CoNNections

The Newsletter of the IEEE Neural Networks Council

VOLUME 3, NUMBER 4 | IISSN 1068-1450 | December 1993

Conference Preview:

IEEE WORLD CONGRESS ON COMPUTATIONAL INTELLIGENCE
June 26-July 2, 1994
Walt Disney World Dolphin Hotel
Orlando Florida

Who *are* these people? See *VRAIS '93*, p. 5

IEEE Neural Networks Council Constituent Societies

Circuits and Systems Society
Communications Society
Computer Society
Control Systems Society
Engineering in Medicine & Biology Soc.
Industrial Electronics Society
Industry Applications Society
Information Theory Society
Lasers and Electro-Optics Society
Oceanic Engineering Society
Power Engineering Society
Robotics and Automation Society
Signal Processing Society
Social Implications of Technology
Systems, Man & Cybernetics Society

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Council President: Russell C. Eberhart, Research Triangle Institute
Vice President: Patrick K. Simpson Orincon, Inc.
Past President: Robert J. Marks II, Univ. Washington
Secretary: Toshio Fukuda, Nagoya Univ
Treasurer: Roy S. Nutter, West Virginia Univ.
IEEE Trans. on Neural Networks Editor: Robert J. Marks II
IEEE Trans on Fuzzy Systems Editor: James Bezdek, University of West Florida

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Meetings: James Bezdek, Univ. West Florida
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Publications: Stamatios Kartalopoulos, AT&T Bell Laboratories
Regional Interest Groups: Rick Alan, TRW Safety System
Fellows Committee: Robert W. Newcomb, University of Maryland
Awards: Bradley Dickinson, Princeton Univ.

CoNNections Newsletter

Newsletter Editor: Wesley E. Snyder
North Carolina State University
Department of Electrical and Computer Engineering
North Carolina State University
Raleigh NC 27695
(910)716-3908
FAX: (910)716-2870
wes@eos.ncsu.edu

Associate Editor: Paul Bakker
Computer Science Dept.
The University of Queensland
Queensland QLD 4072 Australia
Fax: +61 7 365 1999
bakker@cs.uq.oz.au

Managing Editor Rosalyn Snyder
7621 Penland Drive
Clemmons NC 27012
910-766-6210
roz@relito.medeng.wfu.edu

World Congress on Computational Intelligence

International Conference on Neural Networks
FUZZ/IEEE '94
IEEE International Symposium on Evolutionary Computation

EXTENDED DEADLINE
December 31, 1993

June 26 - July 2, 1994
Walt Disney World Dolphin Hotel,
Lake Buena Vista, Florida

Sponsored by the IEEE Neural Networks Council

IEEE INTERNATIONAL CONFERENCE ON NEURAL NETWORKS

General Chair
Steven K. Rogers
United States Air Force
Institute of Technology
rogers@afit.af.mil

Topics: Applications, architectures, artificially intelligent neural networks, artificial life, associative memory, computational intelligence, cognitive science, embedology, filtering, fuzzy neural systems, hybrid systems, image processing, implementations, intelligent control, learning and memory, machine vision, motion analysis, neurobiology, neurocognition, neurodynamics, optimization, pattern recognition, prediction, robotics, sensation and perception, sensorimotor systems, speech, hearing and language, system identification, supervised and unsupervised learning, tactile sensors, and time series analysis.

FUZZ/IEEE '94

General Chair
Piero P. Bonissone
General Electric Corporate
Research and Development
bonissone@crd.ge.ge.com

Topics: Basic principles and foundations of fuzzy logic, relations between fuzzy logic and other approximate reasoning methods, qualitative and approximate-reasoning modeling, hardware implementations of fuzzy- logic algorithms, design, analysis, and synthesis of fuzzy-logic controllers, learning and acquisition of approximate models, relations between fuzzy logic and neural networks, integration of fuzzy logic and neural networks, integration of fuzzy logic and evolutionary computing, and applications.

IEEE CONFERENCE ON EVOLUTIONARY COMPUTATION

General Chair
Zbigniew Michalewicz
University of North Carolina,
Charlotte
zbyszek@mosaic.uncc.edu

Topics: Theory of evolutionary computation, evolutionary computation applications, efficiency and robustness comparisons with other direct search algorithms, parallel computer applications, new ideas incorporating further evolutionary principles, artificial life, evolutionary algorithms for computational intelligence, comparisons between different variants of evolutionary algorithms, machine learning applications, evolutionary computation for neural networks, and fuzzy logic in evolutionary algorithms.

INSTRUCTIONS FOR ALL THREE CONFERENCES

Papers must be received by December 31, 1993

Papers will be reviewed by senior researchers in the field, and all authors will be informed of the decisions at the end of the review process. All accepted papers will be published in the Conference Proceedings. Please submit the following:

- Send one original and five copies of the paper. Six total.
- Papers must be camera ready on 8 1/2 x 11 white paper, two-column format in Times or similar font style, 10 points or larger with one inch margins on all four sides.
- Do not fold or staple the original camera-ready copy.
- Four pages are encouraged, however, the paper must not exceed six pages, including figures, tables, and references. Papers over six pages will not be considered.
- Papers must be written in English.

Authors are encouraged to use the WCCI LaTex template with the IEEE transactions style sheet. (The format is similar to that used in IEEE transactions.) These documents can be FTP'd using the following instructions:

```
FTP FTP.AI.SRI.COM
LOGIN: ANONYMOUS
PASSWORD: <USE YOUR E-MAIL
  ADDRESS AS THE PASSWORD)
(AN SRI INFORMATION DOCUMENT
  WILL SCROLL. AFTERWARDS, TYPE...)
CD PUB/IEEE
GET READ.ME
BYE
```

Centered at the top of the first page should be the complete title, author name(s), affiliation(s), and mailing address(es). In the accompanying letter, the following information must be included:

- Full Title of the Paper
- Corresponding Author (Name, Mailing Address, Telephone and FAX Number)
- Technical Session (First and Second Choices)
- Presentation Preferred (Oral or Poster)
- Presenter (Name, Mailing Address, Telephone and FAX Number)

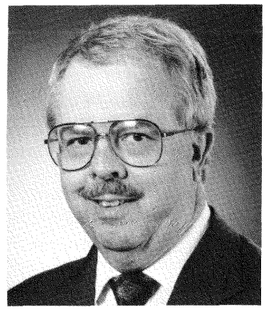
For information and paper submission, mail to:

World Congress on Computational Intelligence
Meeting Management
2603 Main Street, Suite 690 TEL: 714-752-8205
Irvine, California 92714 FAX: 714- 752-7444

E-MAIL:
74710.2266@COMPUSERVE.COM

President's Message

Russell C. Eberhart
Research Triangle Institute



This is my last President's Message. My second one-year term as President of the IEEE Neural Networks Council ends on December 31, 1993. The Council will be ably led by President-elect Pat Simpson in 1994.

I would like to thank all of you who have made being a part of the Council a positive and enriching experience. I'd especially like to thank all of the officers who have served for the past two years, as well as the chairs of the standing committees. Sometimes the work for the NNC has taken a significant amount of your personal time, and you all have always done what was necessary for the Council.

I would also like to reflect on where we've been, and where I hope we're going. We started out as an IEEE Technical Activities Board (TAB) Committee, and our first area of activities was neural networks. By the time we became a Council in 1990, with Bob Marks at the helm, we were initiating activities in fuzzy systems and evolutionary computation. Last year, I established the NNC Virtual Reality Technical Committee headed by Tom Caudell that organized and ran the 1993 Virtual Reality Annual International Symposium (VRAIS).

In addition to expanding our technical areas of activities, we have expanded our geographical scope. We have now held three neural networks conferences in Asia: 1991 in Singapore, 1992 in Beijing, and 1993 in Nagoya and a workshop in Russia. Future neural networks and fuzzy systems conferences are scheduled for Japan and Australia.

In the publications area, we have two exceptionally high-quality refereed publications, the *Transactions on Neural Networks* and the *Transactions on Fuzzy Systems*. Bob Marks and Jim Bezdek are handling the difficult and complex editorial positions effectively and efficiently.

Council volunteers have also distinguished themselves in the areas of IEEE standards (Walter Karplus), publications (Stamatios Kartalopoulos), regional activities (Rick Alan), meetings (Jim Bezdek), and IEEE fellows (Bob Newcomb).

There are many more people I'd like to thank, and who deserve to be named. Heading this list are the AdCom members who have conscientiously and creatively represented their member societies.

