

## WELCOME TO ROSE 2010

On behalf of the organizing committee, it is our pleasure to welcome all participants to the 2010 IEEE International Workshop on Robotic and Sensors Environments (ROSE), being held in Tempe, Arizona, USA, on October 15-16, 2010. The IEEE ROSE is sponsored by the Institute of Electrical and Electronic Engineers (IEEE) Instrumentation and Measurement Society (IMS). It is organized in collaboration with the IMS' TC-15 Virtual Systems in Measurements, TC-22 Intelligent Measurements Systems, TC-27 Human-Computer Interfaces and Interaction, TC-28 Instrumentation for Robotics and Automation, and TC-30 Security and Contraband Detection technical committees.

ROSE 2010 is the eight edition of this international workshop since its introduction in 2003. Pursuing the tradition established in the previous workshops, ROSE addresses all aspects of sensing systems and technologies for robotics and industrial automation, human-robot cooperation, multimodal or distributed sensing and perception technologies.

This year ROSE 2010 received 43 full-paper submissions originating from 16 different countries. All submitted manuscripts went through a careful peer-review process with a minimum of two reviews each. 32 papers presenting contributions of high quality have been selected for publication. The accepted papers span all areas of sensing for robotics, including autonomous mobile and manipulator platforms, intelligent and vision sensing technologies, as well as computational considerations related to robot navigation.

The two-day program provides an excellent opportunity for researchers from all around the world, who are interested in applications of sensing and robotics, to present their latest results and exchange on the new trends. More specifically, this edition of ROSE features the presentation of a group of papers that closely examine human interaction with robots. In relationship with these papers, a round table discussion is organized about the future of robot sensing for applications in the human domain. This direction represents a major area of research in intelligent robotic given the growing place that assistive robotics and social robotic systems are going to occupy over the next decade.

The organizing committee wants to thank all contributors to the success and continuous growth of the ROSE workshop series, especially the technical program committee members who volunteered their time to carefully review the manuscripts and provide constructive comments. Special thanks also go to the amazing local arrangements chairs, Troy L. McDaniel and Sreekar Krishna, at Arizona State University, who invested their enthusiasm, time and endless efforts to make this event a true success both technically and logistically.

Welcome to ROSE 2010. We wish all participants a fruitful experience, and thank you for your participation!

Dr. Pierre Payeur  
Dr. Peter Wide  
*Technical Program Chairs*

Dr. Sathuraman Panchanathan  
Dr. Mel Siegel  
*General Chairs*

# ROSE 2010 COMMITTEE

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## Friday, October 15, 2010

8:30                    *Registration*

9:00                    *Opening and Welcome Message*

9:10 - 10:30        **Session 1 - Intelligent Sensing**  
*Peter Wide, Orebro University, Sweden*

9:10        **Micro-Drone for the Characterization and Self-Optimizing Search of Hazardous Gaseous Substance Sources: A new Approach to determine Wind Speed and Direction**  
Patrick P. Neumann (BAM Federal Institute for Materials Research and Testing, Germany)  
Matthias Bartholmai (BAM Federal Institute for Materials Research and Testing, Germany)  
Jochen H. Schiller (Freie Universitat Berlin, Germany)  
Burkhard Wiggerich (AirRobot GmbH & Co. KG, Germany)  
Manol Manolov (BAM Federal Institute for Materials Research and Testing, Germany)

9:30        **Development of a High Resolution Human Breath Gas Sensor Considering Application for Rescue Robotics in Disaster Zones**  
Hideki Toda (University of Toyama, Japan)  
Genci Capi (University of Toyama, Japan)

9:50        **Estimation of Alerting Thresholds for Sense-and-Avoid**  
Dilan Amarasinghe (Memorial University of Newfoundland, Canada)  
Siu O'Young (Memorial University of Newfoundland, Canada)

10:10       **Dependable Distributed Data Acquisition Through Groups of Agents Operating Autonomously**  
Meng Wang (State University of New York at Stony Brook, USA)  
Alex Doboli (State University of New York at Stony Brook, USA)

10:30 - 10:50       *Coffee Break*

10:50 - 12:30       **Session 2 - Mobile Robots**  
*Genci Capi, University of Toyama, Japan*

10:50       **Stochastic Parameters Identification and Localization of Mobile Robots**  
Amar Khoukhi (King Fahd University of Petroleum and Minerals, Saudi Arabia)

11:10       **A New Approach for 3D Environment Measurement in Mobile Robot Applications**  
Zijian Zhao (University of Oulu, Finland)  
Juha Röning (University of Oulu, Finland)  
Antti Tikanmaki (University of Oulu, Finland)

