



Connections

The Newsletter of the IEEE Neural Networks Council

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President's Message-Should the Council Become a Society?

Patrick K. Simpson

The IEEE Technical Activities Board (TAB) consists of societies and councils. The majority of the technical groups are societies. When there is a technology (e.g. neural networks or solid-state circuits) that appears to span the technical interests of several societies, a committee is formed. If the committee is growing and strong, it becomes a council. Sometimes, as was the case for the Robotics and Automation Society, a council will ascend to society.

Societies and councils are the same in most ways. They each sponsor periodicals, conferences, books, video tutorials, and so on. They each

elect an executive committee. In addition, each society or council has its own budget.

The primary difference between a society and a council is membership. The members of a council are other IEEE societies. The members of a society are people (IEEE Members).

When a society wants to join a council, it petitions the council and, if there is sufficient technical overlap, it is added. Once a society has joined a council, that Society's president appoints two of its members to represent the society in council affairs. The appointed society representatives, the council's executive

committee, and various committee chairs, conduct council business.

A second difference is subscriptions. Currently, to get the *IEEE Transactions on Neural Networks* or the *IEEE Transactions on Fuzzy Systems*, you must be a member of one of the sponsoring societies. If you are not a member of a sponsoring society, you must pay a higher subscription fee (or join a sponsoring society for the lower rate).

A third difference is local representation. Most IEEE members are aware of Chapters. If there is enough local support, a society Chapter (i.e. Signal Processing Society Chapter)

(continued on back cover)

IEEE Neural Networks Council Member Societies

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

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Educational Activities: Karen Haines, University of New Mexico
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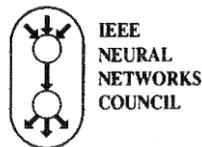
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1995 IEEE International Conference
on
Neural Networks
27 November - 1 December 1995

1995 IEEE International Conference
on
Evolutionary Computation
29 November - 1 December 1995



Perth, Western Australia
ICNN/ICEC General Chair: Yianni Attikiouzel
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Natural and artificial neural networks and associated topics:
Applications—Motion Analysis Architectures—Neurobiology—Artificially Intelligent Neural Networks—Neurocognition—Associative Memory—Neurodynamics—Computational Intelligence—Optimization—Cognitive Science—Pattern Recognition—Filtering—Prediction—Fuzzy Neural Systems—Robotics—Hybrid Systems—Sensation and Perception—Image Processing—Sensorimotor Systems Implementations—Speech, Hearing and Language—Intelligent Control—System Identification—Learning and Memory—Supervised/Unsupervised Learning—Machine Vision—Time Series Analysis

Theory and applications of genetic and evolutionary algorithms, and associated topics:
Theory of evolutionary computation—Applications of evolutionary computation—Efficiency/robustness comparisons with other direct search algorithms—Parallel computer implementations—Artificial life—Evolutionary algorithms for computational intelligence—Comparisons between different variants of evolutionary algorithms—Machine learning applications—Evolutionary computation for neural networks—Fuzzy logic in evolutionary algorithms

ADDRESSES

ICNN'95 submissions and all other correspondence regarding the conferences, *except* submissions of papers to ICEC

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La Jolla, CA 92037 USA

SCHEDULE

Proposals for tutorials, exhibits and plenaries 31 March 1995
Submission of papers 5 May 1995
Notification of acceptance 7 July 1995
Submission of camera-ready papers 25 August 1995

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 ISO A4 or USA 8.5" x 11" white paper, written in English in one-column format in Times or similar font style, 10 points or larger with 2.5cm (1") 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 and the name(s), affiliation(s) and address(es) of the author(s). The Paper Submission Cover Sheet (available via e-mail from conference management) should be completed and attached to the submission.

Treasurer: Svetha Venkatesh, Curtin University of Technology, Perth
Local Arrangements: Dorota Kieronka, Curtin University of Technology
Publicity Chair: Chris deSilva, University of Western Australia, Perth

The NNC Standards Committee

Mary Lou Padgett
Auburn University

Activities of the IEEE Neural Networks Council (NNC) Standards Committee are open to all interested persons.

