized by J. Xiao (University of North Carolina)
"Genetic Programming" organized by John R. Koza (Stanford University)
"Self-adaptation in Evolutionary Algorithms" organized by Guenter Rudolph (ICD Informatik Centrum Dortmund e.V)
"Evolutionary Algorithms and Fuzzy Systems" organized by Witold Pedrycz (University of Manitoba)
"Be Darwinian: Make Your Evolutionalry-Based Optimization Algorithm Compete with All Others" organised by Hugues Bersini (Universite Libre de Bruxelles)
"Non-Darwinian Evolutionary Algorithms" organised by Qiangfu Zhao (University of Aizu)

Submission to Special Sessions:
Four (4) copies of complete papers (6 pages maximum) should be submitted to each session organizer.

Important Dates for Special Sessions:

Submission of Papers for special sessions	:December 15, 1995
Notification of acceptance	:February 15, 1996
Submission of camera-ready papers	:April 10, 1996

The deadline for proposals for organizing other special sessions during the 3rd IEEE ICEC '96 is August 20, 1995; submit your proposal to any Program Co-Chair.

Program Co-Chairs:

Zbigniew Michalewicz	Thomas Baeck	Hiroaki Kitano
(University of North Carolina)	(University of Dortmund)	(Sony Computer Science Laboratory)
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Toshio Fukuda, Dept of Micro System Engineering,Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-01 JAPAN
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ICEC'96 will be organized in conjunction with the conference of Artificial Life (May 16-18, 1996, Kyoto, JAPAN)

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May 20-22, 1996
Symposion & Toyoda Auditorium
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Robotics Society of Japan (RSJ)
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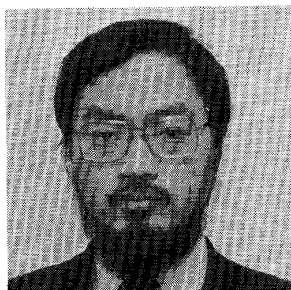Japan Society of Mechanical Engineers (JSME)

WELCOMING REMARKS

Welcome to the 1996 IEEE International Conference on Evolutionary Computation (ICEC'96). It is our great pleasure to have an opportunity to host this conference, which is cosponsored by the IEEE Neural Network Council (NNC) and the Society of Instrument and Control Engineers (SICE). The ICEC Conference is a unique forum dealing with the theory and applications of the evolutionary computation algorithms based on biological phenomena. The topics of the conference are carefully chosen and organized to highlight and address key issues related to intelligent systems.
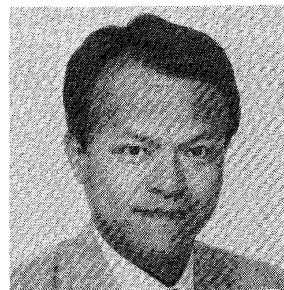
Nagoya and its surroundings have many electro-mechanical industries. The area, as one of the industrial technology centers of the world, has been involved in the research and development of numerous innovative technologies and has applied them to actual products such as automobiles, mechatronics, industrial robots and other new products. But the problem of gaps between users and the high tech products still exists.

This conference is aimed at giving an opportunity for leading international researchers from among various fields to discuss the wide range of problems encounted in high technologies. We have two plenary lectures, three invited lectures of a tutorial nature, and technical sessions for oral and poster presentations, all of which cover recent remarkable results in both theoretical and application-oriented research in the field. I am certain you will enjoy the informative sessions and exciting discussions.

We would like to thank the members of our committees, for their excellent work in putting together this conference. We hope that ICEC'96 will be very successful and fruitful to all of you and will contribute to the development of this emerging technology.

Toshio Fukuda
General Chair
Nagoya University

Takeshi Furuhashi
General Vice-chair
Nagoya University

MASSAGE FROM PROGRAM CO-CHAIRS

The 1996 IEEE International Conference on Evolutionary Computation (ICEC'96) is the third in a series of annual meetings devoted to the field of evolutionary computation. The first conference took place in June '94 in Orlando, Florida (as a part of the First World Congress on Computational Intelligence); the second conference was held in December '95 in Perth, Australia. Future conferences are planned for April '97 in Indianapolis, Indiana, and May '98 in Anchorage, Alaska (the latter one would be a part of the Second World Congress on Computational Intelligence).
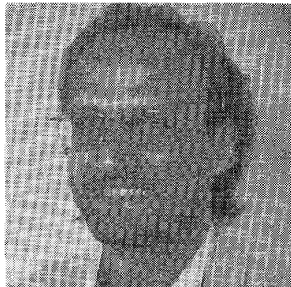
There are 154 papers accepted for presentation during this conference. Some of these papers (46 to be exact) are scheduled to be presented orally at the regular sessions; another group of papers (66) are scheduled for oral presentations for several special sessions. Finally, 42 papers will be presented as posters.

