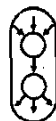


# The 12<sup>th</sup> IEEE International Conference on Fuzzy Systems

**Sunday 25 May – Wednesday 28 May, 2003  
St. Louis, Missouri, USA**



Sponsored by  
Institute of Electrical and Electronics Engineers (IEEE)  
IEEE Neural Networks Society



Edited by  
Olfa Nasraoui, The University of Memphis  
Hichem Frigui, The University of Memphis  
James M. Keller, University of Missouri-Columbia

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## A Message from the General Chairman

### 2003 IEEE International Conference on Fuzzy Systems

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Welcome to the 2003 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE2003), sponsored by the IEEE Neural Networks Society. FUZZ-IEEE is being held at the St. Louis Marriott Pavilion Downtown in the shadow of the Gateway Arch. The conference theme, "Exploring New Frontiers" alludes to the fact that 200 years ago, Lewis and Clark's Corps of Discovery wintered in the St. Louis area preparing to embark on the great adventure to explore the unknown reaches of the United States. It seemed fitting to use their drive to uncover the unknown as a guide for us as we discover new understanding of the mechanisms and management strategies of uncertain information.

We are truly an international community, as you will see from the number of countries represented by the scientists, practitioners, students, engineers, and other colleagues from around the globe. We have three outstanding plenary lectures, two of them delivered by IEEE Neural Network Society Fuzzy Pioneer Award winners. We had a very strong tutorial program proposed for Sunday, May 25, so we made the decision to open the tutorial program to all participants. Hence, as part of registration, all FUZZ-IEEE2003 participants can attend any one of the tutorials, with the second at a nominal price.

I would like to thank the many people who have helped ensure the success of FUZZ-IEEE2003. My program chairs, Hichem Frigui and Olfa Nasraoui, worked tirelessly to ensure that the technical program sparked. As local arrangements and publicity chair, Joe Stanley did so much of the detailed organization and planning. I need to thank my web co-chairs, Chi-Ren Shyu (also financial chair) and Wannapa Mahamaneerat, along with Tom Cholewo, the NNS web system chair, for all of their work on the local web site and the online submission and reviewing system. Appreciation is also owed to the other conference organizers, Pascal Matsakis (tutorials and exhibits) and Slawo Wesolkowski (student grants), as well as the organizers of the numerous special sessions and tracks, the authors, and the program committee members who reviewed the submissions. Most of you now know Cyndi Fergusson, my administrative assistant for both FUZZ-IEEE2003 and for *IEEE TFS*. Without her superb organization, none of this could have been pulled off. I also wish to recognize Paul Jackson, the Columbia artist who allowed us to use his original watercolor piece "Around the Bend" as our conference logo.

Of course, last and most importantly, I thank you for coming to FUZZ-IEEE2003. I hope that you find the conference memorable, technically satisfying, and enjoyable.

Sincerely,

A handwritten signature in black ink that reads "Jim Keller".

Jim Keller  
General Chairman  
University of Missouri  
Columbia, MO USA

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## A Message from the Program Chairs

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### 2003 IEEE International Conference on Fuzzy Systems

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Welcome to the 12<sup>th</sup> IEEE International Conference on Fuzzy Systems (FUZZ-IEEE2003)! Join us as we discover new understanding and applications of the mechanisms and management strategies of uncertain information. The spectrum that is spanned by the diverse program in our conference this year truly attests to the wide multidisciplinary interests under the common umbrella of soft computing. The program exhibits contributions spanning a range of fields, mirroring the evolution of soft computing from the classical fuzzy logic theory, control, robotics, and pattern recognition, to the trendy data mining, Web mining, information retrieval, and computer security.

Our program this year blossoms with papers in a variety of topics: Fuzzy Logic, Control, Mobile Robots, Optimization, Computing with Words, Human Interfaces, Neural Networks and Evolutionary hybrids, Data Mining, Information Retrieval, Pattern Recognition, Clustering, Image Processing, Architecture, as well as a assortment of Applications. We also have several special sessions in contemporary areas: *Fuzzy Logic and the Internet (FLINT)*, *Fuzzy Logic in Content-Based Multimedia Information Retrieval*, *Soft Computing in Bioinformatics*, *Computer Security with Soft Computing*, *Computational Intelligence for Homeland Defense*, and *Fuzzy and Morphological Neural Networks*.

To supplement our program, we have three outstanding plenary lectures, by three pioneers in fuzzy logic: Henri Dubois, Abe Mamdani, and Enrique Ruspini; and two panels that bring together experts, including *Prof. Lotfi Zadeh*, to help discuss the role of computational intelligence in two critical contemporary areas: the *Panel on Computational Intelligence for Homeland Defense and Counterterrorism*, and the *FLINT Panel on Enhancing the Power of the Internet*.

Our program is further enriched by a strong tutorial program delivered by renowned experts in their respective areas, spanning various subjects, from Fuzzy Databases and Robotics to Knowledge Management and Text Mining.

Any conference of this size and magnitude cannot succeed without excellent teamwork. We would like to acknowledge the Program Committee for their reviewing efforts, and our Special Session Organizers for graciously accepting our invitation to help us coordinate the contributions in their respective areas. We also join our General Chair in thanking local arrangements and publicity chair, Joe Stanley; web co-chairs Chi-Ren Shyu (also financial chair), Wannapa Mahamaneerat, and Tom Cholewo (the NNS web system chair); tutorial and exhibits Chair, Pascal Matsakis; Glenn Heckard of *The Printing House, Inc.* for his patience and help with the proceedings under tight timing constraints; and Administrative Assistant Cyndi Fergusson. We would also like to thank our panel organizers, with special thanks to Anupam Joshi who proposed and coordinated the Homeland Defense panel, all while getting tested by the challenging role of being a new father! Last, but not least, we acknowledge the excellent overall organization, guidance, timing, and patience of our General Chair, James Keller.

Most of all, we thank you for joining us in FUZZ-IEEE2003, and hope that you will enjoy attending the conference activities.

Sincerely,

Olfa Nasraoui and Hichem Frigui  
Program co-Chairs  
The University of Memphis  
Memphis, TN USA

## **Conference Organization**

### **2003 IEEE International Conference on Fuzzy Systems**

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Jim Keller, University of Missouri-Columbia

#### **Program Co-Chairs:**

Hichem Frigui, University of Memphis  
Olfa Nasraoui, University of Memphis

#### **Tutorials Chair:**

Pascal Matsakis, University of Guelph

#### **Exhibits Chair:**

Pascal Matsakis, University of Guelph

#### **Publicity Chair:**

Joe Stanley, University of Missouri-Rolla

#### **Financial Chair:**

Chi-Ren Shyu, University of Missouri-Columbia

#### **Local Arrangements Chair:**

Joe Stanley, University of Missouri-Rolla

#### **Web Development Co-Chairs:**

Tomasz Cholewo, Lexmark Co., Lexington, KY  
Chi-Ren Shyu, University of Missouri-Columbia  
Wannapa Mahamaneerat, University of Missouri-Columbia

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### 2003 IEEE International Conference on Fuzzy Systems

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\* Special Session Organizers