There have been a few (but only a few!) disappointments along the way. The biggest disappointment to me is the refusal of the IEEE TAB to approve our request to change our name from the "Council on Neural Networks" to the "Council on Computational Intelligence." This refusal flies in the face of logic: we are active in all of the areas now known as computational intelligence, and our premier conference activity is the World Congress on Computational Intelligence. We are also applying to publish the *Journal of Applied Computational Intelligence*. But at least one very large society in the IEEE is jealous of what they perceive to be their "turf." Oh, well. Actions speak louder than words, and the NNC is definitely leading the activities in the computational intelligence field.

Finally, I'd like to take this opportunity to urge that we remain a Council, and not attempt to become an IEEE society. I believe that we have the benefit of the "cream of the crop" as representatives of the societies on our AdCom. We are doing things, not just talking about them. We generally have the enthusiastic cooperation of our member societies in our endeavors. And our field of interest cuts across most of the societies of the IEEE. I believe that trying to surgically remove computational intelligence from all the societies so as to create a new society would be very difficult, if not impossible. And we would become "just another society," in competition with all the rest. We would lose our uniqueness, and our spirit of cooperation across the IEEE.

And there's a broader issue that I believe is important. The proliferation of IEEE societies cannot continue indefinitely. The IEEE is going to have to restructure. It's just a matter of time. And some kind of matrix organization with societies as vertical organizations and councils as horizontal ones may be worth considering.

My experience in the IEEE has been, and I'm sure will continue to be, a very rewarding experience, both professionally and personally. I feel especially privileged to have traveled in, and learned a little about the cultures of, China, Singapore, Japan, Australia and India. When I was growing up in Kansas, I never dreamed that I'd call people from all of these countries "Friend." But I do, and these friendships, together with others I've gained worldwide, are the highlight of my IEEE experience.

I'm sure I'll stay involved with the Council and the IEEE. It's a part of me.

CoNNections Newsletter

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Pat Simpson Elected Council President

The following officers were elected at the September Neural Networks Council AdCom meeting: President: Patrick K. Simpson; Vice President, Walter Karplus; Treasurer, Piero P. Bonissone; and Secretary, Stamatios Kartalopoulos.

• Patrick K. Simpson: President

Pat Simpson is an active member of the IEEE, having served on the organization and program committees of several national and international conferences as well as the executive committee of the IEEE Neural Networks Council. His technical achievements include Program Chairman of the first IEEE Conference on Neural Networks for Ocean Engineering, Guest Editor of the *IEEE Journal of Oceanic Engineering*'s issue on Neural Network Applications to Oceanic Engineering, Associate Editor of the *IEEE Transactions on Neural Networks*, and NATO Lecture Series participant. Pat has written over sixty papers on the theory and application of neural networks, fuzzy systems and artificial intelligence and is author of the book *Artificial Neural Systems: Foundations, Paradigms, Applications, and Implementations*.

He is currently a Principal Engineer with ORINCON Corporation, San Diego CA, a small-business dedicated to the application of intelligent systems to difficult defense-related problems.

•Walter J. Karplus: Vice President

Walter Karplus was educated at Cornell University and the University of California and has been on the faculty of the School of Engineering and Applied Science of the University of California at Los Angeles for over thirty years. From 1972 until 1979, he was Chair of the Computer Science Department. His research has focused on the design of hardware and software computer systems for the modeling and simulation of physical and biological systems. He has served on the board of directors of AFIPS and has headed the Neural Networks Council's Standards Committee for three years.

He is the author of eight books and over 130 technical papers and isva Fellow of the IEEE.

In addition to teaching and academic research, Dr. Karplus has held scientific positions with Hughes Aircraft Company, International Geophysics and Sun Oil. He is also a frequent consultant to a host of governmental agencies and industrial organizations. Among his many awards are a Fulbright Fellowship, a Guggenheim Fellowship, the Senior Scientific Award of the Society for Computer Simulation, the Silver Core Award of the International Federation for Information Processing, and an Achievement Award from NASA.

•Piero P. Bonissone: Treasurer

Piero Bonissone received the B.S. degree from the University of Mexico City and the M.S. and Ph.D. from The University of California, Berkeley.

A computer scientist at the General Electric Corporate Research and Development Center since 1979, Piero has carried out research and projects in artificial intelligence, expert systems, simulation, fuzzy sets, and interactive graphics. He is also an adjunct professor of ECSE at the Rensselaer Polytechnic Institute.

Currently he is a member of ARPA's Planning and Scheduling Initiative Executive Committee with responsibilities as Co-chair of the Initiative's Visionary Demonstration and as Technical Coordinator for the Initiative's 1993 Integrated Feasibility Demonstration.

He has also developed many projects in Fuzzy Logic Control Technology (FLC Development Environment and compiler) and in a variety of FLC applications ranging from the control of turbo-shaft engines and locomotive wheel slip to the use of Fuzzy Logic in power electronics and dishwashers.

In 1986, he received the King-Sun Fu Award from the North American Fuzzy Information Processing Society for his contributions to the field of fuzzy sets and approximate reasoning. In 1989, he received the Dushman award from the General Electric Corporate Research and Development Center for his role in the RUM project, a GE proprietary expert system tool that integrates the theories of plausible and default reasoning.

He is a member of IEEE, AAAI, ACM, and NAFIPS. In 1993 he was the Program Chair of the IEEE Second International Conference on Fuzzy Systems (FUZZ-IEEE'93). He will be the Conference Chair of FUZZ-IEEE'94.

Piero is the editor-in-chief of the *International Journal of Approximate Reasoning* (North Holland Press) and has been coeditor of three books. In 1991 and 1992 he gave televised tutorials on various aspects of Fuzzy Logic for the IEEE, the National Technical University, NASA, Kodak, and the Centre de Recherche Informatique de Montreal (CRIM).

•Stamatios Kartalopoulos: Secretary

Stam Kartalopoulos has served the NNC in several different capacities: Representative of the Communications Society, NNC Liaison to IEEE Press, initial work on the CD-ROM program, and currently Chairman of the NNC Publications Committee. Especially worth mentioning are two successful firsts:

- three books (co)sponsored by NNC and published by IEEE Press, and
- CD-ROM of IJCNN conference proceedings

He has also served the Communications Society in different capacities: currently as the chair of ComSoc's Signal Processing and Communications Electronics Committee and member of several ComSoc Committees, and also on the technical program committee of several ComSoc Conferences. In addition, he was the guest editor of a special issue on Fuzzy and Neural Networks of ComSoc's *Communications Magazine*.

He has published numerous articles in scientific journals and conferences in the domain of communications systems, digital controllers, logic, opto-electronic systems, neural networks, and fuzzy systems.

Stam is with AT&T Bell Laboratories in Holmdel NJ.

Conference Reports

IJCNN-93 Nagoya

The international joint conference on Neural Networks (IJCNN'93-NAGOYA) was held in Nagoya, Japan from October 25 to 29, 1993 under the joint sponsorship of: The IEEE Neural Network Council (NNC), Japan Neural Network Society (JNNS), International Neural Network Society (INNS), European Neural Network Society (ENNS), The Society of Instrument and Control Engineers (SICE), and The Institute of Electronics, Information and Communication Engineers (IEICE). It was the world's largest conference on neural networks, and this was the first time it was held in Japan. Nagoya is located between Tokyo and Osaka.

There were about 1500 participants from approximately 40 nations including participants to the public industrial forum. The Advisory Chair of the IJCNN'93-NAGOYA was Prof. F. Harashima, the Organizing Chair Prof. S. Amari, the Program Chair Prof. K. Fukushima, and the Steering Chair Prof. T. Fukuda.

The conference began with an opening lecture entitled "What Can We Expect from Neural Network Models?" by Prof. M. Ito, and two keynote lectures entitled "Strategies for Developing Effective Neural Network Applications" by Prof. D. E. Rumelhart and "The Brain and Computer" by Prof. S. Amari. An industry forum "How Does Neural-Technology Change Industries?" was also held which was open to the public. There were five panelists from financial, economic, industrial, and academic backgrounds. The titles of their talks are "Advanced Technology: Impact on Financial Industry and Financial Markets" by Dr. G. J. Deboeck, "Integrating Neural Network for Successful Industrial Application" by Prof. F. Fogelman-Soulie, "Neurocomputational Robots - The Primary Industry of the Next Millennium" by Dr. R. Hecht-Nielsen, "Applications of Neural Networks to Home Appliances" by Dr. T. Nitta, and "How the ANN can contribute to the industrial development" by Mr. K. Noguchi. Following the introduction by Prof. T. Fukuda, they had an active discussion on the past, present and future state of neural networks. They provided an opportunity for attendees to understand the possibility of applying neural networks in industrial, finance and other fields, and find new research & development issues and applications.

