# 1993 IEEE International Conference on Neural Networks (ICNN'93)
# Second IEEE International Conference on Fuzzy Systems (FUZZ-IEEE'93)

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*A pioneer combination of the largest technical conferences in the world devoted to fuzzy systems and neural networks.*

In recent years, concepts and methods from the fields of fuzzy systems and neural networks have been increasingly used in combination to develop new system modeling and analysis techniques and to understand and control a variety of real-world systems. Neural network techniques, for example, have proven to be extremely useful to refine and adjust the possibility distributions that define fuzzy controllers and fuzzy signal processors. Conversely, ideas from fuzzy logic have been used to generalize the architecture and learning rules of neural networks systems. The increasing number of technological connections between the fields has manifested itself in numerous technical contributions that bridge both disciplines. For example, approximately 20% of the papers presented at the First International Conference on Fuzzy Systems were concerned with combinations of fuzzy logic and neural networks concepts and techniques.

The evolving symbiosis of these new technologies and the realization that advances in the two fields are increasingly intertwined motivated the joint, concurrent meeting of two major technical forums: the 1993 IEEE International Conference on Neural Networks (ICNN'93) and the Second IEEE International Conference on Fuzzy Systems (FUZZ-IEEE'93).

San Francisco, California was the venue, from March 28 to April 1, 1993 of these two major meetings sponsored by the IEEE Neural Networks Council. The format chosen for this combined event allowed participants to either conference to attend all functions and programs of both conferences. Over 1200 participants were able to attend a rich program of tutorials, exhibits, technical sessions, social functions and tours.



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The technical programs prepared by the Program Chair of FUZZ-IEEE'93, **Dr. Piero P. Bonissone**, and by the Program Cochairs of ICNN'93, **Dr. Hamid Berenji, Professor Elie Sanchez,** and **Professor Shiro Usui**, were especially designed to foster interdisciplinary communication while maintaining the individual character of each conference.

The plenary session program, for example, included two joint sessions, or "superplenaries" featuring talks by **Professors Lotfi A. Zadeh, Bernard Widrow, Carver Mead,** and **Teuvo Kohonen.** Plenary sessions of ICNN'93 included talks by **Dr. Piero Bonissone, Dr. Richard Sutton, Professor Kumpati Narendra,** and **Professor John Koza** while plenary sessions of FUZZ-IEEE'93 included talks by **Professor E. Mamdani, Professor Michio Sugeno, Dr. Hamid Berenji,** and **Professors Didier Dubois** and **Henri Prade.** Two of these plenary talks (by Dr. Bonissone and Dr. Berenji) were specially prepared to introduce each community to significant concepts and advances of the other.

•Tutorials

The tutorial program of the joint meeting, organized by **Professor James Bezdek,** also emphasized interdisciplinary themes, ranging from applications



Hard-working AdCom members labor under the gaze of Jack London and Mark Twain

of fuzzy logic and neural networks to control systems, computer vision, and pattern recognition to discussions of approaches based on combination of genetic algorithms and neural networks and of expert systems and neural networks. Other tutorials included presentations on basic concepts of fuzzy set theory, neural networks, and evolutionary programming; hardware approaches to fuzzy logic; applications of fuzzy logic to databases and neural networks; and—in keeping with the multidisciplinary orientation of the event—on the role of cognitive-science concepts in neural networks applications.

The technical session program for both conferences included more than 600 contributions, of which approximately 350 were presented as part of ICNN'93 and 250 as part of FUZZ-IEEE'93. Invited sessions were organized on a variety of topics ranging from reinforcement learning and recurrent neural networks to various aspects of fuzzy reasoning and its applications. A significant number of participants attended sessions dealing with genetic algorithms and industrial applications of fuzzy logic, which, I am happy to report, will figure prominently in future NNC-sponsored meetings.

The organizing committee was particularly pleased with the response of participants to sessions dealing with interdisciplinary subjects such as the role of biological evolution in computation and various aspects of the symbiotic relation between fuzzy logic and neural networks.

### •Exhibits

Nearly 30 exhibitors participated in the joint Exhibits program displaying a variety of products and services ranging from books and software systems to various forms of hardware. "Flakey", an autonomous mobile robot developed by SRI International that uses a fuzzy controller, thoroughly and consistently roamed the exhibition floor during coffee breaks, sometimes sporting ICNN'93 and FUZZ-IEEE'93 T-shirts.

### •Electronic Proceedings

Both ICNN'93 and FUZZ-IEEE'93 followed in the pioneering footsteps of IJCNN'92 by producing CD-ROM versions of the Conference Records. These CD-ROM Proceedings, which were produced by Young Minds, Inc. of Redlands, California, may be accessed using a proprietary software package (ViewTool) that supports a wide variety of hardware platforms ranging from personal computers to a variety of engineering workstations.

### •Practitioner's Workshops

An innovation, introduced in the context of FUZZ-IEEE'93, was the inclusion, as a complement to the technical program, of "Practitioner's Workshops." Practitioner's workshops are informal gatherings intended to describe significant case histories and experiences in the application of a particular technology. The objective of practitioners' workshops is to provide newcomers to the field with significant information about the problems faced by those who successfully accomplished the technological transfer of theoretical ideas into actual commercial and industrial products. The pilot practitioners' workshop for FUZZ-IEEE'93 was organized by **Dr. Earl Cox** on the topic of commercial and business applications of fuzzy logic.



Renowned Juggler
Toshio Fukuda and
fellow performers

### •Video Proceedings

Also appearing for the first time in an NNC-sponsored conference was the first of a planned series of Video Proceedings, which was jointly produced by the NNC and the IEEE Educational Activities Board. Video Proceedings are collections of video segments showing significant research advances that cannot be easily conveyed in other formats. For this initial edition of a joint ICNN/FUZZ-IEEE'93 Video Proceedings, **Aviv Bergman,** of Interval Research Corporation, and I solicited a number of contributions from leading researchers in the fields of fuzzy logic and neural networks. These clips were edited and combined with narrative explanations about each contributed segment, and, more generally, about the nature of each discipline and its major problems. The result, produced with the assistance of the Stanford Instructional Television Network, is a new IEEE video entitled "Fuzzy Logic and Neural Networks: Clips from the Field."

The positive participant response to ICNN'93 and FUZZ-IEEE'93 expressed through personal comments and written evaluations are most reassuring indications of the timeliness and value of such a joint meeting and are a most appreciated reward for the efforts devoted by the IEEE volunteers who planned and organized these conferences.

In closing, I would like to thank the Program Chairs of both conferences; **Richard Tong,** who promptly and diligently took care of our finances; **Wei Xu**, who organized and promoted the Exhibits Program; **Camerone Welch,** who handled press and public relations; **Andy Worth,** who coordinated volunteer activities; **Aviv Bergman,** who chaired the Video Proceedings effort; **Alessandro Saffiotti,** who provided valuable real-time assistance and participated in the video effort; **Jim Bezdek**, for his confidence and for the organization of the tutorial program, and to all members of the Program and Organizing Committees, who made the San Francisco conferences such a big success. Special thanks also go to **Nomi Feldman** and her team at Meeting Management for their skillful organizational support. Finally, all of us involved in ICNN'93 and FUZZ-IEEE'93 are most grateful to **Russ Eberhart, Bob Marks**, and the Neural Networks Council for their confidence and unwavering support.