



## aaai-11 – san francisco

August 7–11, 2011

### AAAI 2011 Robotics Program Program

Sponsored by the Association for the Advancement of Artificial Intelligence

The robotics program at AAI has a long tradition of demonstrating innovative research at the intersection of robotics and artificial intelligence. It strives to be a venue that pushes the science of embodied AI forward. Over the past few years a central point of the event has been the discussion of common research platforms and software, with the primary goal of focusing the research community's energy toward common challenge tasks.

This year we are soliciting participation in three challenge events: Learning from Demonstration, Small-scale Manipulation, and Miniature Humanoid Obstacle Avoidance. These are described in detail below.

Participants should submit a letter of intent that includes the following information:

- ⇒ Organization
- ⇒ Team name and list of members
- ⇒ Designated contact person (physical address, phone, and email)
- ⇒ Which track you will enter (one of the three challenges or the edu track)
- ⇒ Additional details (for example, for the manipulation challenge will you be in mobile manipulation or unlimited)
- ⇒ Brief description of robot to be used in the challenge, or approach that will be demonstrated, or exhibit that will be made.

Submissions will be accepted through the Robotics Program EasyChair website (<https://www.easychair.org/account/signin.cgi?conf=aaai2011robotics>). The submission deadline is March 1st, 2011.

#### Final Abstract Submission and Publication

Participating teams will have the opportunity to include a short abstract in the AAI-11 Conference Proceedings. Camera-ready copy will be due no later than April 26, 2011 (11:59 PM PDT) at the AAI Press paper submission site. Full instructions will be sent to approved teams by April 7.

Abstracts must be in trouble-free, high resolution PDF format, formatted for US letter (8.5" x 11") paper, using type 1 or TrueType fonts. Abstracts may be no longer than 2 pages including references, and formatted in AAI two-column, camera-ready style.

Authors will be required to transfer copyright of their paper to AAI.

#### Events

Robotic program events include the Learning from Demonstration Challenge, the Small-Scale Manipulation Challenge, the Miniature Humanoid Obstacle Challenge, and the Robotics Education Track. These events are described in greater detail below.

#### Learning from Demonstration Challenge

Robot learning from demonstration research focuses on the development of algorithms that enable humans to teach robots new tasks by showing the robot what to do instead of by programming. The 2011 Robot Learning from Demonstration Challenge, held in conjunction with the AAI Conference and Robotics Exhibition, is the premier forum for the presentation of advanced demonstration learning systems. The challenge is designed as an annual, multiday event that enables participants to showcase their latest findings through presentations and live interactive demos.

The broad aim of the Learning from Demonstration Challenge is to promote technological innovation in this research area by facilitating discussion

#### Important Dates

- ⇒ March 1, 2011: Letters of intent due
- ⇒ April 7, 2011: Team notifications sent
- ⇒ April 26, 2011: Camera-ready copy due

of the latest developments, providing a venue for showcasing cutting edge research, and encouraging comparative assessment through a series of organized challenges. Toward this goal, this year's event will include a single challenge task focused on food preparation. The task will require a combination of low-level skills, such as picking up and manipulating objects, and high-level task reasoning. Participants will be asked to demonstrate a robot's ability to learn the task through interaction with a human teacher.

Since not all interested participants may have access to robotic hardware that meets the requirements of the task with respect to sensing and manipulation, researchers will be provided with access to a Willow Garage PR2 robot through the Bosch PR2 Remote Lab facility.

#### Organizing Committee

Sonia Chernova (Worcester Polytechnic Institute) ([soniac@cs.wpi.edu](mailto:soniac@cs.wpi.edu))

#### Small-Scale Manipulation Challenge: Robot Chess

The AAI-2011 Small-Scale Manipulation Challenge focuses on perception and dextrous manipulation of small, light-weight objects, so that robots of any size can compete. This year the domain will again be chess. There will be two divisions: a mobile manipulation division for robots that can navigate on a tabletop, and an unlimited division for fixed-base arms and human-scale mobile platforms.

Qualification materials are due April 1, 2011. These consist of a two page abstract describing the robot platform and technical approach being used, and a brief video demonstrating that the robot is able to move a chess piece.

Rules for the competition will be worked out with the qualified competitors, but will be similar to those used in 2010. For more information, visit the challenge web page ([chiara-robot.org/Challenge](http://chiara-robot.org/Challenge)).

#### Organizing Committee

David S. Touretzky (Carnegie Mellon University) ([dst@cs.cmu.edu](mailto:dst@cs.cmu.edu))

Mike Stilman (Georgia Institute of Technology) ([mstilman@cc.gatech.edu](mailto:mstilman@cc.gatech.edu))

#### Miniature Humanoid Obstacle Challenge

The first Miniature Humanoid Obstacle Challenge was hosted at AAI 2010 in Atlanta. The Challenge demanded a humanoid to reach a goal position on a 6-foot field that was cluttered with colored obstacles. Multiple rounds were held over the 3-days and received enthusiastic audiences. The participants are collaborators on an NSF-sponsored project that works on simulated and miniature humanoids, respectively called virtual-Hubo and mini-Hubo. Based on the enthusiasm of the 2010 Challenge, we propose a Virtual Humanoid Manipulation Challenge. Here, virtual-Hubo will be provided

to all those interested in participating. The simulated world will demand manipulation (for example, push gates, lift bars, and so on and whole-body motions (for example, pick up boxes, crawl under desks, and so on). The exciting element is that code developed for virtual-Hubo runs on mini-Hubo. This platform independence thus enables one to see outcomes from the simulation on a real miniature humanoid. As such, a real-world facsimile of the simulated world will be erected at AAAI 2011. Code from winning teams will be uploaded to our mini-Hubo and executed in the real world. The net effect is a challenge that is not limited by electromechanical hardware but opens the opportunity for many groups, to get involved with humanoid research, and see their work perform on a real humanoid.

**Organizing Committee**

Paul Oh (Drexel University)([paul@coe.drexel.edu](mailto:paul@coe.drexel.edu))

**Robotics Education Track**

Robots — and the AI algorithms that control them — are quickly maturing as resources that help convey computer science, engineering, and many other curricula. This venue offers an accessible and flexible opportunity for undergraduate, early graduate, or pre-college student teams to design, implement, and demonstrate an autonomous robotic system. The tasks involved can span physically-embodied AI: exploration, interaction, and learning within an unknown environment. In the long run, we hope to motivate hands-on AI robotics investigation both for its own sake and in service to other academic disciplines and educational goals.

For more information see the supplemental website for this track ([www.cs.hmc.edu/aaairoboted](http://www.cs.hmc.edu/aaairoboted)).

**Organizing Committee**

Zach Dodds (Harvey Mudd College) ([dodds@cs.hmc.edu](mailto:dodds@cs.hmc.edu))

**Robotics Program Chair**

Andrea L. Thomaz

Georgia Institute of Technology

Information on this page is also available on the supplemental web page for this event ([www.cc.gatech.edu/conferences/AAAI-2011-Robotics/Home.html](http://www.cc.gatech.edu/conferences/AAAI-2011-Robotics/Home.html)).