The remainder of the conference consisted of three keynote lectures entitled "Neural Networks in the Brain Involved in Memory and Recall" by Prof. E. T. Rolls, "Human Level Cognition in Embodied Robots" by Prof. R. A. Brooks, and "Improved Generalization Ability Using Constrained Neural Network Architecture" by Prof. K. Fukushima; 29 technical sessions where about 180 papers were presented; and 530 poster presentations. The technical programs were prepared by the Program Co-Chairs, Prof. K. Fukushima, Prof. R. J. Marks II, Dr. H. H. Szu, and Prof. N. Sugie. A pre-conference session of tutorials in seven fields: Neurophysiology, Biological Models, Nonlinear Systems, Learning, Control, Hardware, and Pattern Recognition and Connectionist Models, drew many participants. They included discussions of approaches based on a combination of neural networks and fuzzy logic as well as presentations on basic concepts of neural networks, fuzzy logic, and genetic algorithm.

The reception, banquet, and closing party were prepared by the Social Events Chair, Prof. K. Kosuge. The banquet speaker, Dr. Goto, the President of Makita Corporation, gave a very interesting speech entitled "Japanese Creativity & Flexibility."

Special sessions during the conference included a round table discussion on "Financial and Economic Applications of Advanced Technology," Real World Computing, President Forum, and Panel Discussion on "Standards for an International Language and Symbology for Artificial Neural Networks, Performance Measure Methodology and Interfaces."

In the Presidents Forum, the presidents of neural network-related societies around the world introduced their activities and confirmed that there would be future exchange of information and various forms of cooperation.

Research on neural networks spans many fields. Topics of discussion were basic research such as brain physiology, neurobiology, cognitive science, learning methods, and neural network architecture, as well as application research such as recognition, optimization, control, hybrid systems, hardware, and its implementation. In particular, for the application to dynamic systems including "chaos," it was indicated that recurrent neural networks would be increasingly important. There was also much interest in hybrid systems, or the fusion and integration of neural networks with fuzzy logic and evolutionary computation, i.e. genetic algorithms.

Neural networks research had become a popular subject with the notion that anything was possible. However, the fad seems to be subsiding somewhat as the boundaries of neural networks become clear from the results of much work in this area. This conference has been set up so that there were many papers presented on application. We can foresee that the fields where neural networks will actually be used will increase and broaden in the future, and it is envisioned that they will certainly be effective.

— Dr. Takanori Shibata
Member of the Steering Committee
IJCNN'93-NAGOYA
Bio-Robotics Div., Robotics Dept
Mechanical Engineering Laboratory,
MITI 1-2 Namiki, Tsukuba 305, Japan

VRAIS 1993

The first IEEE Virtual Reality Annual International Symposium was held in Seattle Washington from September 18 through 22. This conference was sponsored by the Virtual Reality Technical Committee of the IEEE Neural Networks Council, in cooperation with the SPIE, the International Society for Optical Engineering, the IEEE Industrial Electronics Society, Lasers and Electro Optics Society, Robotics and Automation Society, Information Theory Society, Oceanic Engineering Society, Signal Processing Society, and the IEEE Seattle Section.

The conference was a big success, with a total of 477 registered attendees representing over 18 countries—nearly twice the expected attendance. Thanks are due to the efforts of Publicity Chair Rich Donnelly of the SPIE, Press Relations Chair Alden Jones of the University of Washington, and the rest of the Organizing Committee.

The two days of tutorials that preceded the technical conference were organized by Blake Hannaford of the University of Washington. Almost every class was packed to capacity and sold out to standing room only crowds. The general comment from tutorial-goers was "give me more"! This is a rapidly changing field that has yet to completely define itself. The tutorial sessions offered topics that ranged from introductory to advanced, covering subjects such as

head-mounted displays, force reflecting feedback, animation, vision phenomena, acoustic displays, and applications.

The opening ceremony was held the evening of the second day of tutorials. It featured Tom Furness of the Human Interface Technology Laboratories at the University of Washington, a pioneer in this field and the general chair, speaking on the past and future of virtual reality. Also on the stage that night was the Organization Chair Bob Marks of the University of Washington, the Program Cochairs, Michitaka Hirose of the University of Tokyo, General Chair Thomas Caudell of the University of New Mexico, and the General Chair of the next VRAIS conference, David Mizell of Boeing Computer Services. This conference will be held in North Carolina in March of 1995.

The technical sessions were held during the next three days of the conference. A 400 page proceedings, distributed at registration, contained seventy-two high quality technical papers from all over the world. These papers were selected through a review process involving the fifty members of the Program Committee. In addition, the conference sold out of the Video Proceedings, a collection of video shorts showing the state of research in virtual reality at several research institutions around the world.

Each day started out with a plenary session, where experts in the field reported on the state-of-the-art in virtual reality technology. The plenary speakers included Scott Fisher of Telepresence Research, Myron Kruger of Artificial Reality Corp., Roy Latham of CGSD Corp, Warren Robinett of the University of North Carolina, Creve Maples of Sandia National Laboratories, Michitaka Hirose of the University of Tokyo, Larry Stark of the University of California, Berkeley, and Jannick Rolland of the University of North Carolina.

Following each plenary session in the morning, the technical sessions broke up into two parallel tracks. Sessions covered topics such as body sensing, sensory transducers, sensory feedback, human factors, graphics, teleoperation, software systems, and even neural networks. Speakers were given generous half-hour time slots for their talks, which usually allowed time for questions and discussion. Speakers made frequent use of video tapes to illustrate their work.

The next two evenings were set aside for panels. David Mizell of Boeing Computer Society organized the Industry Panel, with representatives from Lockheed, Caterpillar, Ford, General Electric, and of course Boeing. The following night Y. T. Chien of the National Science Foundation organized the Government Panel, with representatives of Advanced Research Projects Agency, Dept. of Transportation/US Coast Guard, NASA Ames Research Center, and DoE Sandia National Laboratories. These panels helped focus the attendees on the realities of applications of this technology, and provided a glimpse of where government funding might be going over the next few years.

A small vendors exhibit was available to attendees during the five days of the conference, organized by Exhibits Chair Chris Esposito of Boeing Computer Services. People had an opportunity to talk first hand with the makers of virtual reality equipment and software, and see some demonstrations of their latest systems.

The conference was managed by Steve Marlin and Nomi Feldman of Meeting Management in Irvine California, and by Finance Chair Dmitry Kaplan of Siemens-Quantum Corp of Issaquah, Washington. Their creativity and resourcefulness made this a very smooth running conference, considering nearly twice as many people attended as was planned.

I would like to thank the 1993 IEEE-VRAIS Organizing and Program Committees, and all of the people who worked hard to make the venture a success. It is the goal of the Virtual Reality Technical Committee to make this conference THE conference in the field. I believe we have made a good start!

—Thomas P. Caudell, Chair
NNC Virtual Reality Technical Com.
VRAIS '93 Program Cochair
Dept. of Electrical & Computer Eng.
University of New Mexico
Albuquerque, NM 87131

IEEE NEURAL NETWORKS COUNCIL
NNC-SPONSORED CONFERENCES
****

NNC Forum: Virtual Reality and Persons with Disabilities
San Francisco
June 8-10, 1994

World Congress on Computational Intelligence
IEEE International Conference on Neural Networks
FUZZ-IEEE
IEEE International Symposium on Evolutionary Computation
June 26-July2, 1994
Walt Disney World
Orlando Florida

1995 and Beyond...

Virtual Reality Annual International Symposium
March 11-16 95 (Note Date Change)
Research Triangle Park, North Carolina

FUZZ-IEEE (with IFES)
Yokohama Japan, March 1995

Int'l Conf on Neural Networks
IEEE Conf. on Evolutionary Programming
Perth, Australia, October 1995

ICNN, Washington DC, March 1995
FUZZ-IEEE New Orleans, September 1996

Cover Photo: **Michitaka Hirose, VRAIS 1993 Program Co-Chair; David Mizell, 1994 General Chair; Robert J. Marks II, 1993 Organization Chair, Thomas P. Caudell (wearing VR glasses), 1993 Program Co-Chair, and Thomas A Furness III 1993 General Chair**

NNC Standards Committee

Mary Lou Padgett, 1994 Chair
IEEE-NNC Standards Committee

Now in its third year of operation, the Standards Committee of the Neural Networks Council (NNC) invites your participation in its working groups and other activities. IEEE is one of the primary standards organizations in the United States and is currently maintaining over 1500 active standards in the electrical and electronic areas. The IEEE Standards Board has established formal procedures for the initiation of standards projects via Project Authorization Requests (PAR), balloting to approve standards, and the eventual publication of standards. The NNC is represented on the IEEE Standards Board and has made standardization one of its principal activities.

