

# IEEE Robotics and Automation Society Chapter (Washington Section) March 6<sup>th</sup> 2008

**Chair: Raj Madhavan, Ph.D.**

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*Research Staff Member*

*Oak Ridge National Laboratory (ORNL)*

*&*

*Guest Researcher*

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**Vice Chair: Leon Escobar**

*leonescobarm@ieee.org*

*Research Associate*

*Norbert Wiener Center of Harmonic Analysis (UMCP)*

*&*

*Automation and Controls Project Engineer*

*Nestlé-Dreyer's Ice Cream Factory (Laurel, MD)*

**Treasurer: Jason Gorman, Ph.D.**

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*Guest Researcher*

*National Institute of Standards and Technology (NIST)*



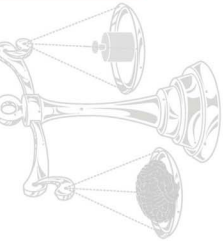
Robotics and Automation Society Chapter (Washington Section)



# Outline

- Chapter Grants
- Upcoming Conferences, Workshops & Symposiums (w/ RAS Chapter Sponsorship)
- Feedback (DL Series, Paper Reviews, etc.)
- **Guest Speaker Series Kickoff @ 7:00 PM**
  - Dr. Edward Tunstel
- *Please add name, email, and signature on the signup sheet*

# PerMIS'08



NIST  
National Institute of Standards and Technology



## PerMIS'08 Performance Metrics for Intelligent Systems Workshop August 19—21, 2008 [http://www.isd.nist.gov/PerMIS\\_2008](http://www.isd.nist.gov/PerMIS_2008)

### Call for Papers

PerMIS'08 will be the eighth in the series that started in 2000, targeted at defining measures and methodologies of evaluating performance of intelligent systems. The workshop has proved to be an excellent forum for discussions and partnerships, dissemination of ideas, and future collaborations in an informal setting. Attendees usually include researchers, graduate students, practitioners from industry, academia, and government agencies.

PerMIS'08 aims at identifying ways of **quantifying and contributions of functional intelligence towards achieving success**, where *intelligence* is defined as "the ability to act appropriately in an uncertain environment, where appropriate action is that which increases the probability of success", and *success* is "the achievement of behavioral goals" (J. Abus, 1991). In addition to the main theme, as in previous years, the workshop will focus on applications of performance measures to practical problems in commercial, industrial, homeland security, and military applications. Topic areas include, but are not limited to:

- Defining and measuring aspects of a system:
  - The level of autonomy
  - Human-robot interaction
  - Collaboration & Coordination
  - Taxonomies
- Evaluating components within intelligent systems:
  - Sensing and perception
  - Knowledge representation, world models, ontologies
  - Planning and control
  - Learning and adapting
  - Reasoning
- Infrastructural support for performance evaluation:
  - Testbeds and competitions for intercomparisons
  - Instrumentation and other measurement tools
  - Simulation and modeling support
- Technology readiness measures for intelligent systems
- Applied performance measures in various domains, e.g.,
  - Intelligent transportation systems
  - Emergency response robots (search and rescue, bomb disposal)
  - Homeland security systems
  - De-mining robots
  - Defense robotics
  - Hazardous environments (e.g., nuclear remediation)
  - Industrial and manufacturing systems
  - Space/Aerial robotics
  - Medical Robotics & assistive devices

The Proceedings of PerMIS are indexed by INSPEC, Compendex, ACM Digital Library, and are released as a NIST Special Publication. Selected papers from past workshops have been published as special issues with the Journal of Integrated Computer-Aided Engineering (PerMIS'04) and the Journal of Field Robotics (PerMIS'06).

### Submission Information

Prospective authors are requested to submit a draft paper (max. 8 pages) or an extended abstract (1-2 pages) for review. Invited session proposals can also be submitted as draft papers but should contain 1) a session title and a brief statement of purpose, 2) name and affiliation of the organizer(s), and 3) a preliminary list of speakers. All submissions must be written in English, starting with a succinct statement of the problem, the results achieved, their significance, and a comparison with previous work. Papers are to be submitted at [www.isd.nist.gov/PerMIS\\_2008/submission.htm](http://www.isd.nist.gov/PerMIS_2008/submission.htm) using the specified templates.