Activity Report

The IEEE Standards Board is one of the foremost standards-making organizations in the world. Its capabilities are respected by industry, academia and government. A long history of setting successful standards has helped to gather a broad-based nucleus of people eager to work on NNC-sponsored standards.

The ongoing projects on Artificial Neural Networks glossary and performance measures have been expanded, and Virtual Reality standards projects have been initiated.

Artificial Neural Networks

The committee working on the ANN glossary project has developed a core of terms needing to be defined. These terms have been divided into modules and drafts circulated at all conferences inviting NNC standards participation. Numerous revisions of the basic term definitions have been processed. The next step is to obtain definitions for more specialized terms to supplement the existing set. Areas currently being addressed include: Intelligent Highway Vehicle Systems (IHVS), financial, power, computer vision, controls and pattern recognition. Terms relating ANN's to fuzzy systems and to evolutionary computation are being gathered. The ANN performance measure working group has expanded its activities to include certain training set considerations. The ANN interfaces group will present suggestions for hardware interface standards at WCCI (Deiss).

Virtual Reality

The IEEE Standards Board approved the following Project Authorization Request (PAR) on 25 March 1994 in Piscataway: P1392

Recommended Practice for Terminology—Definition of Terms for Virtual Reality. Standards Board Sponsor: Padgett; Working Group Chair: Eberhart.

The New Standards Committee (NESCOM) requested that the NNC Standards Coordinating Committee file a plan outlining proposed future projects relating to Virtual Reality. Study groups are thus being formed in the areas of Head Mounted Displays, Tracking, and Graphical Database Interfaces. Standards in these areas have been requested by manufacturers, and a set of suggestions is needed quickly.

Since the VR arena is so diverse, efforts to coordinate with others are intense. Padgett was invited to work with the Computer Society Standards Activities Board to map out planned coordination and circulation of drafts. The Distributed Interactive Simulation and Intelligent Highway Vehicles Systems groups also established liaisons with the NNC VR Standards group.

Communications

Communication with the public includes email, ftp sites and conference discussions. This summer, the NNC Standards Committee will further extend its public forum to a new IEEE Standards newsgroup and to all other bulletin boards or newsletters interested in circulating announcements. Initially, the IEEE newsgroups will be moderated by Padgett and Blade. Comments should be on the subject of standards, and considerate of the purpose of the newsgroup. Polite, short comments and questions with pointers to the location of other information of a more extensive nature are appropriate. Our liaison for the Far East, Toshio Fukuda, can assist with translations and exchange of ideas. Many countries have requested formal glossaries in languages other than

English.

Activities

All the NNC Standards Working Groups and Study Groups will hold formal and informal meetings throughout the year at WCCI, SCSC94 in San Diego, in Zurich, and at the WNN/FNN94 Washington DC meeting, where a NASA co-sponsored, multi-society standards forum will be held. In 1995, the Standards Committee will focus its VR efforts on the VRAIS 95 meeting at Research Triangle Park, North Carolina in March. Contact David Mizell at mizell@espresso.boeing.com for a conference update!

NNC Standards Committee Contacts

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- Methodology for Evaluating ANN
Training Algorithms
Robert W. Green
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- and
- Christopher M. DeAngelis,
deangelis@ada.npt.nuwc.navy.mil
- ANN Interface Standards
Steve Deiss
deiss@cerf.net
- Fuzzy Systems
Hamid R. Berenji
berenji@ptolemy.arc.nasa.gov

Call For Participation

VRAIS '95

March 11-15, 1995

TOPICS:
 Software Architectures
 Behavioral Modelling
 Tools and Techniques for Animation and Modeling in VR Systems
 Software Tools Development and Rapid Prototyping
 Artificial Intelligence Applied to VR
 Fuzzy Logic and Neural Networks Applied to VR
 Graphic Algorithms
 Distributed VR Systems
 Shared VR Systems
 Augmented Reality Systems
 VR Environment Design
 VR Interaction and Navigation Techniques
 Innovative and Useful Applications
 High Performance Driver Design