In contrast with previous years, there is a large number of various special sessions which focus on special topics in evolutionary computation which presently gain much attention in the field.
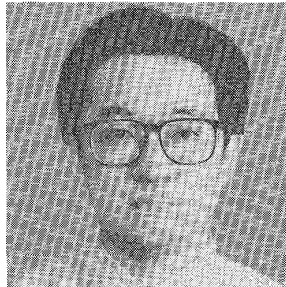
These include special sessions on (1) constrained optimization, constraint satisfaction, and evolutionary computation, (2) evolutionary artificial neural networks, (3) evolutionary robotics and automation, (4) self-adaptation in evolutionary algorithms, (5) evolutionary algorithms and fuzzy systems, (6) be Darwinian: make your evolutionary-based optimization algorithm compete with all others, (7) non-Darwinian evolutionary algorithms (8) evolutionary computation : toward a breakthrough in hard optimization problems with an emergent approach, and (9) evolutionary behavior of biological, physical and chemical process. These proceedings continue the tradition of IEEE ICEC conferences and provide a written record of explorations of new ways of approaching difficult, real-world problems from variety of disciplines. We are sure that these proceedings provide an interesting material for further studies in this fascinating and growing area of research: evolutionary computation. It is our pleasure to see the strong interest of Japanese researchers in evolutionary computation being reflected by a large number (in fact, almost half of all papers) of local contributors.

We would like to thank all the people who made these proceedings and the conference possible. Thanks are due to all members of the program committee for reviewing all the submissions and for making decisions on acceptance and rejection. We thank several individuals volunteered to organize special sessions for their successful efforts. Special thanks are due to the whole organizing committee and the supporting organizations of this conference for their efforts in handling all the other aspects of the conference organization.
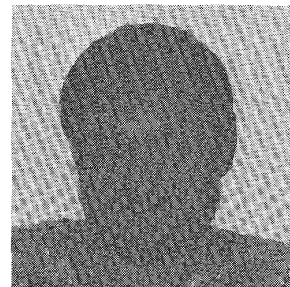
Finally, we are grateful to Nagoya University for the use of their facilities.

Thomas Bäck
Informatik Centrum Dortmund
Program Co-chair

Hiroaki Kitano
Sony Computer Science Laboratory
Program Co-chair

Zbigniew Michalewicz
University of North Carolina - Charlotte
Program Co-chair

WELCOMING REMARKS BY THE PRESIDENT OF THE IEEE NNC

The increasing importance and popularity of artificial neural networks in the late 1980s prompted fourteen technical societies within the Institute of Electrical and Electronic Engineers to collaborate in the formation of a joint organization -- the IEEE Neural Networks Council (NNC). The conferences and publications sponsored by the Council proved to be immediate successes.

It soon became evident that the artificial neural networks (NN) community had close ties and affinities with other emerging computer-based fields, most notably fuzzy systems (FS) and evolutionary computations (EC). So the charter of the Council was expanded to encompass these disciplines, and new conferences and publications were launched. In 1994 NNC convened the First World Congress in Computational Intelligence, bringing together the leading researchers and practitioners in NN, FS and EC. All three of these innovative approaches to pattern recognition, control and optimization
differ fundamentally from more classical methods in that they are not based upon the formulation and iterative refinement of a system model. Rather they employ novel algorithms that were, until recently, considered too computationally-intensive.

In 1995, NNC sponsored the second International Conference on Evolutionary Computations in Perth, Australia. The present congress in Nagoya therefore marks the third NNC meeting to bring together specialists in evolutionary strategies, evolutionary programming, genetic algorithms and genetic programming. These methods originated and flourished largely independently in Europe, Asia and America. The IEEE Neural Council is very pleased indeed to provide a platform and a common meeting ground to bring these pioneering groups together.

Walter J. Karplus, President
IEEE Neural Networks Council

WELCOME MESSAGE FROM THE SICE PRESIDENT

It is a great pleasure to extend our sincere welcome to all of you who are participating in ICEC'96, the Third International Conference on Evolutionary Computation which is being held at Nagoya University, Japan. This conference is co-sponsored by the IEEE Neural Network Council(NCC) and the Society of Instrument and Control Engineers of Japan(SICE).

The objective of this conference is to provide a forum sharing the excitement of the recent accomplishments in the area of Evolutionary Computation, including Genetic Algorithm, Genetic Programming, Artificial Neural Network and the related fields such as Evolutionary Robotics. Also to enforce the communication and cooperation between theory and actual applications challenging to expand the leading edge technology is very important function of the conference.

ICEC'96 is greatly honored to have Prof. John Koza of Stanford University and Dr. David Forgel of Natural Selection Inc. as our Plenary Lecturers giving their lectures on the recent topics of Genetic Programming and Evolutionary Computation respectively. Also three invited speakers from Germany and USA are scheduled to give their lectures on their exciting subjects.

I would like to take this oppotunity to thank all conference organizers,plenary and invited speakers, authors and attendees for their support and participation. Especially the dedication of Prof. Fukuda, the General Chair, is to be highly appreciated.

Again, we would like to welcome you to Nagoya and ICEC'96. I believe ICEC'96 will be successful contributing for the prosperous future marking the Revolutionary Progress in this new fields of Evolutionary Computation.

Eiichi Ohno
SICE President

ICEC'96 Conference Organization

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General Chair: Toshio Fukuda   (Nagoya University)

General Vice Chair: Takeshi Furuhashi (Nagoya University)

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Hiroaki Kitano (Sony Computer Science Laboratory)
Zbigniew Michalewicz (University of North Carolina - Charlotte)

Special Program Co-chairs:

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Shinzo Kitamura (Kobe University)

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Local Arrangement Chair: Takeshi Furuhashi (Nagoya University.)