Recent activities by the NNC Standards Committee have been numerous and productive. Several focal areas have emerged, and a new one is predicted.

•Artificial Neural Networks

Participation from all over the world has mushroomed, and support has been gained from NASA and the Navy. Since the last issue of *CoNNections,* the Glossary and Performance Measures Working Groups have met in Seattle, Huntsville, Nagoya and San Francisco. Organization and planning in Seattle led to a very productive series of sessions at IJCNN Nagoya. Professor Toshio Fukuda was particularly instrumental in this success. Activities included a panel, a tutorial and a series of luncheon discussions. These provided opportunities for exchange of ideas and evaluation of current drafts of the glossary and rudimentary performance measure metrics. The work initiated in these forums is being extended at every opportunity and location.

•ANN Glossary and Symbols Working Group

Limited circulation of a draft glossary of terms has started. Committee members in the US, Japan, China, Germany, Finland, Switzerland and Russia have copies of the much-revised glossary of terms, and have promised more revisions and additions. There is a strong push for developing an international language and symbology for artificial neural networks which can then be translated into many languages. More terms should be added to the glossary, and more pseudocode for common paradigms developed. Widespread circulation of an augmented draft is anticipated early next year. Meanwhile, lists of suggested terms, definitions and pseudocode are welcomed by the committee. Contributions by industry will be heavily weighted!

•ANN Performance Evaluation Working Group

The ANN Performance Measures Methodology Working Group has grown.

The NASA co-sponsored paper competition has become a yearly event. For 1994, 1995 or 1996, send papers on ANN Performance, Paradigm Comparison or Applications to Mary Lou Padgett. Periodic awards will be announced, and appropriate publication opportunities will be made available.

Two FTP sites have been established for current information about ANN test problems and training metrics. Please correspond with Bob Shelton and/or Bob Green, preferably by email, to obtain details. CONTRIBUTIONS to these information banks are requested. Please send details of how others can obtain test data to Shelton or Green, so the committee can compile a directory of access information as a service to the community.

•Virtual Reality

In the next issue of *CoNNections,* a complete update on Virtual Reality Activities will be given. Dozens of people have volunteered to work, and industry has outlined some pressing needs. Richard Blade, with support from Russell Eberhart, Thomas Caudell and many interested parties (including NIST), continues an outreach program to involve the entire VR community. Many organizational decisions will be made in the coming months, so please keep volunteering time, resources and ideas. The results will hopefully be of service to a wide group of people.

•Fuzzy Systems

Early next Spring, a strawman glossary of fuzzy systems terms may be available. Hamid Berenji and a team of experts are working on such a draft and would appreciate your input. The Orlando meeting of FUZZ-IEEE will be an excellent opportunity to make substantial progress in this task. Program Chair Berenji encourages your participation!

•Evolutionary Programming

Also at the Orlando IEEE-WCCI, the IEEE Symposium on Evolutionary Computation may provide a fruitful organizational platform for standards activities in evolutionary computation (EC). The ANN Glossary should include terms relevant to EC! If interested, please contact Mary Lou Padgett.

•Upcoming Activities: IEEE-WCCI June 26 - July 2, 1994

All the NNC Standards Activities are planning major outreach programs for the World Congress. Plans include involvement of local academic, industry, NASA and government supporters. In addition to the regular NNC Standards program of open houses, luncheon discussions and working sessions, the committee will sponsor informal outings to area technical attractions and a dutch dinner at Epcot Center. Small groups will brainstorm and try to build lasting networks of fruitful contacts. The objectives are to fine-tune the direction of each standard to meet the needs of the entire community, and to welcome support and hard work from all interested parties!

•1994 Standards Committee Contacts

After January 1, our Standards Chair, Professor Walter J. Karplus will become the IEEE-NNC Vice President and Standards Chair Emeritus. The entire committee has relied upon his advice and experience and will continue to do so in an informal manner. All the past Standards Chairs and the current hard-working committee members will continue to try to serve the community and keep the standards activities moving

INTEREST IN STANDARDS

Areas of Interest in Standards (Check all that apply):

Artificial Neural Networks:

_____ Glossary

_____ Performance

_____ Interfaces

_____ Other (specify)

Fuzzy Systems:

_____ Glossary

_____ Performance

_____ Interfaces

_____ Other (specify)

Other Standards Areas: _____

DESIRED LEVEL OF INVOLVEMENT:

_____ Receive Reports Only (Specify): _____

_____ Work with Standards Working Group: (Specify): _____

_____ Propose Standards in: _____

AFFILIATION GROUP:

Government _____ Industry: _____ Academia: _____

NAME: _____

AFFILIATION OR ORGANIZATION: _____

MAILING ADDRESS: _____

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Please return to Mary Lou Padgett by email, fax or regular mail to update our records of your interest and available resources. Suggestions regarding specific activities for the coming year are welcome!

in positive directions. Your input and suggestions are very welcome!

NNC Standards Committee
Contact List

Walter J. Karplus, Chair
IEEE-NNC Standards Committee
UCLA, CS Department
F3723 Boelter Hall
Los Angeles, CA 90024
P: (310) 825-2929
F: (310) 825-2273
karplus@cs.ucla.edu

Mary Lou Padgett, Vice Chair
IEEE-NNC Standards Committee
ANN Glossary and Symbols Chair
Auburn University
1165 Owens Rd.
Auburn, AL 36830
p: (205) 821-2472
F: (205) 844-1809
mpadgett@eng.auburn.edu

Prof. E. Tzanakou, Chair
Paradigms Sub-group
Dept. Biomedical Engineering
P.O. Box 909
Rutgers University
Piscataway, NJ 08855-09-9
P: (908) 932-3155
F: (908)) 932-3753
etzanako@elbezeth.rutgers.edu

Robert Shelton, Chair
ANN Performance Evaluation Group
Software Technology Branch (PT4)
NASA Johnson Space Center
Houston, TX 77058
P: (713) 483-5901
F: (713) 244-5698
shelton@gothamcity.jsc.nasa.gov

Dr. Robert W. Green, Chair
Methodology for Evaluating
ANN Training Algorithms Group
Computer and Information Science Dept.
University of Massachusetts, Dartmouth
N. Dartmouth, MA 02747
P: (508) 999-8260
F: (508) 999-8901
green@cis.umassd.edu

Christopher M. DeAngelis, Asst.
Methodology for Evaluating
ANN Training Algorithms Group
Naval Undersea Warfare Center Div.
Newport
Code 2222, Bldg. 1173-3
Newport, RI 02841
P: (401) 841-3616
F: (401) 841-2431
deangelis@ada.npt.nuwc.navy.mil

Steve Deiss, Chair
ANN Interface Standards Group
Applied Neurodynamics
2049 Village Park Way #248
Encinitas, CA 92024
P: (619) 944-8859
F: (619) 944-8880
deiss@cerf.net

Dr. Hamid R. Berenji, Chair
Fuzzy Systems Group
Mail Stop: 269-2
Artificial Intelligence Research Branch
NASA Ames Research Center
Moffett Field, CA 94035
P: (415) 604-6070
F: (415) 604-3594
Secretary x 6527
berenji@ptolemy.arc.nasa.gov

Prof. Richard Blade, Chair
Virtual Reality Working Group
Physics Dept.
Univ. of Colorado at Colorado Springs
PO Box 7150
Colorado Springs, CO 80933-7150
P: (719) 593-3556 or (719) 471-4476
F: (719) 593-3542
rablade@uccs.edu

In Memoriam
Edward C. Posner

On June 16. 1993 Edward C. Posner was killed while riding his bicycle to work in Pasadena. He was 59. He was Chief Technologist of the Office of Telecommunications and Data Acquisitions at Caltech's Jet Propulsion Laboratory and held a half time appointment in the Department of Electrical Engineering at Caltech. He had been at JPL since 1961and at Caltech since 1970. Ed is survived by his wife Sylvia, to whom he had been married since 1956, and two grown children, Joyce Posner, of Seattle Washington, and Steven Posner, of Pasadena.