TOPICS:
 Operating Systems Considerations
 Parallel Processing
 Telepresence and Telerobotics Actuators
 Human Factors of VR
 Calibration of VR Systems
 Registration with the Real World
 Evaluation of VR Techniques and Systems
 Safety Standards
 Graphics and Video Hardware
 VR Display Devices, including: Visual, Audio, Kinesthetic, Force, Tactile, Olfactory, and Taste Displays
 Sensors
 Position and Motion Tracking
 Gesture Recognition
 Wireless Computer Connections

IEEE Virtual Reality
 Annual International Symposium
 Research Triangle Park, North Carolina
 Sheraton Imperial Hotel & Convention Center

Sponsored by
 The IEEE Neural Networks Council
 and

The IEEE Computer Society Technical Committee on
 Computer Graphics

Cooperating: SPIE - The International Society for Optical Engineering
 and SCS - The Society for Computer Simulation



PAPER SUBMISSIONS:

Send 6 copies of full papers to the Meeting Management address. Papers should be submitted in either double column or single column/double space format. Papers are limited in length to no more than eight double-column/single space pages. Papers must be written in English. In a cover letter, please include the complete title of the paper and the corresponding address, phone, fax and email information.

General Chair: David Mizell
 Boeing Computer Services

PAPERS:
 Peer reviewed proceedings.
 Steven Bryson
 NASA Ames Research Center
 Bryson@nas.nasa.gov

Steven Feiner
 Columbia University
 Feiner@cs.columbia.edu

PANELS
WORKSHOPS:
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 Blake@uw-isdl.ee.washington.edu

TUTORIALS:
 Beth Wenzel
 NASA Ames Research Center
 Beth@eos.arc.nasa.gov

EXHIBITS:
 Karen Haines
 Dept. of EECE, UNM
 Karen@eece.unm.edu

DUE DATE FOR ALL SUBMISSIONS:
 August 15, 1994

MAIL TO:
 Meeting Management
 2603 Main Street, #690
 Irvine, CA 92714
 Tel. 714-752-8205
 Fax 714-752-7444

Conference Report: ANZIIS'93

The Inaugural Australian and New Zealand Conference on Intelligent Information Systems (ANZIIS'93) was held in Perth, Western Australia in December, 1993.

The Conference was sponsored by the IEEE, in cooperation with the Institution of Engineers (Australia) and the Australian Computer Society.

The Conference was attended by about two hundred delegates from Australasia, Europe, and the United States of America, whose interests included Artificial Neural Networks, Artificial Intelligence, Virtual Reality and Fuzzy Logic. One hundred and fifty-six papers were presented during the three days of the Conference, which was held at the University of Western Australia.

The Conference was preceded by a day of tutorials. The four tutorials covered the topics Virtual Reality (Dr. John Wann), Learning Algorithms (Professor Jacek Zurada), Neural Networks and Expert Systems (Professor George Lendaris), and Wavelet Transforms and Applications (Professor Thong Nguyen).

The keynote addresses were given by John Wann on Virtual Reality, by Jacek Zurada on Learning in Artificial Neural Networks, and by George Lendaris on Neural Networks and Expert Systems.

A panel discussion on Recent Challenges in Neural Networks gave the delegates an opportunity to put questions regarding the current directions of Neural Network research to a number of Australian and international experts.

The ANZIIS conference will be held annually. The 1994 venue will be Brisbane, Queensland. In 1995, Perth will host it again, together with the IEEE International Conference on Neural Networks and the IEEE International Conference of Evolutionary Computing.

