



ROBOTICS  
SCIENCE AND SYSTEMS  
WORKSHOP

**NIST**  
National Institute of  
Standards and Technology

# Quantitative Performance Evaluation of Navigation Solutions for Mobile Robots

Organizers: Raj Madhavan, Chris Scrapper, and Alex Kleiner

Saturday, July 28<sup>th</sup> 2008

<http://kaspar.informatik.uni-freiburg.de/~rss/>

## Speakers

Tim Bailey *USyd*  
Henrik Christensen *Georgia Tech.*  
Dieter Fox *UWash*  
Giorgio Grisetti *Ufreiburg*  
Scott Lenser *iRobot*  
Johannes Pellenz *UKoblenz*

## Intended Audience

The primary audience of the proposed workshop is intended to be researchers and practitioners both from academia and industry with an interest in development of stable navigation solutions and robot-generated maps. It is envisioned to be also useful for anyone who has an interest in quantitative performance evaluation of robots and/or robot algorithms.

## Follow up Events

**Special Session** dedicated to objective evaluation methods and the development of test methods towards quantifying mobile robot navigation solutions at the 2008 Performance Metrics for Intelligent Systems (PerMIS) Workshop to be held from August 19-21 at the National Institute of Standards and Technology (NIST), U.S.A. ([www.isd.mel.nist.gov/PerMIS\\_2008](http://www.isd.mel.nist.gov/PerMIS_2008)).

**A Mapping Camp Robotic Exercise** that will bring together researchers and manufacturers of robotics technologies to assess quality of robot-generated maps and navigation solutions using standardized test methods.

## Contact Details

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## CALL FOR PARTICIPATION

The development of adaptive and technically capable mobile robots that are able to safely operate in unstructured, dynamic environments is essential to the acceptance of robotic technologies, permitting collaborative operations of man and machine. Currently, there is no way to quantitatively measure the performance of these systems against user-defined requirements; and furthermore, there is no consensus on what objective evaluation procedures need to be followed to deduce the performance of these systems. The lack of reproducible and repeatable test methods have precluded researchers working towards a common goal from exchanging and communicating results, inter-comparing robot performance, and leveraging previous work that could otherwise avoid duplication and expedite technology transfer from the "drawing board" to the field.

This workshop is the first in a series of workshops whose primary focus is to bring together what is currently an amorphous research community to define standardized methods for the quantitative evaluation of navigation solutions and robot-generated maps that will enable mobile robots to operate in dynamic unstructured environments. This workshop will seek to develop test methods to classify the performance characteristics of navigation solutions that facilitate the inter-comparison of experimental results. It will also attempt to define a *de facto* standard testbed for evaluation of navigation solutions that will provide a baseline for comparison and will provide the mechanisms targeting specific aspects of a system thus allowing researchers to assess the performance of various systems in different scenarios and environmental conditions.

## Workshop Format & Date

The workshop program will consist of one featured presentation, five regular presentations, and will conclude with a panel discussion involving all participants to summarize presented research and to decide future research directions and collaboration. The resulting papers and presentations will be included in a workshop CD and will also be made available at <http://kaspar.informatik.uni-freiburg.de/~rss/>. This half-day workshop is scheduled to be held on **Saturday, July 28<sup>th</sup> 2008** during the morning session of the workshops at RSS'08.

## Registration

All interested participants must register for the RSS conference to attend the workshop. Additional details on conference technical program, registration, travel, and accommodation are available from the RSS'08 website at <http://roboticsconference.org/>.