Throughout his scientific career in information and communication theory, Ed was actively involved in academic, education, and scientific organizations. He was a Fellow of the IEEE and a member of dozen other profession societies. He held five patents, and served as associate editor of four journals.

Over the last several years he made a substantial contribution to the development of neural network research. He was the author of several papers on the capacity of neural networks and was instrumental in the creation of Caltech's graduate study program in Computation and Neural Systems.

As the principle organizer and first chairman of the annual Neural Information Processing Systems (NIPS) meeting, he was involved in establishing a premier scientific meeting in this area. Over the last two years of his life he was working hard to establish the NIPS Foundation so that NIPS as well as other related meetings would remain on sound financial and legal footing. Ed's commitment to the maintenance of high standards in the field of neural networks was well known and has provided a solid base for the continued growth of the enterprise. For those of us who were honored to be able to work with him, his wit, humor, and dedication to his field are already painfully missed.

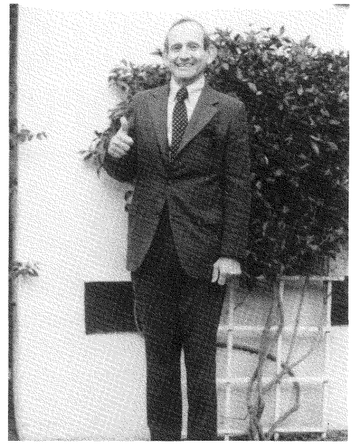
In addition to his interest in scientific research, Ed was also strongly committed to students and science education. For example, one of his many legacies to the NIPS meeting is a strong commitment to student travel awards. At Caltech and the Jet Propulsion Laboratory, Ed's commitment to students was legend. Ed was particularly heavily involved in the Summer Undergraduate Research Program (SURF) at Caltech through which undergraduates (both from Caltech and from other institutions) carry out independent research projects during the summer months. Ed was an active member of the SURF Administrative Committee. As one of the most active SURF research sponsors, Ed served as mentor to 13 SURF students since 1984 and had three students prepared to work with him this last summer. In addition, Ed cofounded the SURFSAT satellite program with a JPL colleague in 1986. In this project, teams of undergraduate students are designing, building, and testing a small communications satellite to support the research objectives of NASA's Deep Space Network. Since its inception, 43 students have participated in SURFSAT.

Ed's legacy to the education of young people stretches far and touches many as is evidenced by his involvement with SURF, one program on his long list of interests. For this reason, his widow, and the California Institute of Technology have elected to honor his memory by working to establish an Edward C. Posner SURF fellowship fund. This fund will be used to support a SURF student for ten weeks each summer.

—James M. Bower
California Institute of Technology

Those individuals, or institutions interested in making a contribution to the Edward C. Posner SURF fellowship fund in his memory should contact:

Dore Charbonneau
Director of Special Gifts Development
Mail Code 105-40
California Institute of Technology
Pasadena, CA. 91125 818 - 356-6285



Ed Posner was an important scientist and educator, and his work has left an important imprint on the design of modern deep-space telecommunications systems, and on a generation of students. Yet he is perhaps most often remembered by his friends, students, and colleagues for his sense of humor. His deadpan wit was liable to surface in almost any conversation, and he was in constant demand as an after dinner speaker. Anyone who knew Ed even slightly will have a favorite Posner Story, but here are two. At a JPL meeting several years ago, which Ed was chairing, a project engineer was describing a sophisticated data-processing device called the "Big Viterbi Decoder," to which she inevitably referred as the "BVD." As soon as Ed heard this acronym, he remarked without hesitation "we're used to working with hardware and software, but this is the first time I've heard of an application of underwear to communications technology."

More recently, in 1992 Ed presented a paper at a conference in honor of Sol Golomb's 60th birthday. Ed's topic was the application of information theory to a study of the human olfactory system, and he entitled his paper "A Code in the Nose."

—Bob McLiece
California Institute of Technology

IEEE WORLD CONGRESS ON COMPUTATIONAL INTELLIGENCE

Orlando, Florida, June 26-July 2, 1994

Sponsored by the IEEE Neural Networks Council

The 1994 IEEE World Congress on Computational Intelligence consists of three IEEE International Conferences: The Third IEEE International Conference on Fuzzy Systems, IEEE International Conference on Neural Networks, and The IEEE Conference on Evolutionary Computation. **The registration fee for the Congress covers admission to all three of the Conferences** as well as to a special five day Symposium entitled "Computational Intelligence: Imitating Life". This Symposium will be held Monday, June 27, through Friday, July 1, 10:20 am to 12:40 pm.

SPECIAL SYMPOSIUM

COMPUTATIONAL INTELLIGENCE: IMITATING LIFE

The Symposium addresses critical and emerging technologies and issues relating to biologically, psychologically, and linguistically motivated models that exhibit various facets of computational intelligence. The paradigms discussed include learning, reasoning, evolution, search, and optimization each of which often uses life imitating metaphors for guiding model building. Machine learning from data, neural and fuzzy information processing, approximate reasoning, and evolutionary computation, are examples of computational intelligence approaches addressed by Symposium speakers. The Symposium provides a unique forum for cross-fertilization between the areas of neural networks, fuzzy logic, and evolutionary computing.

Symposium presentations are explicitly targeted towards the identification of challenges, issues, and potential solutions for problems arising in computational intelligence.

The Symposium consists of 3 public lectures, 10 plenary talks and 30 mini-symposia presentations, covering Neural Networks (21), Fuzzy Logic (13) and Evolutionary Computation (9). Contributions include recent research that has implications for further progress, state-of-the-art reviews, and discussions of important applications in fields such as biology, signal and imaging processing, robotics and control. Presenters have been chosen from academia and industry and represent the leaders in their fields from thtoughout the world.

The Symposium Proceedings "Computational Intelligence: Imitating Life", will be published and available at the Congress for each participant. Proceedings will later be distributed by the IEEE Press.

COMPUTATIONAL INTELLIGENCE: IMITATING LIFE

SYMPOSIUM SPEAKERS:

Hans-Paul Schwefe	On the Evolution of Evolutionary Computation
Kenneth DeJong	Genetic Algorithms: a 25 Year Perspective
Lawrence J. Fogel	Evolutionary Programming in Perspective
Lawrence Davis	Genetic Algorithms for Optimization: Three Case Studies
Kiroaki Kitano	Beyond AI: The Double Helix of AI and Alife
Bernard Manderick	How to Improve GA-performance for Combinatorial Optimization Problems by Analyzing their Fitness Landscape
Heinz Muehlenbein	Theory and Applications of the Breeder Genetic Algorithm
Ingo Rechenberg	Evolution Strategy
David Schaffer	Combinations of Genetic Algorithms with NNs or Fuzzy Systems
Henri Prade	Similarity-based Approximate Reasoning
Ramon Lopez de Mantaras	Reasoning Under Uncertainty and Learning in Knowledge Based Systems: Imitating Human Problem Solving Behavior
Hamid Berenji	Fuzzy Systems that Can Learn
Piero P. Bonissone	Fuzzy Logic Controllers: An Industrial Reality
Takeshi Yamakawa	A Neo Fuzzy Neuron and Its Applications to System Identification and Expectation of Chaotic Behavior
Michio Sugeno	Qualitative Modeling based on Numerical Data and Knowledge Data, and its Application to Control
James C. Bezdek	Neural and Fuzzy Models, Pattern Recognition and Computational Intelligence
James Keller	Computational Intelligence in High Level Computer Vision: Determining Spatial Relationships
Witold Pedrycz	Fuzzy Modelling: Methodology, Algorithms, and Practice
Pratap Khedkar	Learning as Adaptive Interpolation in Neural Fuzzy Systems
Toshio Fukuda	Fuzzy-Neuro-GA Based Intelligent Robotics
Teruo Fujii	Self-Generation of Neural-Net Controller by Training in Natural Environment
Tetsuro Yabuta	Learning Control Aspects in Terms of Neuro-control
Sigeru Omatu	Learning on Neural-Controllers in Intelligent Control Systems
Allen Waxman	Visual Learning of Objects: Neural Models of Shape, Color, Motionand Space
Erkki Oja	Unsupervised Learning for Feature Extraction
Anil K. Jain	Neural Networks and Pattern Recognition
Dave Touretzky	Neural Representations of Space in Rats and Robots
Shiro Usui	Computational Color Vision Model by Neural Networks
Karen Payton	Status of Auditory Modeling Research and its Relationship to Automatic Speech Recognition
Robert Hecht-Nielsen	Neural Network Theory - Early Payoffs and New Challenges
John Moody	Neural Networks for Time Series
Steven K. Rogers	How Captain Amerika Uses Neural Networks to Fight Crime
Rolf Eckmiller	Biology-Inspired Pulse Processing Neural Nets with Adaptive Weights and Delays - Sources from Neuroscience versus Applications in Industry and Medicine
Gerald Tesauro	Why Does TD-Gammon Learn So Well?
Joseph R. Brown	New Paradigms in Technology Transfer
Charles H. Anderson	Neurobiological Computational Systems
Robert A. Wiggins	Neural Computing Technology Transfer - A UK Government Programme
Francoise Fogelman	Integrating Neural Networks for Real World Applications
George Sperling	Visual Preprocessing
Russell C. Eberhart	Biomedical Applications of Computational Intelligence

More information about the Symposium, including abstracts of the papers to be presented, is available from Robert Marks, University of Washington. FAX (206)543-3842, email: marks@milton.u.washington.edu. A complete list of WCCI Tutorials will be available from Karen Haines after January 1: karen@orincon.com.