—Yianni Attikiouzel
 The University of Western Australia

Calendar

- August 1-7, 1994. 3rd Int'l Conf. on Fuzzy Logic, Neural Nets and Soft Computing. Iizuka, Japan. Contact T. Yamakawa, Kyushu Inst. of Technology, Iizuka, Japan.
- August 9-10. IEEE/Nagoya University WWW on Fuzzy Logic and Neural Networks/Genetic Algorithms. Nagoya. Contact Takeshi Furuhashi, Dept. Information Electronics, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-01 Japan.
- August 16-18, 1994. 9th IEEE International Symposium on Intelligent Control Columbus, Ohio, USA. Contact Levent Acar. acar@cme.nist.gov.
- September 6-8, 1994. IEEE Workshop on Neural Networks for Signal Processing. Ermioni, Greece. Contact Jeng-Neng Hwang, University of Washington, hwang@ee.washington.edu; Tel (206)685-1603; Fax (206)543-3842.
- September 13-16 '94. ICARV'94: 3rd Int'l Conf. on Automation, Robotics, and Computer Vision. Contact: Marcelo Ang, National University of Singapore, Tel 65-772-2555; Fax 65-779-1459; email mpeangh@nusvm.bitnet.
- October 2-5, 1994. IEEE Int'l Conf. on Systems, Man and Cybernetics. San Antonio, Texas. Contact: Prof. G.V.S. Raju, University of Texas at San Antonio, San Antonio, Texas, email:raju@voyager1.eng.utsa.edu.
- November 6-10, 1994. ETFA/94. Seiken/IEEE Symp. on Emerging Technologies

(continued on page 6)

Books: Computational Intelligence: Imitating Life

Edited by Jacek Zurada, University of Louisville, Robert J. Marks II, University of Washington, and Charles J. Robinson, University of Pittsburgh. From IEEE Press and the IEEE World Congress on Computational Intelligence

In the Preface to *Computational Intelligence: Imitating Life*, the editors write, "To our knowledge, the publication of this book marks the first time the components of Computational Intelligence have been fused in a single volume."

This book has its origins at the 1994 IEEE World Congress on Computational Intelligence (WCCI) to be held this summer at the Walt Disney Dolphin Hotel in Orlando. The WCCI, for the first time, will bring together in time and space, major conferences on neural networks, fuzzy systems and evolutionary programming.

A special plenary symposium, addressing emerging issues in computational intelligence, was conceived as glue to provide continuity among the three conferences. The contributions to the symposium were thought to be so outstanding that an archival volume of the contributions

was felt appropriate."

After an introduction by the editors and an essay "What is Computational Intelligence?" by James Bezdek, the papers are presented in seven sections: Computational Learning Theory, Approximate Reasoning, Evolutionary Computation, Biological and Computational Pattern Recognition, Intelligent Control, Hybrid Computational Intelligence, and Applications.

Among the contributors are A.K. Jain, Robert Hecht-Nielsen, Rolf Eckmiller, Allen Waxman, Shiro Usui, and Toshio Fukuda

The book will be given to all full participants at WCCI and will be available after the Conference from the IEEE Press.

[List price \$49.95 (for IEEE members, \$40.00). To order, call IEEE Customer Service: (800)678-IEEE or (908)981-1393 or Fax (908)981-9667. IEEE Order No: PC04580.]

& **Factory Automation.** Tokyo. Contact Richard Zurawski: rzz@stan.xx.swin.oz.au.

- **December 8-10, 1994. WNN/FNN.** Washington, D.C. Contact Mary Lou Padgett. mpadgett@eng.auburn.edu.
- **December 18-21, 1994. NAFIPS/IFIS/NASA 94.** San Antonio TX. Contact Larry Hall: hall@csee.usf.edu.
- **March 11-16, 1995. Virtual Reality Annual International Symposium (VRAIS).** Research Triangle Park, North Carolina (Note Date Change) See announcement.
- **March 20-24, '95. FUZZ-IEEE (with IFES) Yokohama,** Japan. See announcement.
- **November 27-December 1, 1995. ICNN: IEEE Int'l Conf. on Neural Networks.** Perth, Australia. See announcement.
- **November 29-December 1, 1995. IEEE Int'l Symp. on Evolutionary Computation.** Perth, Australia. See announcement.