### Important Dates

Submission of full papers May 29, 2008  
Proposal for invited sessions June 06, 2008  
Notification of acceptance June 27, 2008  
Final papers due July 25, 2008

**General Chair**  
Elena Messina, NIST  
**Program Chair**  
Raj Madhavan, ORNL/NIST

#### Program Committee

S. Balakrishna, NIST USA  
R. Bostelman, NIST USA  
F. Bonsignorio, Heron Robots Italy  
G. Berg-Cross, EM&J USA  
P. Courtney, PerkinElmer UK  
J. Evans, USA  
D. Gage, XPM Tech, USA  
J. Gunderson, GammaTwo USA  
L. Gunderson, GammaTwo USA  
S.K. Gupta, UMD USA  
A. Jacoff, NIST USA  
S. Juller, Univ. College London UK  
M. Lewis, UPitt USA  
T. Kallmar-Nagy, Texas A&M USA  
A. del Pobil, Univ. Jaume-I Spain  
S. Ramasamy, UALR USA  
L. Reeker, NIST USA  
C. Schlenoff, NIST USA  
M. Shneier, NIST USA  
E. Tunstel, JHU-APL USA  
(pending)

#### Location

Washington, D.C. (The workshop will be held at NIST, Gaithersburg MD 20899)



Rob

ection)



# CapSci'08

[www.washacadsci.org/capsci08/Index.htm](http://www.washacadsci.org/capsci08/Index.htm)

Capitol Science 2008:  
Washington Academy of Science's Biennial Conference  
To be held March 29-30 at the National Science Foundation in Arlington, VA

Students (from Junior High through Graduate School)

Capital Science 2008 - Schedule for Saturday March 29

Room Capacity	45	80	20	24	24	12	12	20	20	120	42	42	80-100
Room Number	120	110	310	320	330	340	360	365	370	375	380	380	1235
Activity	registration												
Session 1	9:00-10:00	IIE/WIN-FORMS	IEEE-DC&NoVa Sections	PhilSoc	NCS/OASA	Break Room	SEAP	ASTI	SAF	WSHM	ASP/BS W/ VNPS/MN PS		
Session 2	10:00-11:00												
Session 3	11:00-12:00	PLENARY SESSION: <i>International Polar Research</i> led by the NSF Office of Polar Programs											
Room 1235	SPEAKER - Dr. Mario Livio, Senior Astrophysicist and Head of the Office of Public Outreach, Space Telescope Science Institute												
Lunch Hilton Hotel	12:00 - 2:00												
Session 4	2:00-3:00	IIE/WIN-FORMS	DC-AMS	IEEE-DC&NoVa Sections		Break Room		BioSW	ASTI	SAF	NIST	ASP/BS W/ VNPS/MN PS	
Session 5	3:00-4:00				PCHFES								
Session 6	4:00-5:45	PLENARY SESSION: <i>Tissue Ownership, Ethical, Legal, and Policy Considerations</i> led by Dr. William Gardner, Executive Director, American Registry of Pathology											
Cash Bar and Dinner Hilton Hotel	6:00 - 8:30	SPEAKER: NSF DIRECTOR DR. ARDEN BEMENT											

Key

- ASP/BS - American Society of Plant Biologists
- ASTI - American Society for Technical Innovation
- AMIS - Association for Women in Science - DC Metropolitan Chapter
- BioSW - Biological Society of Washington
- BSW - Botanical Society of Washington
- DC-AMS-DC Chapter, American Meteorological Society
- IEEE - Institute for Electrical and Electronics Engineers, Inc
- IIE - Institute of Industrial Engineers, National Capital Chapter
- MNPS - Maryland Native Plant Society
- NCS/OASA - National Capital Section/Optical Society of America
- NIST - National Institute of Standards and Technology
- PCHFES - Potomac Chapter of the Human Factors and Ergonomics Society
- PhilSoc - Philosophical Society of Washington
- SAF - Society of American Forester Washington Section
- SEAP - George Washington University Science and Engineering Apprenticeship Program
- VNPS - Virginia Native Plant Society
- WINFORMS-Washington Chapter of the Institute for Operations Research and Management Sciences
- WSHM - Washington Society for the History of Medicine



# RAS Distinguished Lecturer Series

- <http://www.ieee-ras.org/technical/distlect.php>
- <http://www.ieee-ras.org/technical/files/DLrequest.pdf>
- IEEE RAS Sponsored Lecture
  - w/ local Chapter & Section support
  - June 30 Deadline for talks in the second-half of the year
  - *“Cannot be used to support a plenary talk at a conference/symposium/workshop”*
  - **Distinguished Lecturers - Americas**
- Technical meetings
- Tours and conferences
- Seminars and/or tutorials
- Other services and activities for the local members of RAS
  