Calendar

Upcoming Conferences with a Neural Networks component (ordered by date of submission deadline, or by conference date if the deadline has passed) If you have any conference details to add to this list, please send (preferably) a Call-For-Papers to

Paul Bakker
Computer Science Dept.
The University of Queensland
QLD 4072, Australia
Fax: +61 7 365 1999
email: bakker@cs.uq.oz.au

Email or fax submissions are not usually acceptable. Please contact the program chair or other contact for submission requirements. The designation [passed] refers to the deadline date. We include some deadlines even after the official cutoff since these are sometimes changed

—*Expired Submission Deadlines*—

Ordered by conference date. Deadlines are sometimes extended.

•**10th Israeli Symp. on Artificial Intelligence and Computer Vision** 27-28 Dec 93Tel-Aviv, Israel[30 Jun 93] "Cognitive Modeling; Pattern Recognition and Neural Networks" Contact: schild@bimacs.cs.biu.ac.il (Dr. Uri J. Schild)

• **3rd Int'l Symp. on Artificial Intelligence and Mathematics** 2-5 Jan 94 Ft Lauderdale, FL, USA[30 Jul 93] "Mathematical methods in neural networks, learning theory, learning algorithms, complexity of neural computation" Contact: hoffman@acc.fau.edu (Frederick Hoffman)

• **27th Annual Hawaii Int'l Conf. on System Sciences Mini-Track on Neural Network Applications in Organizations** 4-7 Jan 94 Maui, HI, USA [1 Jun 93] "Bond rating, forecasting, data analysis, production scheduling,..." Contact: thill@uhunix.uhcc.hawaii.edu (Prof. Tim Hill)

•**Symp. on Connectionist Models and Psychology** 29 Jan 94Brisbane, AustraliaUnspecified] "The rationale for using connectionist models; Correspondence between network and human performance; Basic computational processes" Contact: janetw@cs.uq.oz.au (Janet Wiles)

• **5th Australian Conf. on Neural Networks (ACNN'94)** 31 Jan-2 Feb 94Brisbane, Q, Australia[17 Sep 93] Contact: acnn94@s1.elec.uq.oz.au

• **Pan Pacific Conf. on Brain Electric Topography** 10-12 Feb 94Sydney, Australia[10 Nov 93] "Analysis and models of electrical brain function; findings of brain topography and cognitive processes" Contact: pan@brain.physics.swin.oz.au

• **Representation, Analogy, and Cognition:** An Interdisciplinary Graduate Student Conf. 18-19 Feb 94Binghamton, NY, USA[15 Oct 93] "Developmental and Scaffolded Connectionist Models" Contact: timothy@turing.pacss.binghamton.edu (Timothy Buczak)

• **The 3rd Annual Conf. on Evolutionary Programming (EP94)** 24-25 Feb 94 San Diego, CA, USA[30 Jun 93] (abstract) "Neural network training and Design; Pattern Recognition" Contact: pja@cis.ohio-state.EDU (Peter J Angeline)

• **10th IEEE Conf. on Artificial Intelligence for Applications (CAIA-94)** 1-4 Mar 94San Antonio, TX, USA[31 Aug 93] Contact: CAIA@CS.UMBC.EDU

• **1994 ACM Symp. on Applied Computing (SAC'94)** Track on Fuzzy Logic in Applications 6-8 Mar 94Phoenix, AZ, USA[17 Sep 93] "Applications of Fuzzy Systems to Neural Systems" Contact: fathi@ls1.informatik.uni-dortmund.de (Madjid Fathi)

• **AAAI 1994 Spring Symp.: Artificial Intelligence in Medicine: Interpreting Clinical Data** 21-23 Mar 94 Stanford, CA, USA[15 Oct 93] "A large data sample will be made available to participants to serve as training and test sets for various approaches to information management and to provide a common domain of discourse." Contact: aim-94@camis.stanford.edu

• **AAAI-94 Spring Symp. on Goal-Driven Learning** 21-23 Mar 94Stanford, CA, USA[15 Oct 93] "Evaluating and selecting learning biases, explanation-based learning" Contact: ashwin@cc.gatech.edu (Ashwin Ram)

• **Journees sur l'Acquisition, la Validation et l'Apprentissage (JAVA-94)** 21-25 Mar 94Strasbourg, France[12 Nov 93] "Machine Learning, Knowledge Acquisition and Knowledge Validation" Contact: dieng@sophia.inria.fr (Rose DIENG)

• **Int'l Conf. on Expert Systems for Development** 28-31 Mar 94Bangkok, Thailand[15 Aug 93] (abstracts) "Associative Memories, Machine Learning, Neural Networks" Contact: sada@cs.ait.ac.th (Dr. R.Sadananda)

• **3rd Conf. on Information Technology and its Applications (ITA'94)** Association of Muslim Researchers. 2-3 Apr 94Leicester, UK[1 Nov 93] "Expert Systems, Neural Networks, Fuzzy Logic, Genetic Algorithms, Robotics" Contact: wani@taff.cf.ac.uk (Dr. A Wani)

• **Workshop on Automatic Speaker Recognition, Identification and Verification (IDIAP-ESCA)** 5-7 Apr 94Martigny, Switzerland[15 Sep 93] Contact: esca@idiap.ch

• **European Meeting on Cybernetics and Systems Research (EMCSR'94)** 5-8 Apr 94Vienna, Austria[8 Oct 93] "Artificial Neural Networks and Adaptive Systems" Contact: sec@ai.univie.ac.at

• **7th European Conf. on Machine Learning (ECML94)** 6-8 Apr 94Sicily, Italy [15 Oct 93] "Computational learning theory, neural networks, genetic algorithms,." Contact: ecml@cs.kuleuven.ac.be

• **Int'l Symp. on Speech, Image Processing & Neural Networks (ICASSP'94)** 14-16 Apr 94Hong Kong[4 Oct 93] Contact: enpklun@hkpcc.hkp.hk (Dr. Daniel Lun)

• **IMACS Int'l Symp. on Signal Processing, Robotics And Neural Networks (SPRANN'94)** 27-29 Apr 94Lille, France[25 Oct 93] "Neural Nets in Robotics, Control, Computing,..." Contact: SPRANN94@idnges.decnet.citilille.fr

• **Florida AI Research Symp. (FLAIRS-94)** 5-7 May 94 Pensacola Beach FL,USA [18 Oct 93] "Knowledge-based approaches to the construction of intelligent systems" Contact: ddd@panther.cis.ufl.edu (Douglas D. Dankel II)

• **The Ninth Annual Goddard Conf. on Space Applications of Artificial Intelligence** 10-12 May 94Greenbelt, MD, USA[20 Sep 93] "Neural networks, Parallel Processing, Robotics and telerobotics." Contact: short@dunloggin.gsfc.nasa.gov (Nick Short)

• **Int'l Conf. on Instrumentation and Measurements (IMTC'94)** 10-12 May 94Hamamatsu, Japan[1 Oct 93] "Neural technologies for measurements, neural subsystems for control and signal processing; Special Session on Neural Instruments" Contact: piuri@ipmel1.polimi.it (Prof. Vincenzo PIURI)

• **4th Int'l Conf. on Principles of Knowledge Representation and Reasoning (KR'94)** 24-27 May 94Bonn, Germany [8 Nov 93] "Explicit representations of knowledge; constraint solving; classification". Contact: kr94@mail2.ai.univie.ac.at

