

AAAI-05: Twentieth National AI Conference Is a Panoply of Content

Sara Reese Hedberg

... out over the Ocean, the winter sky is brilliant panoply of stars and comets, beckoning to adventurers ... who seek to divine its mysteries.

– Ben Green, *Before His Time*
(The Free Press, NY, 1999)

This year marks the twenty-fifth anniversary of the American Association for Artificial Intelligence and the twentieth National Conference on AI (AAAI-05).¹ The National Conference on AI is a focal point for leading researchers, practitioners, and engineers from around the world to share their latest work. This year's conference continues the long tradition of presenting a rich panoply of research and applications at the cutting edge of AI today.

Blue Ribbon Speakers

The range of blue ribbon speakers at this year's conference is as diverse as the field of AI itself. The keynote speaker is the colorful, controversial, and provocative Marvin Minsky,² co-founder of the MIT AI Laboratory and one of the founding fathers of AI. The Presidential address will be given by outgoing AAAI President, Ron Brachman,³ a highly respected AI researcher who is currently serving in the Corporation for National Research Initiatives as a special assistant to the President.

Other AAAI-05 invited speakers include Tucker Balch (Georgia Institute of Technology), Chitta Baral (Arizona

State University), Amy Greenwald (Brown University), Marti Hearst (University of California, Berkeley), Sridhar Mahadevan (University of Massachusetts), and Dana Nau (University of Maryland).

The Seventeenth Innovative Applications of Artificial Intelligence conference (IAAI-05) will feature world-renowned Internet commerce pioneer and visionary Jay M. ("Marty") Tenenbaum⁴ who will speak on "The Future of AI and the Web"; PalmPilot architect and executive director of the Redwood Neuroscience Institute Jeff Hawkins⁵ whose talk is titled "AI Winter into Spring: Can a New Theory of Neocortex Lead to Truly Intelligent Machines?"; and Martin Keane, coauthor of Genetic Programming III with John Koza, who will speak about "Real-world Applications of Genetic Programming."

The honor of this year's AAAI Robert S. Englemore Memorial Lecture has been awarded to James A. Hendler,⁶ the highly-regarded AI researcher and a pioneer in the development of the semantic web. Hendler is a professor of computer science and electrical engineering at the University of Maryland.

Technical Conference Receives Record Number of Submissions

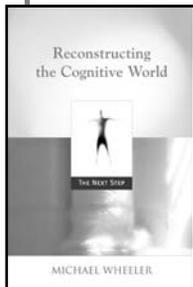
A record 803 papers were submitted to this year's technical conference, a testimony to the vibrancy of the AI

research field today. Submissions were received from 40 countries, with 48 percent coming from outside the US. After rigorous evaluation, 150 papers were accepted for oral presentation, and 79 for poster presentation.

A look at the categories of the accepted papers (and the number of papers within each category) gives a brief glimpse of the breadth of research agendas currently underway. There will be 5 papers published in activity and plan recognition, while 27 papers will be published in the agents and multiagent systems category. The analogical and case based reasoning category features 6 papers; auctions and market-based systems features 5 papers, and automated reasoning features 12 papers. Twenty papers will be published in constraint satisfaction and satisfiability; game theory and economic models features 5 papers; human-computer interaction has 6 papers, knowledge acquisition and engineering has 2 papers, knowledge representation and reasoning has 19 papers, and logic programming has 4 papers. Machine learning, the category with the largest number of papers, has 35, while machine perception has 6. Markov decision processes and uncertainty has 12 papers, natural language processing and speech recognition has 15 papers, planning and scheduling has 17 papers, and robotics has 16 papers in the proceedings. Search has 10 papers, and the final category, semantic web, information retrieval, and extraction, will feature 7 papers in the proceedings. The technical conference also includes 16 tutorials, 14 workshops, 22 intelligent systems demonstrations, 26 student abstract papers, and 16 doctoral consortium participants.

In an effort to facilitate communication across the many subareas of AI, AAAI-05 will include the first-ever track of highlights from sister-conferences. Representatives from 13 specialized AI conferences will summarize highlights from their most recent gatherings including. Topics covered in this session include intelligent agents, computational linguistics, constraint programming, automated planning and scheduling, case-based reasoning, ma-

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Innovative Applications of AI (IAAI-05)

The Seventeenth Annual Conference on Innovative Applications of Artificial Intelligence (IAAI-05)⁷ continues a highly regarded tradition of presenting both case studies of deployed applications and papers on emerging applications. Each of the deployed application papers includes quantitative measurements of the benefits provided by AI technology (for example, money saved, increases in productivity, and so on). These papers add to the ever-growing body of evidence that AI produces tremendous value to industry and governments around the globe.

By colocating IAAI-05 with the technical AAAI-05 conference, AI re-

searchers have an opportunity to learn of the challenges applying AI techniques to real-life problems. Reciprocally, AI application developers have an opportunity to learn about the latest AI techniques emerging from the research labs for next generation of intelligent applications.