11:30       **Intelligent neural network based controllers for path tracking of wheeled mobile robots: a comparative analysis**  
Omid Mohareri (Simon Fraser University, Canada)  
Rached Dhaouadi (American University of Sharjah, United Arab Emirates)  
Mehran M. Shirazi (Simon Fraser University, Canada)

- 11:50 An Intelligent Multi-Agent System for Mobile Robots Navigation and Parking**  
Amar Khoukhi (King Fahd University of Petroleum and Minerals, Saudi Arabia)
- 12:10 Keeping Multiple Moving Objects in Field of View of a Mobile Robot**  
Kaushik Nagarajan (University of Texas at Dallas, USA)  
Wen Yu (University of Texas at Dallas, USA)  
Nicholas Gans (University of Texas at Dallas, USA)
- 12:30 - 1:45 Lunch – Provided by: 24 Carrots**
- 1:45 - 3:05 Session 3 - Human and Robot Interaction**  
*Pierre Payeur, University of Ottawa, Canada*
- 1:45 Development of a Method to Determine Operator Location using Electromagnetic Proximity Detection**  
J. L. Carr (National Institute for Occupational Safety and Health, USA)  
C. C. Jobes (National Institute for Occupational Safety and Health, USA)  
J. Li (National Institute for Occupational Safety and Health, USA)
- 2:05 A Framework for Face Detection on Central Catadioptric Systems**  
Yohan Dupuis (IRSEEM, France)  
Xavier Savatier (IRSEEM, France)  
Jean-Yves Ertaud (IRSEEM, France)  
Ghaleb Hoblos (IRSEEM, France)
- 2:25 User Centered Framework for Intuitive Robot Programming**  
Andreas Pichler (Profactor GmbH, Austria)  
Martin Ankerl (Profactor GmbH, Austria)
- 2:45 A Vision based Robot Navigation and Human Tracking for Social Robotics**  
Genci Capi (University of Toyama, Japan)  
Hideki Toda (University of Toyama, Japan)  
Takuya Nagasaki (University of Toyama, Japan)
- 3:05 - 3:30 Coffee Break**
- 3:30 - 5:00 Special Session: The Future of Robot Sensing for Applications in the Human Domain**  
*Chair TBD*
- 3:30 Sensing and Perception for Rehabilitation and Enhancement of Human Natural Capabilities**  
Peter Wide (Orebro University, Sweden)  
Mel Siegel (Carnegie Mellon University, USA)  
Emil Petriu (University of Ottawa, Canada)
- 4:00 - 5:00 Round Table: The Future of Robot Sensing for Applications in the Human Domain**  
*Leader: Peter Wide (Orebro University, Sweden)*
- 6:30 - 8:30 Conference Dinner – Engrained Restaurant, ASU campus**

## Saturday, October 16, 2010

**8:30**                      *Registration*

**9:00 - 10:40**            **Session 4 - Wireless and Distributed Sensing Networks**  
*Pinhas Ben-Tzvi, The George Washington University, USA*

**9:00**            **Evaluation of a Wireless Vital Sensor for Ubiquitous Health Monitoring Systems**

Tadayuki Inoue (Osaka City University, Japan)  
Tetsuo Tsuchioka (Osaka City University, Japan)  
Shigeyoshi Nakajima (Osaka City University, Japan)  
Shinsuke Hara (Osaka City University, Japan)  
Hajime Nakamura (Osaka City University, Japan)  
Kazuhide Takeuchi (Osaka City University, Japan)

**9:20**            **Improved Sound-based Localization Through a Network of Reconfigurable Mixed-Signal Nodes**

Anurag Umbarkar (State University of New York at Stony Brook, USA)  
Varun Subramanian (State University of New York at Stony Brook, USA)  
Alex Doholi (State University of New York at Stony Brook, USA)

**9:40**            **Energy Saving by Centralized Sleep in Early Detection of Captured Nodes**

Wei Ding (Austin Peay State University, USA)  
Yingbing Yu (Austin Peay State University, USA)  
Sumanth Yenduri (University of Southern Mississippi, USA)

**10:00**           **Examination of Fusion Result Feedback for Fault-Tolerant and Distributed Sensor Systems**

Sebastian Zug (Universität Magdeburg, Germany)  
André Dietrich (Universität Magdeburg, Germany)