- Email me your suggestions

# Paper Reviews

- **Committees & Boards**
  - **Program Committee Member**, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, September 22 – 26, 2008.
  - **Program Committee Member**, *The 4th Annual IEEE Conference on Automation Science and Engineering (CASE)*, August 23 – 26, 2008.
  - **Program Chair**, *Performance Metrics for Intelligent Systems (PerMIS) Workshop*, August 19 – 21, 2008.
  - **Program Committee Member**, *Robotics: Science and Systems (RSS)*, June 25 – 28, 2008.
  - **Editorial Board Member**, *The Open Construction and Building Technology Journal*, 2007 – present.
  - **Editorial Board Member (Associate Editor)**, IEEE Robotics and Automation Society Conference Editorial Board, *International Conference on Robotics and Automation (ICRA)*, 2006 – present.
  - **Editorial Board Member**, *International Journal of Tomography & Statistics*, 2006 – 2008.
- Email me if you are interested in reviewing papers

# Local Chapter Grant



IEEE RAS Washington Section

## Autonomous Small Robot Speedway Competitions

Organizers: Melanie Vida, John Palmisano & Raj Madhavan

### CALL FOR PARTICIPATION

#### Background

Robot competitions are entertaining and a means for evaluating the performance of mobile, autonomous robots for a given fitness evaluation. Ranging from mobile, autonomous wheeled vehicles such as the Grand DARPA Challenge to cooperative teams of humanoid robots that compete in soccer, such as RoboCup, the challenges are typically representative of the kind of engineering problems that extend the boundary in Artificial Intelligence, Computer Vision, and Automation. The fitness evaluation can be duration in time to complete a task, ability to complete a sequence of tasks to meet a goal, and ability of robots to handle uncertainty.

#### The Competition

The PIs have received a grant under the *IEEE Robotics and Automation Society's Local Chapter Grants* for this purpose. It is our belief that competitions are an effective means of stimulating interest among participants by providing exciting technological problems to tackle. The Autonomous Small Robot Speedway competition is an outdoor, track-and-field race style competition. The track-and-field provides an excellent basis to measure the performance of small self-navigating robots in terms of speed, endurance, and sensor accuracy, and path planning. The rules and guidelines for the competition will be sent to interested participants.

#### Who Can Participate?

Under this effort, we are soliciting participants in the Greater Washington Area (Washington D.C., Northern Virginia and Baltimore). We would like to invite any IEEE junior members, University students, and the like to accept the challenge towards acquiring a deeper appreciation of the state-of-the-art and the challenges that are currently the focus in robotics and automation. The mobile robot challenge would begin this summer and there will be 3 tryouts before the final competition. The competition occurs once every month starting in June 2008. The robot size can range from 10x10x10 cm to 40x40x40 cm. The rules and guidelines for the competition will be provided to all the interested applicants by February 28<sup>th</sup>, 2008. First prize ~ \$500.00 and vendor related prizes ~ second, third prize awards.

#### Interested?

Please contact us by **April 30, 2008** 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) to [ieee.ras.dc@gmail.com](mailto:ieee.ras.dc@gmail.com). If selected, you are expected to attend seminars, tryouts to be held at the University of Maryland over the course of the competition series.

#### 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. The proposed effort will be administered under the auspices of the IEEE Washington Section Robotics & Automation Society Chapter (Chair: Dr. Madhavan).

#### Contact Details:

**Melanie Vida**  
Booz-Allen-Hamilton (BAH)  
[ieee.ras.dc@gmail.com](mailto:ieee.ras.dc@gmail.com)

**John Palmisano**  
Navy Research Lab. (NRL)

**Raj Madhavan, Ph.D.**  
National Inst. of Stds. & Tech. (NIST)



pter (Washington Section)

## Autonomous Small Robot Speedway Competitions

### Organizers :

- Melanie Vida (Booz Allen Hamilton)
- John Palmisano (Naval Research Laboratory) &
- Raj Madhavan (ORNL/NIST)

— *To provide a semi-formal IEEE-RAS Robotics and Automation competition open to members as well as to the general public with the end-goals to increase member participation, recruit new members, and to grow core-capabilities*

— *To educate members, University students, and the like in a deeper appreciation of the state-of-the art and the challenges that are currently the focus in Robotics and Automation*



# The Golden years Leading an Independent Life in the 21<sup>st</sup> Century



IEEE Washington DC &  
NOVA Team

J. Poston, EMBS USA  
P. Otto, EMBS USA  
A. Dei, EMBS USA  
D. Sterling, EMBS, COMM USA  
R. Madhavan, RAS USA  
R. Harwick, COMS USA  
P. Rait, COMS, RAS USA  
D. Holly, COMS  
T. Settle, SFS USA  
G. Strutt, ITS USA  
J. Christian, ITS USA  
M. Taysing-Lara, APS  
H. Sauberman, NPSS USA  
D. Rehfeld, RS USA  
T. Starat, CS USA  
L. Black, CS USA  
M. Caldwell, CS USA  
C. Baldi, CS USA