Calls for Papers

- **Visualization in Biomedical Computing '94 (VBC '94).** Rochester, Minn. October 4 - 7, 1994, Deadline: July 1 1994. Contact: Richard A. Robb, Mayo Foundation/Clinic or VISION-LIST at FTP:TELEOS.COM
- **ICONIP: Int'l Conf. on Neural Information Processing.** Seoul Korea. Oct. 17-20, 1994. Contact: Myung Won Kim, Electronics and Telecommunications Research Institute, PO Box 8, Daeduk Science Town, Daejeon, Korea 305-606, Tel +82 42-860-6856.
- **IEEE SMC94.** San Antonio Texas. October 1994. Special Sessions on Adaptive Control and Fuzzy Adaptive Control. Contact: Dominique Lamy, ICAM. Tel+20 93 58 55. Fax+20 93 14 89.
- **ISANN: 1994 International Symposium on Artificial Neural Networks.** December 15-17, 1994 Tainan, Taiwan, Republic of China. Submissions: (USA and Europe) Prof. J.N. Hwang, hwang@ee.washington.edu. (Asia and rest of the world) pcchung@eembox.ncku.edu.tw.

Newsletter Deadline August 15, 1995

Send calendar announcements, conference reports, research notes, letters and other news items of interest to the community, to Rosalyn Snyder
CoNNections Managing Editor
3603 Octavia Street
Raleigh NC 27606.
(Note change of address effective July 15.)

Advertising

Advertisers should contact Rosalyn Snyder for rate sheet and schedule.

INTERACTIVE NEURAL NETWORKS, FUZZY LOGIC

DESIRE/NEUNET IS UNIQUE. Create new networks by typing and screen-editing readable matrix operations like

VECTOR layer2 = sigmoid(weight*layer1 + bias)
VECTOR member = one - abs(x - X); null, one
DOT output = member*ruleTab1

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\$735 (PC), \$2700 (SPARC; \$1800 educational), with 2 DESIRE texts (MIT Press 1991, McGraw-Hill 1989). Interactive neural-net C source-code generator \$7500.

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- **International Conference on Intelligent Autonomous Systems: IAS-4.** Karlsruhe, Germany, March 27-30, 1995. Deadline: July 30, 1994. Contact: F. Wallner, wallner@ira.uka.de.
- **Computational Intelligence for Financial Engineering (CIFE)** April 9-11 1995. New York. Deadline: November 1, 1994. Contact: Scott Matthews, 14920 24th Ave. SE, Bothell WA 98012-5718. Tel(206)485-0442.
- **HEURISTICS: The Journal of Knowledge Engineering & Technology,** Special Issue on The Integration of Digital Multimedia Technology and Knowledge-based Systems. Contact: Merrill E. Warkentin, mwarkent@research1.bryant.edu.

NNC Regional Interest Groups (RIGs)

The primary goal of the NNC RIGs Committee this year will be to increase the number of RIGs (Regional Interest Groups) worldwide (there are currently ten). RIGs provide an excellent opportunity for you to promote computational intelligence at a local level, and to network with other people who live nearby. If you would like to organize a new RIG, contact:

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Tel(206) 630-9398
Fax(206) 630-9398
colinwiel@mcimail.com.

FUZZ-IEEE/IFES '95



**March 20-24, 1995
Yokohama, Japan**

The International Joint Conference of
the Fourth IEEE International Conference
on Fuzzy Systems
and
the Second International Fuzzy
Engineering Symposium

Sponsored by IEEE NNC, LIFE, SOFT, JIPDE

Topics of Interest:

Basic concepts and methodology, fuzzy computing (hardware/ software), genetic algorithms and evolutionary systems, image understanding, intelligent systems, human interface, neural networks, virtual reality, and their applications to:
agriculture, artificial life, behavioral science, business management, civil engineering, control, design and architecture, ecology, education, industry, knowledge engineering, law, medicine, multimedia, natural language, operations research, pattern recognition, psychology, robotics, security, socio-economics, etc.