• **Int'l Symp. on Circuits and Systems (ISCAS'94)** 30 May-2 Jun 94London, UK[1 Oct 93] "Neural Systems and Nonlinear Circuits and System" Contact: iscas94@ic.ac.uk

• **Parallel Architectures and Languages Europe (PARLE'94)** 13-17 Jun 94 Athens, Greece[19 Nov 93] "massively parallel machines, neural networks, multiprocessor design issues" Contact: parle@cti.gr

• **1994 American Control Conf. Invited Session: Neural Network Application for Aircraft & Spacecraft** 29 Jun-1 Jul 94Baltimore, MD, USA[1 Sep 93] Contact: feteih@evax12.eng.fsu.edu (Salah Feteih)

•**1st International Conference on Applied Synergetics and Synergetic Engineering (ICASSE)** 21-23 June 1994 Erlangen, Germany "Synergetic Modelling focussing on successful application of synergetic models in different fields of science such as physics, chemistry, biology, neurobiology, psychology sociology or economics" Contact: wag@iis.fhg.de (T. Wagner)

• **14th IMACS World Congress on Computation and Applied Mathematics** 11-15 Jul 94Atlanta, GA, USA[15 Oct 93] "Neural network architectures and implementations; application of neural techniques for signal and image processing" Contact: piuri@ipmel1.polimi.it (Prof. Vincenzo Piuri)

•**1994 Int'l Conf. on Qualitative Information, Fuzzy Techniques, and Neural Networks in Simulation (ICQFN'94)** 1-3 Jun 94Barcelona, Spain 30 Nov 93 Contact: Cellier@ECE.Arizona.Edu (Francois E. Cellier)

• **7th IEEE Symp. on Computer-Based Medical Systems (CBMS-94)** 10-12 Jun 94. Winston-Salem, NC, USA1 Dec 93 "Applications of computer technology, including neural networks, to medicine..." Contact: (Wesley E. Snyder) wes@relito.medeng.wfu.edu

•***---unexpired submission deadlines:-----***

• **European Symp. on Artificial Neural Networks (ESANN'94)** 20-22 Apr 94 Brussels, Belgium begin Dec 93 "Theoretical, mathematical and other fundamental aspects of neural networks, relations with statistics, signal processing" Contact: esann@dice.ucl.ac.be

•**IEEE Workshop on Biomedical Image Analysis.** Seattle, Washington 24-25 June 1994 "Motion Analysis of Biomedical Images Deformable Models Stereoscopic Techniques Sensor Fusion and Multimodality Image Analysis Multidimensional Segmentation... " 31 December 93. Contact: (D. Goldgof) goldgof@figment.csee.usf.edu

•**World Congress on Neural Networks (WCNN 1994)** 4-9 Jun 94 San Diego, CA, USA10 Dec 93 Contact: INNS (fax: +1 202-466-2888)

• **Int'l Symp. on Integrating Knowledge and Neural Heuristics (ISIKNH'94)** 9-10 May 94Pensacola Beach,-FL,USA15 Dec 93 (summaries) Contact: Rob Francis (fax: +1 904-392-6950)

• **Int'l Conf. on Artificial Neural Networks (ICANN'94)** 26-29 May 94Sorrento, Italy15 Dec 93 "Cognitive Science, Mathematical Models, Neurobiology,." Contact: iiass@salerno.infn.it (Prof. Eduardo R. Caianiello)

•**NNC Forum: Virtual Reality and Persons with Disabilities** June 8-10, 1994 San Francisco. Contact: Harry Murphy. vf0ao)73@vax.csun.edu

•**Symp. on Hybrid Intelligent Systems: neural networks, fuzzy logic, genetic algorithms, expert systems** (at World Congress on Medical Physics and Biomedical Engineering (RIO'94)) 21-26 Aug 94Rio de Janiero, Brazil20 Dec 93 Contact: machado@riosc.bitnet (Ricardo Jose Machado)

• **1st World Congress on Computational Medicine, Public Health and Biotechnology** 24-28 Apr 94Austin, TX, USA31 Dec 93 "Brain modeling, Neural nets and clinical applications, Neurological disorder modeling" Contact: compmed94@chpc.utexas.edu

• **From Animals to Animats: 3rd Int'l Conf. on Simulation of Adaptive Behavior (SAB94)** 8-12 Aug 94Brighton, UK5 Jan 94 "Neural correlates of behavior; Neural networks and evolutionary computation; Hierarchical and parallel organizations" Contact: sab94@cogs.susx.ac.uk

• **32nd Annual Meeting of the Association for Computational Linguistics**

NNC-Endorsed Meetings

The Neural Networks Council has agreed to be a "technical co-sponsor" or "cooperating organization" for the meetings listed below.*

Name	Site	Date	Contact
ICONIP: '94 Int'l Conf. on Neural Information Processing	Seoul	Oct. 17-20 '94	mkim@logos.etri.re.kr
3rd Int'l Conf. on Automation Robotics and Computer Vision	Singapore	Sept. 13-16 '94	
EP'94: 3rd Evolutionary Programming Conf.	San Diego CA	Feb. 24-25 '94	
1994 IEEE/Nagoya University (WWW) On Fuzzy Logic and Neural Networks/Genetic Algorithms	Nagoya, Japan	Aug 9-1094	furu@uchikawa.nuem.nagoya-u.ac.jp
994 IEEE workshop on Neural Networks for Signal Processing	Ermioni Greece	Sept. 6-8, 1994	hwang@ee.washington.edu
ICARV'94: Automation, Robotics and Computer Vision	Singapore	Sept.13-16 1994	mpeangh@nusvm.bitnet
Int'l Symp. on Integrating Knowledge and Neural Heuristics	Pensacola, FL	May 3-4 1994	lacher@cs.fsu.edu
3rd Int'l Conference on Fuzzy Logic, Neural Nets and Soft Computing, NeuroScience and Engineering	Iizuka, Japan	August 1-7, 1994	T.Yamakawa, Kyushu Instit. Technology
1995 CIFE, Computational Intelligence for Financial Engineering	TBA	April 9-12, 1995	

* The NNC has agreed to be named in the Call for Papers and other promotional materials for these meetings, but the Council does not have a financial interest. Conference organizers who wish to list the NNC as a cooperating or technical co-sponsor should contact James Bezdek, Chairman of the NNC Meetings Committee for information on the approval process. (email: jbezdek@uwf.bitnet; Tel: (904)474-2784; FAX (904)484-3023.)

(ACL-94) 27 Jun-1 Jul 94Las Cruces, NM, USA6 Jan 94 Contact: wiebe@nmsu.edu (Janyce M. Wiebe)

