



# aaai-05 robot program

*Celebrating AAI's 25th Anniversary*  
**The Twentieth National Conference on Artificial Intelligence**  
July 9-13, 2005, Pittsburgh, Pennsylvania

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We invite you to participate in the Fourteenth Annual AAI Mobile Robot Competition and Exhibition, sponsored by the American Association for Artificial Intelligence. The Competition 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. The 2005 AAI Mobile Robot Contest and Exhibition will include the Robot Challenge, the Open Interaction Task, the Scavenger Hunt, the Robot Exhibition, and the Mobile Robot Workshop. Registration is now open (final deadline is May 31). Full details of the events are available on the separate robot website.

## Competition Awards

### **Scavenger Hunt First Place : Sony Aibo Prize**

HMC Hammer, Harvey Mudd College

### **Open Interaction First Place : Evolution Robotics Prize**

Human Emulation Robots, Hanson Robotics

### **Challenge : ActivMedia Prize**

LABORIUS, Universite de Sherbrooke

## Technical Achievement Awards

### **Map Building and HRI**

LABORIUS, Université de Sherbrooke

### **Overall Excellence for a Fully Autonomous System**

HMC Hammer, Harvey Mudd College

### **Robust Path Finding and Object Recognition**

UML Robotics Lab, University of Massachusetts, Lowell

### **Control Interface Usability**

UML Robotics Lab, University of Massachusetts, Lowell

### **Visionary Hardware Concept**

Claytronics, Carnegie Mellon University

### **Engaging Interaction Using a Cognitive Model**

NRL-MU, Naval Research Laboratory, University of Missouri-Columbia

### **Innovative Interface**

NRL-MU, Naval Research Laboratory, University of Missouri-Columbia

### **Adaptive Vision for Lighting Conditions**

Academic Autonomy, Swarthmore College

### **Visualization for Educational Robots**

Tekkotsu, Carnegie Mellon University

## Honorable Mentions

### **Audience Participation**

Pink Team Searching, Carnegie Mellon University

### **Promising Application and Domain**

Drexel Autonomous Systems Lab, Drexel University

### **Adaptability and Disaster Recovery**

Kansas State University, Kansas State University

### **Interdisciplinary Field Integration**

Stony Brook Robot Design Team, Stony Brook University

### **Robust Tracking and Real Time Adaptability**

CMDash'05, Carnegie Mellon University

### **Potential for Social Impact**

University of Pittsburgh

## Important Dates

If you intend to participate and you require travel funding, you must register your team by May 15, 2005 using the on-line registration system. The final registration form with payment is due on May 31, 2005.

## The Robot Challenge

*Chair:* Ashley Stroupe, Jet Propulsion Lab, (Ashley.W.Stroupe at jpl.nasa.gov)

The goal of the Robot Challenge is to work toward the development of an interactive social robot. Toward that end, the Challenge requires that the robot participate in the AAAI conference. Aspects of conference participation goals include locating the conference registration desk, registering for the conference, performing volunteer duties, and presenting a talk (and answering questions) at a prescribed time and location. Additionally, the robot should socially interact with other conference participants. Navigational technical challenges include dynamic crowded environments, natural landmark detection, direction understanding and following, and map reading. Social interaction challenges may include natural conversation regarding the robot and the conference and personalization of conversation with recognized individuals (by name, badge, or face). All of these things should be done in as close to the normal environment as possible.

## Scavenger Hunt

*Chair:* Doug Blank, Bryn Mawr College, (dblank at cs.brynmawr.edu)

Robots search the conference hotel area for a checklist of given objects such as people or information located at specific locations or at a specific time. This task will require robots to navigate and map a dynamic area with moving objects/people in order to acquire objects to satisfy the checklist.

We welcome a variety of teams to enter with one or more robots and/or human operators, yet every entrant must demonstrate AI techniques during the competition. A key aspect of this event is having the robots interact with people in the environment during timed missions run throughout the course of the conference. More specific rules and guidelines will be posted shortly. We encourage urban search and rescue teams with AI components to consider joining this event.

## Open Interaction Task

*Chair:* Ashley Stroupe, Jet Propulsion Lab, (Ashley.W.Stroupe at jpl.nasa.gov)

This event will take the place of the Robot Host event in past years and will probably involve interacting with conference attendees to achieve a particular task in an unstructured environment.

The goal of the Open Interaction Task event is to entertain people using robots and to provide AI and robotics researchers a refreshing venue for demonstrating AI techniques for interactive, entertainment, and social robots. Some of the topics include navigation, cognitive modeling, perception, emotional state modeling, natural language processing, and human-robot interaction.

Entrants may be any system that demonstrates some level of AI. In particular, we are looking for systems that are entertaining and strongly encourage teams to include human-robot interaction as part of their entry.