#### Location

Univ. of Maryland College Park  
J.H. Kim Engineering Bldg  
Room 1110

#### Registration

IEEE Members \$25,  
IEEE students \$10  
Non-IEEE Members \$50

**Registration Ends 05/05/08**

#### Sponsors

IEEE, Washington DC with technical sponsorship of the IEEE Washington & Northern VA Section Chapters: Engineering, Medicine and Biology, Robotics and Automation, Communications, Signal Processing, Computer, Antennas & Propagation, Information Theory, Nuclear & Plasma Sciences, Reliability, Society for Social Implication of Technology in-cooperation with the George Mason University and Capital College

Washington DC & NOVA 2008

Spring Symposium

*The Golden Years*

*Leading an Independent Life in the 21<sup>st</sup> Century*

May 10, 2008

#### Call for Participation

To speak and present at the upcoming spring symposium on Saturday May 10, 2008. **The emphasis of the workshop is on the use and applications of robotics and sensors in aiding an individual to lead an independent and productive life.**

This is an excellent forum for discussions and partnerships, dissemination of ideas, and future collaborations in an informal setting. Attendees are expected to include researchers, graduate students and practitioners from industry.

Topic areas include, but are not limited to:

Defining the aspects of a system:

- The level of autonomy
- Human-robot interaction
- Collaboration

Evaluating components within intelligent systems:

- Sensing and perception
- Knowledge representation, world models, ontology's
  - Planning and control
  - Learning and adapting
  - Reasoning

Instrumentation and other measurement tools:

- Simulation and modeling support
- Applied performance measures in various domains
- Emergency response robots
- Medical Robotics & Assistive devices

#### Confirmed Speakers

- **Prof. Henrik Christensen**  
*Kulka Chair of Robotics/Director Robotics & Intelligent Machines at GA Tech USA*
- **Ms. Cindy Crump**  
*President and CEO of AFrame Digital, Inc. USA*

#### Special Sessions & Panel Discussions

- Number of different robot technologies for assistance to people as part of their daily lives will be presented
- Demonstration and important feedback from the two assisted living facilities (ALFs) with discussions on the next set of research studies we are undertaking with NIH/NIA and DARPA



Robotics and Automation Society Chapter (Washington Section)





# Guest Speaker Series

IEEE  
RAS Chapter (Washington Section)  
Guest Speaker Series

**Date:** March 6<sup>th</sup>, 2008  
**Time:** 7:00 PM  
**Location:**  
Univ. of Maryland, College  
Park, Kim Engineering Bldg.  
(PepCo Rm. #1105)

## Contact Information

**Dr. Raj Madhavan**  
Chair  
[raj.madhavan@ieee.org](mailto:raj.madhavan@ieee.org)  
301-975-2865  
Intelligent Systems Division  
NIST  
Gaithersburg, MD 20899.

## Space Robotics for Science and Exploration on Planetary Surfaces

**Dr. Edward Tunstel**

Space Robotics and Autonomous Control Lead  
Space Department, JHU Applied Physics Laboratory

### Abstract

The first half-century of space exploration has seen significant accomplishments by robotic spacecraft that have flown by and orbited planets throughout our solar system. Current and future phases of space science and exploration have a major focus on landing and operating robots on planetary surfaces. This talk provides an overview of some of the robotics technologies receiving attention today to enable needed capabilities for current and future missions on the surfaces of other planets. The representative state of the art on missions operating today will be touched on including Mars rover mechanisms for mobility and manipulator placement of science instruments, autonomous navigation and related sensor-based perception, and the semi-autonomous operation of rovers from Earth. Future challenges will also be highlighted in the context of advanced applications that will require robots to perform work on planet surfaces alone, with other robots, or with/for astronauts.

### Speaker Biography

Dr. Tunstel joined the Johns Hopkins University Applied Physics Laboratory in the fall of 2007 where he is working as a Space Robotics and Autonomous Control Lead in its Space Department. Before joining APJL he was the Advanced Robotic Controls Group Leader at NASA's Jet Propulsion Laboratory where he developed autonomous control and navigation algorithms, software, and systems for robotics research and space flight projects for 18 years. His most recent project was the Mars Exploration Rovers mission for which he served as a flight systems engineer for autonomous rover navigation and, more recently, as the mobility and robotic arm subsystem lead for surface mission operations. Dr. Tunstel earned B.S. and M.E. degrees in mechanical engineering at Howard University, Washington, DC and the Ph.D. in electrical engineering at the University of New Mexico. He has authored over 110 refereed publications in journals and conferences and co-edited 3 books, including "Intelligence for Space Robotics" published in 2006. Dr. Tunstel is a senior member of IEEE, IEEE SMC Society Vice President for Conference & Meetings, and Chief Technologist of the NSBE Space Special Interest Group. He is active in the IEEE RAS TC on Space Robotics and IEEE SMCS TC on Robotics & Intelligent Sensing.