**10:20**           **UML Support for Optimizing the Goals of Distributed Control in Traffic Management Applications**

G. Magureanu ("Politehnica" University Timisoara, Romania)  
M. Gavrilescu ("Politehnica" University Timisoara, Romania)  
D. Pescaru ("Politehnica" University Timisoara, Romania)  
A. Doholi ( State University of New York at Stony Brook, USA)

**10:40 - 11:00**        *Coffee Break*

**11:00 - 12:20**        **Session 5 - Robotic Manipulation**  
*Shinsuke Hara, Osaka City University, Japan*

**11:00**           **Development of an Estimated Force Feedback Controller Based on Hertzian Contact and Ultrasound**

Jorge Armendariz (CINVESTAV, Mexico)  
Chidentree Treesatayapun (CINVESTAV, Mexico)  
Arturo Baltazar (CINVESTAV, Mexico)

**11:20**           **A Generic Configuration of a Compact Dexterous and Self-Contained End-Effector for Mobile Robotic Platforms**

Paul .M Mubarak (The George Washington University, USA)  
Pinhas Ben-Tzvi (The George Washington University, USA)  
Zhou Ma (The George Washington University, USA)

- 11:40    Workspace, Accuracy Analysis and Kinematic Calibration of a "Delta" Parallel Robot**  
Toufik Bentaleb (University of Genova, Italy)  
Khelifa Baizid (University of Genova, Italy)  
Amal Meddahi (University of Genova, Italy)  
Hakim Hammache (University of Algiers, Algeria)
- 12:00    Visual Monitoring of Surface Deformations on Objects Manipulated with a Robotic Hand**  
Fouad F. Khalil (University of Ottawa, Canada)  
Phillip Curtis (University of Ottawa, Canada)  
Pierre Payeur (University of Ottawa, Canada)
- 12:30 - 1:45            Lunch – Provided by: 24 Carrots**
- 1:45 - 3:25            Session 6 - Robot Vision and Imaging**  
*Alex Doboli, State University of New York at Stony Brook, USA*
- 1:45    Fusion of Discrete and Continuous Epipolar Geometry for Visual Odometry and Localization**  
David Tick (University of Texas at Dallas, USA)  
Jinglin Shen (University of Texas at Dallas, USA)  
Nicholas Gans (University of Texas at Dallas, USA)
- 2:05    Extraction of 3D Images Using Pitch-Actuated 2D Laser Range Finder for Robotic Vision**  
Pinhas Ben-Tzvi (The George Washington University, USA)  
Samer Charifa (Computer Science Corporation, USA)  
Michael Shick (The George Washington University, USA)
- 2:25    Development of a Characteristic Point Detecting Seam Tracking Algorithm for Portable Welding Robots**  
Doyoung Chan (Seoul National University, Korea)  
Donghoon Son (Seoul National University, Korea)  
Namsoo Kim (Seoul National University, Korea)  
Jongwon Kim (Seoul National University, Korea)  
Jungwoo Lee (Seoul National University, Korea)  
Tae-Wan Kim (Seoul National University, Korea)  
Kyu-Yeul Lee (Seoul National University, Korea)
- 2:45    A Method to Segment a 3D Surface Point Cloud for Selective Sensing in Robotic Exploration**  
Phillip Curtis (University of Ottawa, Canada)  
Pierre Payeur (University of Ottawa, Canada)
- 3:05    Real-time Image Processing for Motion Planning based on Realistic Sensor Data**  
Kai Wetzelsberger (Mannheim University of Applied Sciences, Germany)  
Thomas Pfannschmidt (Mannheim University of Applied Sciences, Germany)  
Thomas Ihme (Mannheim University of Applied Sciences, Germany)
- 3:25 - 3:45            Coffee Break**

3:45 - 4:45

**Session 7 - Robot Navigation**

*Chair TBD*

**3:45     Detecting obstacle-free regions for visual robot navigation by inferring scene horizons**

Francisco Jimenez-Hernandez (UAEM, Mexico)

Cinthia Campos (UAEM, Mexico)

Hector A. Montes (UAEM, Mexico)

Maria E. Enriqueta Barilla-Perez (UAEM, Mexico)

**4:05     Target Tracking with Communication Constraints: An Aerial Perspective**

Gurusubrahmaniyan Radhakrishnan (Arizona State University, USA)

Srikanth Saripalli (Arizona State University, USA)

**4:25     An Embedded Feature-Based Stereo Vision System for Autonomous Mobile Robots**

Pinhas Ben-Tzvi (The George Washington University, USA)

Xin Xu (The George Washington University, USA)

4:45 - 5:00

*Best Paper Awards and Closing Remarks*