

Modeling of Human Social Utility in Games.” These were all included in the very reasonable conference fee, and were all well attended and well received.

The previous CIGs have set a tradition of having excellent keynote talks, and 2007 continued this. Michael Greenspan (Queens University, Ontario, Canada) gave the opening keynote: “Is Computational Intelligence Needed to Play Robotic Pool?” This explained in detail the challenges involved in developing their world leading robot pool player, and gave insights into how major problems were solved in actuators, computer vision, physics modelling, and game strategy. Their robot currently plays at the level of a good amateur, but is not yet a match for professional human players. Michael Buro (University of Alberta, Canada) spoke on “Game AI: Trends and Challenges.” In this talk, he described what game AI is already good at, and highlighted that for real-time strategy games, AI is rather weak compared to human players.

Marco Ernandes (University of Siena, Italy) talked about: “The WebCrow Man-Machine Crossword Challenge.” WebCrow is the first program to offer human-competitive performance at crossword solving. To achieve this, it integrates a Web-based

clue answering module that uses a search engine to gather possible answers, a machine learning system to rank them, and a constraint satisfaction engine to put them together into a coherent solution. The WebCrow system cannot handle cryptic crosswords, but it demonstrated very impressive performance on standard Italian and American crosswords.

The Best Conference Paper Award went to Yizao Wang and Sylvain Gelly for their paper: “Modification of UCT for Monte-Carlo Go with Patterns.” This was a very timely paper by pioneers of a technique that is revolutionizing the world of Computer Go, and almost certainly has applications well beyond that.

CIG 2007 offered four competitions: Ms. Pac-Man (see picture), X-Pilot AI, Neural Network Othello, and Simulated Car Racing. Of these, only the simulated car racing (<http://julian.togelius.com/cig2007competition/>) offered enough entries to name a winner, which was Pete Burrow of AutoDesk software, Cambridge, UK, with his modular neural network. There was also significant interest in the Ms. Pac-Man competition, which will also run for IEEE WCCI 2008. This is a difficult challenge, as the mode of interaction between the software agent and the

game is to capture the screen many times per second, perform image analysis to identify the main game objects, then work out the best course of action, and control the game agent by generating keyboard events to send to the game window. We hope one day for an entry than can challenge the human world record of 920,310 (held by Chris Ayr, Florida, USA), but the best software agents can currently score around 20,000. Some way to go yet!

The conference received 74 paper submissions, of which 40 were accepted for oral presentation and a further 13 for poster presentation. Thanks go to all our reviewers for ensuring a high standard of technical quality, and to Luigi Barone, our proceedings chair, for ensuring that all papers followed the formatting guidelines. As for all CIGs, the proceedings are freely available on the Web, see <http://cigames.org>. Overall, the conference was a great success, with the overall administration being handled with supreme efficiency by David Fogel, general chair of SSCI. Being part of SSCI was appreciated by all delegates, as it allowed one to meet up with a multitude of colleagues at the coffee breaks and social events.

We look forward to IEEE CIG 2008 (Perth, Western Australia, December 15–18) with great anticipation.

2007 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2007)

Qiang Shen
University of Wales, Aberystwyth, UK

The 2007 IEEE International Conference on Fuzzy Systems, FUZZ-IEEE 2007, was held July 23–26 at Imperial College, London. This year, there were 534 papers from 64 countries submitted to the conference, of which 285 papers were accept-

Digital Object Identifier 10.1109/MCI.2007.914699

ed for oral presentation and 65 for poster presentation. A vast majority of submissions were reviewed by three reviewers, with no specific treatment given to papers submitted for special sessions. A small number of papers were reviewed by two referees, but these have been further considered by the relevant area or special session chairs and

by the chairs of the conference. This ensures that every accepted paper is of top quality.

It was remarkable that approximately a quarter of all submissions were from student authors, and that 63 percent of such papers were accepted. Undoubtedly, these figures are very encouraging—demonstrating an

enthusiastic new generation of researchers is ready to pursue further advancements in fuzzy systems. As there were many excellent papers by students, the organizing committee had significant difficulty in deciding the winner of the Outstanding Student Paper Award (many congratulations to the winner, Hazael Jones, of the National Institute for Agricultural Research, France). The slogan of the conference was “Intelligence is fuzzy,” but the future potential of research and development in fuzzy systems is far from fuzzy!

FUZZ-IEEE 2007 had 20 regular sessions, 26 special sessions and one poster session, covering both traditional and emerging topics on fuzzy systems. In addition to the normal paper presentations, the technical program of FUZZ-IEEE 2007 included the following:

- ❑ Five tutorials: “Design of Real Time Evolving Fuzzy Systems: Methodology, Algorithms and Applications,” presented by Dimitar Filev (Ford Research and Advanced Engineering, USA) and Plamen Angelov (Lancaster University, UK); “Model-based Fuzzy Logic Control: Overview and Perspectives,” by Gary Feng (City University, Hong Kong) and Xiao-Jun Zeng (University of Manchester, UK); “Fuzzy Reinforcement Learning,” by Hamid Berenji (Intelligent Inference Systems Corp, USA); “Rule Base Compression in Fuzzy Systems,” by Alexander Gegov (University of Portsmouth, UK); and “Uncertainty and Information,” by George Klir (Binghamton University, USA).
- ❑ Four invited keynote talks: “The Role of Soft Computing in Intelligent Data Analysis,” given by Rudolf Kruse (University of Magdeburg, Germany); “Recognition Technology for Eldercare,” by Jim Keller (University of Missouri-Columbia, USA); “An Approach to Computing with Words,” by Jerry Mendel (University of Southern California, USA); and “From Fuzzy Logic to Extended Fuzzy Logic—The Concept of F-Validity and the Impossibility Principle,” (a special invited lecture that was partly sponsored by BT) by Lotfi Zadeh.
- ❑ Seven panel sessions: “Fuzzy Logic and the Internet (FLINT);” “Women in Computational Intelligence;” “Soft Computing and Multimedia Organization and Retrieval;” “Fuzzy Logic Control: Present, Future, and New Directions;”



Opening Ceremony.



Just a few of the many volunteers who helped to make the conference a great success.

- “Fuzzy Rule Base Networks—Overview and Perspective;” “Decision Analysis and Decision Support—The Need for Fuzzy Logic and Soft Computing;” and “Fuzzy Sets in Information Systems.”
- ❑ One competition workshop: “Simulated Car Racing,” (congratulations to the winning team: Ho Duc Thang, Phil Birkin and Jon

Garibaldi, from the University of Nottingham, UK).

The tutors, invited speakers and panelists represent a cross-section of the international community in fuzzy systems at its best. The number of panels and the first competition organized in the FUZZ-IEEE series made this conference a unique event. This has further reinforced FUZZ-IEEE's continued presence as the most prestigious annual international conference for the fruitful interaction and exchange of ideas on research, development and application of fuzzy systems.

Apart from the technical program, the conference also featured a reception

that took place in conjunction with the poster presentations. Also, a cruise banquet on the Thames enabled delegates to view many great London landmarks from a refreshing and relaxing perspective, and to enjoy the prizes given for the awards presented at IEEE, IEEE Computational Society, and the conference levels.

The organization of a conference of such significance and scale requires tremendous effort and dedication from many people. I would like to take this opportunity to thank once again all the members of the organizing committee and of the administrative support team for having shown great enthusiasm and

professionalism in preparing the detailed arrangements for the conference. I would also like to express my sincere gratitude to the area chairs and the special session chairs, and through them, to extend my gratefulness to all of the reviewers, for having put aside a substantial amount of their time to ensure the quality and the success of the conference. Last, but not least, many thanks go to the authors for contributing and presenting their work at the conference and to all of the approximately 440 delegates, including invited guests, who made this event one of the most celebrated in the history of FUZZ-IEEE series.

2007 International Joint Conference on Neural Networks (IJCNN 2007)

Jennie Si
Arizona State University, USA

The 2007 International Joint Conference on Neural Networks was held August 12–17, 2007 at the Orlando Renaissance Resort at SeaWorld. This marked the twentieth anniversary of this premier event. In recent years, IJCNN has become a leading neural networks conference, maintaining its tradition of an interdisciplinary, systems approach to the field. It has also grown to include papers in neuroscience, machine learning, computational intelligence, and artificial intelligence. Once again, the conference was the result of successful collaboration between the *International Neural Networks Society* (INNS) and the *IEEE Computational Intelligence Society* (CIS). Financial support from the Florida Institute of Technology and the University of Central Florida was greatly appreciated. What follow are a few reflections and highlights of the conference.

Digital Object Identifier 10.1109/MCI.2007.913385

20th Anniversary Celebration

Several conference events were organized in celebration of the 20th anniversary of the IJCNN. A panel discussion, led by the general chair of the 2007 IJCNN, Jennie Si, and co-chaired by INNS President Frederic Ham and IEEE CIS President Vincenzo Piuri, was held on the first day of the conference. Panel members included Thomas Cover, Robert Hecht-Nielsen, Stephen Grossberg, Marios Polycarpou, Paul Werbos, Donald Specht and Walter Freeman. The panel actively engaged in discussions on the society 20 years ago and the direction it has gone since. At the close of the session, commemorative crystals were given to individuals who had made significant contributions to the field of neural networks. A post-conference workshop, "Neural Nets: The Next 20 Years—Choices and Challenges," chaired by Harold Szu, Robert Kozma, Jennie Si, and Ali Minai, consisted of many prominent researchers in neural networks laying

out their goals and ideas for future research. A video record of this session will be made available online. A collection of more than a dozen well prepared posters were displayed in the conference main activity areas. The posters covered important people, events, and status of the field.

Program Overview

At the IJCNN 2007 welcoming reception, Jennie Si delivered opening remarks to the assembled participants. Paul Werbos delivered an exciting presentation on new research opportunities, the new NSF initiative on Cognitive Optimization and Prediction: From Neural Systems to Neurotechnology (COPN). Stephen Grossberg, José Príncipe, and Wolf Singer gave plenary talks. Michael Jordan, who also received an IEEE CIS Pioneer Award, delivered the banquet keynote talk. Following the IJCNN tradition, regular and special sessions were held in four simultaneous tracks over a period of four days.