- **11th European Conf. on Artificial Intelligence (ECAI'94)** 8-12 Aug 94 Amsterdam, Holland8 Jan 94 "Machine Learning; Neural Networks; Cognitive Modelling; Connectionist and PDP Models for AI" Contact: ecai94@scs.leeds.ac.uk (Dr. Tony Cohn)
- **Sixteenth Annual Conf. of the Cognitive Science Society** 27-30 Jul 94Atlanta, GA, USA14 Jan 94 Contact: cogsci94@cc.gatech.edu (Prof. Kurt Eiselt)
- **Int'l Workshop on Intelligent Robotic Systems (IRS '94)** 11-15 Jul 94Grenoble, France15 Jan 94 "Neural Network and Fuzzy Techniques for Control" Contact: Patrick.Reignier@imag.fr
- **New Information Technologies in Science, Education, Medicine and Business (CAD'94)** 4-13 May 94Gurzuf, Ukraine15 Jan 94 "Neurocomputing; Extrasensorics and artificial intelligence" Contact: gregor@gregory.msk.su (Prof. E.L.Gloriosov)
- **12th National Conf. on Artificial Intelligence ((AAAI-94)** 31 Jul-4 Aug 94 Seattle, WA, USA 24 Jan 94 "Distributed AI, Neural Networks, Machine Learning" Contact: bhr@ksl.stanford.edu (Barbara Hayes-Roth)
- **3rd Annual Computation and Neural Systems Meeting (CNS*94)** 21-25 Jul 94Monterrey, CA, USA26 Jan 94 "Understanding neurobiological computation" Contact: cp@smaug.cns.caltech.edu
- **Turkish Symp. on Artificial Intelligence & Neural Networks (TAINN III)** 22-24 Jun 94Ankara, Turkey31 Jan 94 Contact: tainn@vm.cc.metu.edu.tr (after Jan 94)
- **Pattern Recognition1994 16th DAGM Symposium and 18th OeAGM Workshop: Recognition and Learning** 21.-23.September 94 Vienna, Austria 2 Feb 94. "Theory of pattern recognition - speech recognition - speech understanding motion ..." Contact: dagm@prip.tuwien.ac.at (Walter G. Kropatsch)
- **From Perception to Action (PerAc'94)** 7-9 Sep 94Lausanne, Switzerland1 Feb 94 (papers) "A state of the art conference on perceptive processing, artificial life, autonomous agents, emergent behaviors and micro-robotic systems" Contact: perac@di.epfl.ch
- **12th Int'l Conf on Pattern Recognition (ICPR)** 9-13 Oct 94Jerusalem, Israel1 Feb 94 "Pattern recognition and neural networks; parallel computing" Contact: icpr@math.tau.ac.il
- **7th ACM Conf. on Computational Learning Theory (COLT 94)** 12-15 Jul 94New Brunswick, NJ, USA3 Feb 94 "Artificial and biological neural networks, robotics" Contact: colt94@cse.ucsc.edu
- **11th Int'l Conf. on Machine Learning (ML94)** 11-13 Jul 94New Brunswick, NJ, USA8 Feb 94 "Neural networks, computational learning theory, cognitive modeling" Contact: ml94@cs.rutgers.edu
- **16th DAGM Symp. and 18th OeAGM Workshop: Recognition and Learning** 21-23 Sep 94Vienna, Austria12 Feb 94 "Neural networks - machine learning for pattern recognition" Contact: dagm@prip.tuwien.ac.at
- **10th Int'l Conf. on Systems Engineering (ICSE'94)** 6-8 Sep 94 Coventry, UK 15 Feb 94 "Neural Networks and Genetic Algorithms in Control and Identification" Contact: mtx062@uk.ac.cov (Dr. Keith Burnham)
- **1994 IEEE Workshop on Neural Networks for Signal Processing (NNSP'94)** 6-8 Sep 94 Ermioni, Greece 15 Feb 94 Contact: msou@intranet.gr (Mrs. Myra Sourlou)
- **1st IEEE Int'l Conf. on Image Processing (ICIP-94)** 13-16 Nov 94 Austin, TX, USA15 Feb 94 (abstracts) "Neural Networks for image processing and model-based compression" Contact: icip@pine.ece.utexas.edu
- **IEE Colloquium on Advances in Neural Networks for Control and Systems** 26-27 May 94Berlin, Germany 25 Feb 94 Contact: hunt@DBresearch-berlin.de (Dr. K J Hunt)
- **Int'l Conf. on Evolutionary Computation the Third Parallel Problem Solving From Nature (PPSN III)** 9-14 Oct 94 Jerusalem, Israel1 Mar 94 "Genetic algorithms, neural and immune networks, machine learning" Contact: maenner@mp-sun1.informatik.uni-mannheim.de (Reinhard Maenner)
- **3rd Golden West Int'l Conf. on Intelligent Systems (GWIC)** 6-8 Jun 94 Las Vegas, NV, USA 10 Mar 94 "Neural Networks, Genetic Algorithms, Machine Learning" Contact: looney@cs.unr.edu (Carl Looney)
- **2nd Annual European Symp. on Algorithms (ESA'94** 26-28 Sep 94 Utrecht, Netherlands 25 Mar 94 "Neural and genetic computing, parallel and distributed algorithms" Contact: jan@cs.ruu.nl (Professor Jan van Leeuwen)
- **Int'l Conf. on Neural Information Processing (ICONIP'94)** 17-20 Oct 94 Seoul, South Korea 30 Apr 94 Contact: ICONIP@cair.kaist.ac.kr
- **4th Int'l Conf. on Microelectronics for Neural Networks and Fuzzy Systems (MICRONEURO 94)** 26-28 Sep 94 Torino, Italy30 May 94 "All aspects of hardware implementations of Neural Networks" Contact: lmr@pimac2.iet.unipi.it (L.M. Reyneri)
- **3rd Neural Computation and Psychology Workshop** 31 Aug-2 Sep 94Stirling, Scotland1 Jun 94 "Theme: models of perception" Contact: pjh@uk.ac.stir.cs (Peter Hancock)
- **Bat-Sheva Seminar on Functional Brain Imaging** 9-16 Jun 94Tel-Aviv, Israel- "PET, EEG, MEG, Optical, and particular emphasis on MRI" Contact: (fax) +972-3-561 2303 (Dan Knassim Ltd.)
- **Expert Systems for Accounting, Auditing and Tax Expert Systems with Applications: An International Journal Special Issue** 1 July 94. Contact brownc@bus.orst.edu (Carol E. Brown) (Oregon State University)
- **1995 Int'l Conf. on Neural Information Processing (ICONIP'95) 30 Oct-**3 Nov 95 Beijing, China 30 May 95 Contact: Prof Yi Xian Yang, P.O. Box 145, Dept. of Information Engineering, Beijing University of Posts & Telecommunications, Beijing 100088, P.R. China
- **Virtual Reality Annual International Symposium (VRAIS)** March 11-16 95 (Note Date Change) Research Triangle Park, North Carolina Contact: John L. Trimble. FAX 312 664 6491.

1994 IEEE INTERNATIONAL CONFERENCE ON ROBOTICS AND AUTOMATION

Sponsored by the IEEE Robotics and Automation Society

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ADVANCE ANNOUNCEMENT

The theme of the 1994 Conference is "**Robotics and Automation in the Service of Humankind**". This year, the Conference celebrates its 11th anniversary. Major scientific and engineering accomplishments have been reported over the last decade. As the field matures, the research community is now looking into the future with a renewed sense of purpose, entrepreneurship, and dedication to the enhancement of the quality of life. Intelligent robotic systems are being developed by the rapidly emerging service robotics industry. Applications of advanced automation technology are having an increasing impact on productivity and quality control in many manufacturing sectors, and have become a key competitive factor in the global economy. The 1994 Conference will bring together researchers and practitioners to present the latest accomplishments, and explore future directions. Special emphasis will be placed on **applications and industrial case studies** to help identify new "pulling forces" for research in the 21st century. Technical papers presented on Tuesday, Wednesday, and Thursday, May 10–12, will appear in the bound proceedings. Topics include but are not limited to:

- Robot sensing and sensor data fusion
- Reasoning and planning
- Multirobot coordination
- Dexterous and redundant manipulation
- Robot dynamics and control
- Telerobotics and shared control
- Autonomous systems
- Micro electromechanical and micro robotic systems
- Advanced actuators
- Mechatronic design issues
- Distributed intelligence and self-organizing systems
- Robot systems in unstructured and hazardous environments
- Virtual reality and environments
- Industrial inspection
- Design automation and rapid prototyping
- Computer integrated manufacturing
- Scheduling and control of manufacturing systems
- Modeling and performance evaluation of discrete event systems
- Advanced process control and automation
- Materials processing automation

TUTORIALS AND WORKSHOPS:
Half day and full day tutorials and workshops will be held on Sunday, May 8; Monday, May 9; and Friday, May 13, 1994.

EXHIBITS:
There will be exhibits of state-of-the-art hardware and software products at the conference. Reservations for space and further information may be obtained from:

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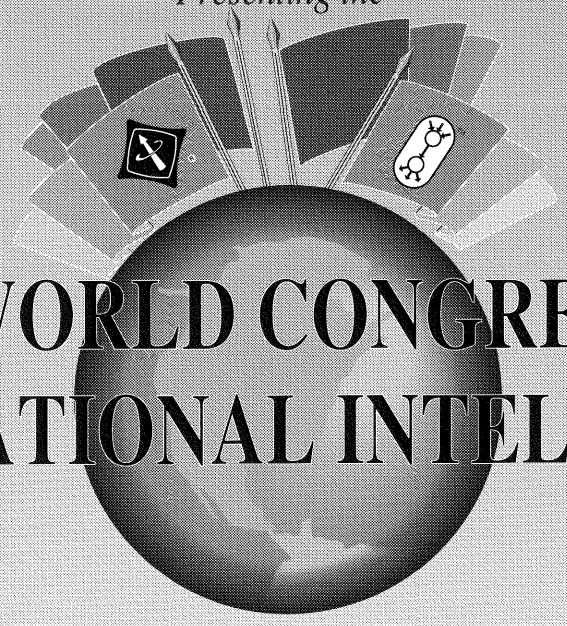

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