

# IEEE RAS New Initiatives Competition

## Advancing Robotic Research through an Open Source High-Fidelity Simulation Framework and Competition

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### CALL FOR PARTICIPATION

#### Background

Automated Guided Vehicles (AGVs) represent an integral component of today's manufacturing processes. They are widely used on factory floors for intra-factory transport of goods between conveyors and assembly sections, parts and frame movements, and truck-trailer loading/unloading. Automating these systems to operate in unstructured environments presents an exciting area of current research in robotics and automation. Unfortunately, the traditional entry barrier into this research area is quite high. Researchers need an extensive physical environment, robotic hardware, and knowledge in research areas ranging from mobility and mapping to behavior generation and scheduling. An accepted approach to lowering this entry barrier is through the use of simulation systems and open source software.

The PIs have received a grant under the *IEEE Robotics and Automation Society's New Initiatives Competition* for this purpose. The PIs have extensive experience including managing the *de facto* standard open source systems for Virtual Urban Search and Rescue (USAR) development ([www.sourceforge.net/projects/usarsim](http://www.sourceforge.net/projects/usarsim)). It is our belief that competitions are an effective means of stimulating interest and participation among students by providing exciting technological problems to tackle.

#### Who Can Participate?

Under this effort, we are soliciting faculty members and their interested students from universities in the Greater Washington Area (Washington D.C., Northern Virginia and Baltimore) to be introduced to this time-critical research area. Student involvement will be encouraged through the creation of a **factory automation regional competition** and tutorial. This competition will be based on the successful RoboCup Rescue Virtual Competitions (also run and managed by the PIs: <http://www.robocup-us.org/>). Since all code used in these competitions is open source, participants will be able to learn from their competitors and self-sustain their research in their areas of expertise.

Researchers from multi-agent cooperation, robotic mapping, communications networks, and sensory processing backgrounds are particularly encouraged to participate. The participants will be provided with the necessary equipment and knowledge needed to join the robotics and automation research community in the area of AGVs. A two day tutorial will be provided, during which the participants will be loaned a simulation platform with all relevant software installed.

#### Interested?

Please contact us by *August 17<sup>th</sup>, 2007* with a succinct statement of how you expect to benefit from your participation and why you should be selected (emphasize skills and experience with respect to the requirements of the competition). If selected, you are expected to attend a two day tutorial to be held at NIST on *September 13--14, 2007*.

#### Beyond the Competition ...

It is our belief that this competition will serve as a model for establishing a university-community focused on a real-world practical problem and an international competition to be held in conjunction with the annual IEEE International Conference on Robotics and Automation (ICRA). The proposed effort will be administered under the auspices of the recently formed IEEE Washington Section Robotics & Automation Society Chapter (Chair: Dr. Madhavan). It is anticipated that this effort will help to draw more students into IEEE and RAS memberships and conference attendance.



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