This year's award-winning deployed application papers are from the following organizations (the title of each paper follows):

General Electric Global Research (Automating the Underwriting of Insurance Applications)

DCS Corporation (Loads-n-Limits and Release-n-Sequence: The "Brains" behind WEPS)

MTR Corporation Ltd. (Hong Kong), City University of Hong King and Synergicorp Ltd (Hong Kong) (Scheduling Engineering Works for the MTR Corporation in Hong Kong)

Config Works, University Klagenfurt, Bausparkasse Wustenrot (Austria) (Knowledge-based Interactive Selling of Financial Services with FSAdvisor)

Texas A&M (TEXTAL: Automated Crystallographic Protein Structure Determination)

NASA, University of Central Florida (NESTA: NASA Engineering Shuttle Telemetry Agent)

NOAA and Northrop Grumman Corp (CORMS AI: Decision Support System for Monitoring US Maritime Environment)

Emerging application papers show a diversity of AI techniques that hold promise for next-generation applications. The organizations presenting in this category are as follows:

Google, Carnegie Mellon University (Boosting Sex Identification Performance)

Jet Propulsion Laboratory (The Deep Space Network Scheduling Problem)

University of Fortaleza (Brazil) (A Multi-Agent Simulator for Teaching Police Allocation)

Childrens Hospital Los Angeles, University of Southern California (Markov Decision Processes for

Control of a Sensor Network-based Health Monitoring System)

Lehigh University, Naval Research Laboratory, Maastricht University (The Netherlands) (Automatically Acquiring Domain Knowledge for Adaptive Game AI Using Evolutionary Learning)

Rutgers University (Activity Recognition from Accelerometer Data)

Boreas Group, Maverick Technologies America (Development of a Hybrid Knowledge-Based System for Multiobjective Optimization of Power Distribution System Operations)

University of Southern California, Carnegie Mellon University (The DEFACTO System: Training Tool for Incident Commanders)

Cycorp (A Knowledge-Based Approach to Network Security: Applying Cyc in the Domain of Network Risk Assessment)

IBM Research Lab (India and Switzerland) (Managing the Life Cycle of Plans)

University of Texas at Arlington (A Learning Architecture for Automating the Intelligent Environment)

Robot Competition and Exhibition

The fourteenth annual Robot Competition and Exhibition⁸ once again brings together teams from universities, colleges, and research laboratories to compete and to demonstrate cutting edge, state of the art research in robotics and artificial intelligence. This year the program will include the Robot Challenge, the Scavenger Hunt, the Open Interaction Task, the Robot Exhibition, and the Mobile Robot workshop.

In the Robot Challenge, competing robots attend the conference by starting at the entrance to the conference center and finding the registration desk, registering for the conference, performing volunteer duties as required, interacting with conference attendees, and finally reporting at a prescribed time to a conference hall to give a talk.

In the Scavenger Hunt, robots will

search the conference area for a checklist of given objects, such as people or information located at specific locations or at a specific time. This task requires that the robots navigate and map a dynamic area with moving objects or people in order to acquire objects and satisfy a checklist. A key aspect of this event is the interaction of robots with people in the environment during timed missions run throughout the course of the conference.

The Open Interaction Task will take the place of the Robot Host event in past years and will probably involve interacting with conference attendees. The purpose of this event is to achieve a particular task in an unstructured environment.

The Robot Exhibition continues as a forum for researchers to demonstrate state-of-the-art research in a less structured environment than the competition events. The exhibition gives roboticists an opportunity to showcase current robotics and embodied-AI research that does not fit into the competition tasks.

Finally, on the last day of the conference, the Mobile Robot Workshop will be held for those who participated in the robotics track of the conference.

The preliminary list of teams entering this year's Robot Competition includes Bryn Mawr College, Canisius College, Carnegie Mellon University, Drexel University, Hanson Robotics, Inc., Fedex Institute of Technology, Harvey Mudd College, Intel Pittsburgh Research, Naval Research Laboratory, Pennsylvania State, University Abington, Stony Brook University, Swarthmore College, Université de Sherbrooke, University of Massachusetts Lowell, University of Missouri-Columbia, University of Notre Dame, University of New Orleans, University of Pittsburgh, University of Texas at Arlington, and the University of Texas at Dallas

First Annual General Game Playing Competition

A new addition to the National Conference on AI is the First Annual General Game Playing Competition. Gen-

eral game players are computer systems able to accept formal descriptions of arbitrary games and then play those games effectively without human intervention. Unlike specialized game playing systems (such as Deep Blue, the chess playing computer system developed by IBM that beat world chess champion Garry Kasparov in 1997), they do not rely on algorithms designed in advance for specific games. The stakes are high for the competition-with a \$10,000 prize going to the winner. (No human players allowed.)

The competition is designed to test the abilities of general game playing systems by comparing their performance on a variety of games-both single player and competitive games (such as a maze search, tic-tac-toe, or some variant of chess). The competition will consist of two phases: a qualification round and a runoff competition. There will be various conditions of play to test the scope of each system. Entrants will be evaluated on the basis of consistent legal play, ability to attain winning positions, and overall time; and the best will advance to a runoff round of increasingly complex games. The entrant to win the most games in this round will be the winner of the overall competition. An article on the competition appears elsewhere in this issue of *AI Magazine*.

The proceedings from AAAI-05/IAAI-05 will be available through AAAI Press.⁹

Notes

1. www.aaai.org/Conferences/National/2005/aaai05.html.
2. www.web.media.mit.edu/~minsky/.
3. www.www.brachman.org/.
4. www.commerce.net/about/board.asp.
5. www.rni.org/directors.html#jeff-hawkins.
6. www.cs.umd.edu/~hendler/.
7. www.aaai.org/Conferences/IAAI/2005/iaai05.html
8. www.aaai.org/Conferences/National/2005/robots05.html
9. www.aaai.org/Conferences/National/2005/games05.html
10. www.aaai.org/Press/press.html.