## The Robot Exhibition

*Education Chair:* Lloyd Greenwald, Drexel University, (lgreenwa at cs.drexel edu)

*Research Chair:* Magdalena Bugajska, Navel Research Labs, (magda.aic.nrl.navy mil)

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

## The Mobile Robot Workshop

A robotics workshop will be held on the last day of the conference. Teams who receive travel support must attend and present at the workshop. All other participants are strongly encouraged to attend and present. A research paper will be required within one month after the end of the workshop, and will be published in a workshop proceedings by AAAI.

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## Abstracts

Low-Cost Outdoor Robot Platform for the Penn State Abington Mini Grand Challenge  
*Robert Avanzato*

Pyro: An Integrated Environment for Robotics Education  
*Douglas Blank, Deepak Kumar, Lisa Meeden, and Holly Yanco*

Ready or Not, Here I Come ...  
*Magdalena Bugajska, William Adams, Scott Thomas, J. Gregory Trafton, and Alan C. Schultz*

Robots in an Intelligent Systems Course  
*Debra Burhans, Andre Nelson, and Victoria Steck*

Scavenging with a Laptop Robot  
*Alan Davidson, Mac Mason, Susanna Ricco, Ben Tribelhorn, and Zachary Dodds*

Social Tag: Finding the Person with the Pink Hat  
*Carl DiSalvo, Didac Font, Laura Hiatt, Nik Melchior, Marek Michalowski, and Reid Simmons*

Upending the Uncanny Valley  
*David Hanson, Andrew Olney, Steve Prilliman, Eric Mathews, Marge Zielke, Derek Hammons, Raul Fernandez, and Harry Stephanou*

Catoms: Moving Robots Without Moving Parts  
*Brian Kirby, Jason Campbell, Burak Aksak, Padmanabhan Pillai, James Hoburg, Todd Mowry, and Seth Copen Goldstein*

NavBot: The Navigational Search-and-Rescue Robot  
*Matthew Marge, Ayman Sawas, Juan Carlos Liberato, Murtaza M. Karim, Manish Muttreja,*

*Nader Alrawahi, and Brian Fink*

A Brochette of Socially Interactive Robots

*F. Michaud, D. Létourneau, P. Lepage, Y. Morin, F. Gagnon, P. Giguère, É. Beaudry, Y. Brosseau, C. Côté, A. Duquette, J.-F. Laplante, M.-A. Legault, P. Moisan, A. Ponchon, C. Raïevsky, M.-A. Roux, T. Salter, J.-M. Valin, S. Caron, P. Masson, F. Kabanza, and M. Lauria*

Indoor Aerial Robot Competition: Challenges in Search and Rescue Applications

*Paul Y. Oh, William E. Green, and Keith W. Sevcik*

Toward Affective Cognitive Robots for Human-Robot Interaction

*M. Scheutz, J. Kramer, C. Middendorff, P. Schermerhorn, M. Heilman, D. Anderson, and P. Bui*

Using a Sketch Pad Interface for Interacting with a Robot Team

*Marjorie Skubic, Derek Anderson, Samuel Blisard, Dennis Perzanowski, William Adams, J. Gregory Trafton, and Alan C. Schultz*

Tekkotsu: A Framework for AIBO Cognitive Robotics

*David S. Touretzky and Ethan J. Tira-Thompson*

Improving Human-Robot Interaction for Remote Robot Operation

*Holly A. Yanco, Michael Baker, Robert Casey, Andrew Chanler, Munjal Desai, Dan Hestand, Brenden Keyes, and Philip Thoren*

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## Registered Teams

*Preliminary List*

### **Academic Autonomy**

Swarthmore College

### **Claytronics/DPR**

Carnegie Mellon University/Intel Pittsburgh Research

### **Drexel Autonomous Systems Lab**

Drexel University

### **Griffins**

Canisius College

### **HMC Hammer**

Harvey Mudd College

### **Human Emulation Robots**

Hanson Robotics, Fedex Institute of Technology, ARRI, UTD

### **LABORIUS**

Universite de Sherbrooke

### **ND Rudy**

Notre Dame

### **NRL-MU**

Naval Research Laboratory, University of Missouri-Columbia

### **Pink Team Searching**

Carnegie Mellon University

### **Stony Brook Robot Design Team**

Stony Brook University

### **Tekkotsu Project**

Carnegie Mellon

**University of Pittsburgh**  
University of Pittsburgh

**UNO Robotics Team**  
University of New Orleans

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## Travel Funding

Limited travel funding will be available. If you wish to receive travel funding, the deadline for registering your intent to participate is May 15, 2005 (via the web registration).

## Participation Fees

Each team will be required to pay a \$250 participation fee that will help AAI to defray the cost of the competition. This fee is in line with fees charged by other competitive robotic events, and helps AAI to move towards a sustainable funding model for the annual robot competition.

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*General Cochairs:* Sheila Tejada (sheila at cs.uno edu)  
Paul Rybski (prybski at cs.cmu edu)

*Advisor and Past Cochair:* Bill Smart, Washington University in St. Louis, (wds at cse dot wustl dot edu)

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