Call for Papers

Organizing Committee Chair
Toshiro Terano

General Chair
Michio Sugeno

Program Committee Co-Chairs:
Kaoru Hirota & Toshio Fukuda

Instructions for Preparation of Papers

Papers will be reviewed by senior researchers in the field, and the corresponding author will be informed of the decisions at the end of the review process. All accepted papers will be published in the Conference Proceedings. FAX or E-mail submissions are not acceptable. Please submit the following to:

**Program Committee
FUZZ-IEEE/IFES'95
LIFE
Siber Hegner Building 3 FL.
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Fax: +81-45-212-8255**

- 1) Send one original and five copies of the paper. Six total.
 - 2) Papers must be camera ready on 8 1/2 x 11 inches (or A4) white paper, two-column format in Times or similar font style, 10 points or larger with one inch margins on all four sides.
 - 3) Do not fold or staple the original camera-ready copy.
 - 4) Either six pages or eight pages, including figures, tables, and references. Papers over eight pages will not be considered.
 - 5) Paper must be written in English. 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:
- 1) Full Title of the Paper
 - 2) Corresponding Author (Name, Mailing Address, Telephone & Fax Numbers, E-mail Address)
 - 3) Technical Session (First and Second Choices from Topics of Interest)
 - 4) Presenter (Name, Mailing Address, Telephone & Fax Numbers, E-mail Address).

DEADLINES

Deadline of Submission (must be received)
Notification of Acceptance
Final Camera Ready Manuscript (must be received)

August 31, 1994
October 31, 1994
December 15, 1994

Should the Council Become a Society? (Continued from front cover)

can be formed. Because the NNC is not a society, it cannot have chapters. It can form Regional Interest Groups (and it has), but this is not easily done and the funding for local activities is limited. For many, working within a chapter of the local IEEE Section is preferred.

Should the NNC become a society? If it did, it would charge dues to its members and each member would determine who would be on the Executive Committee and Administrative Committees. This would eliminate appointments and provide the opportunity to any IEEE member to become a voting member of the IEEE NNC AdCom and ExCom. Furthermore, the membership could exercise its vote on key issues. Other than that, the difference would be almost imperceptible (other than a name change).

It is difficult to say exactly how large the membership for an IEEE Neural Networks Society would be, but I will offer a guess. Currently there are 7,200 subscribers to the *IEEE Transactions on Neural Networks* and 5,850 subscribers to the *IEEE Transactions on Fuzzy Systems*. If three-fourths of these subscribers become members, and

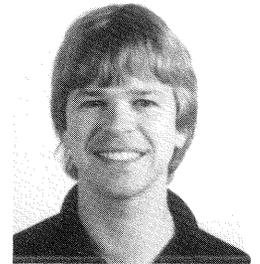
approximately 50% of the subscribers receive both transactions, this would mean the IEEE Neural Networks Society would have almost 5,000 members.

What do you think? Do you feel that the current society president appointment structure that is in place is preferable to membership-based elections? Do you feel the current structure for local meetings is sufficient and does not require a chapter-based structure? Do you feel that the access to *Transactions on Neural Networks* and *Transactions on Fuzzy Systems* is hindered by having to belong to another society to get the lower rate?

I would like you to respond to the editor of *CoNNections* with your thoughts on this issue. The Editor will summarize these thoughts and publish the results in the next issue of *CoNNections*. If you have thoughts that you would not prefer to have publicly expressed, please feel free to send to me where I will treat them with confidence. My mail address is 17436 Ashburton Road, San Diego, CA 92128. I can also be reached by email at xm8@sdcc12.ucsd.edu. I look forward to hearing from you.

PKS

Direct from Australia— The On-Line NN Calendar



NNC CoNNections Associate Editor Paul Bakker of the University of Queensland, Australia, has prepared the bulk of the extensive calendar which has appeared in the last several issues. You may access the current version of this calendar (which is updated monthly) via anonymous ftp from <ftp.cs.uq.oz.au>. ('get' the file /pub/pdp/conferences).

If you would like to add a conference to this on-line calendar, please send (preferably) a Call-For-Papers to

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IEEE Neural Networks Council
Dr. Wesley E. Snyder, Editor
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