SAE International™

"The society dedicated to advancing mobility engineering worldwide"

June 4-5, 2008
Carnegie Mellon University
Pittsburgh, Pennsylvania, USA

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Driver Assist and Autonomous Vehicle Technology Symposium

Automation on the Move

Hot Topics

- DARPA's Urban Challenge
- Advanced Driver Assistance and Autonomous Navigation
- Safety, Infrastructure and the Environment

Robotics Tours

- The New Robot City
- The Field Robotics Center

Hosted by

Carnegie Mellon

www.sae.org/driverassist

SYMPOSIUM OVERVIEW

Driver Assist and **Autonomous Vehicle Technology** Symposium

June 4-5, 2008

AUTOMATION ON THE MOVE

Driver assist and autonomous vehicle technologies are used to improve productivity and increase the safety in a growing number of fields. There have been huge improvements in recent years in sensing and perception technologies and remarkable technical achievements such as the completion of the **DARPA Grand Challenge**, which have helped to accelerate investments in these technologies. Among the most prominent examples are DARPA's Urban Challenge and Rio Tinto's multi-million dollar grant to the Centre for Mine Automation.

This symposium will showcase technologies, as well as systems and applications of driver assist and autonomous ground vehicles in the areas of transportation, agriculture resource management, and construction and mining. It will build upon the momentum of the 2005 Driver Assist and Autonomous Vehicle Technology Symposium, providing an update of the industry while discussing current applications and future decisions.

The Defense Advanced Research Projects Agency (DARPA) held its third Grand Challenge competition on November 3, 2007.

The DARPA Urban Challenge featured autonomous ground vehicles conducting simulated military supply missions in a mock urban area. Safe operation in traffic is essential to U.S. military plans to use autonomous ground vehicles to conduct important missions.

WHAT TO EXPECT

Topics of Discussion

This symposium will showcase systems and applications of driver assist and autonomous ground vehicles in the areas of:

- Agriculture resource management
- Construction and mining
- Sensor and navigation technologies

Special Events

- Keynote Speaker — Dr. William "Red" Whittaker
- Welcome Reception — Singleton Room Foyer
- Field Robotics Center Tour
- Robot City Tour

SYMPOSIUM ORGANIZERS

William Messner
Professor of Mechanical Engineering
Carnegie Mellon University

Sanjiv Singh
Associate Research Professor
Robotics Institute
Carnegie Mellon University

WHO SHOULD ATTEND

- Software Engineers
- Control & Navigation Engineers
- Manufacturers
- Suppliers
- Government Officials

SYMPOSIUM AGENDA

WEDNESDAY, JUNE 4

8:00 a.m. Registration – Singleton Room Foyer

8:45 a.m. Opening Remarks – Bill Messner

Keynote Speaker

9:00 a.m. *Presentation on the DARPA Urban Challenge*
Red Whittaker/Chris Urmson, Carnegie Mellon

Transportation

9:45 a.m. *Autonomous Driving Revolution: Roadmap and Challenges*
Bakhtiar Litkouhi, GM R&D

10:15 a.m. Coffee Break — Singleton Room Foyer

10:45 a.m. *An Automotive Perspective on Robotics and Advanced Driver Assistance Systems*
Dean McConnell, Continental Automotive

11:30 a.m. *Motion Planning for Autonomous Navigation in Urban Environments*
John Dolan, Intel Research

12:15 p.m. Lunch in the Schatz Room

Agriculture and Resource Management

1:45 p.m. *Automation in Agriculture: Specialty Crops Need It!*
Jim McFerson, Washington State Tree Fruit Research Commission

2:30 p.m. *Driving Innovation with Intelligent Mobile Equipment*
John Reid, John Deere

3:15 p.m. Coffee Break — Singleton Room Foyer

3:30 p.m. *Automation of Commercial Landscape Mowing and Other Repetitive Operations*
Dana Lonn, The Toro Company

Tour of Field Robotics Center

4:15 p.m. On-campus location

Welcome Reception

5:15 p.m. Singleton Room Foyer

THURSDAY, JUNE 5

8:40 a.m. Opening Remarks – Bill Messner

Mining and Construction

8:45 a.m. *Realistic Testing of Autonomous Mining Equipment: Safety, Infrastructure and Environment*
Mark Bartlett, Freeport McMoran Mining

9:30 a.m. *Mine Automation of a Small Open Pit in Northern Saskatchewan*
John Orr, GLR Resources Inc.

10:15 a.m. Coffee Break — Singleton Room Foyer

10:30 a.m. *On the Automation of Mining and Construction Sites*
Mike Taylor, Caterpillar

Other Applications

11:15 a.m. *Autonomy vs. Immersion: The Full Spectrum of Driving Experiences for the 21st Century*
Brian Yamauchi, iRobot

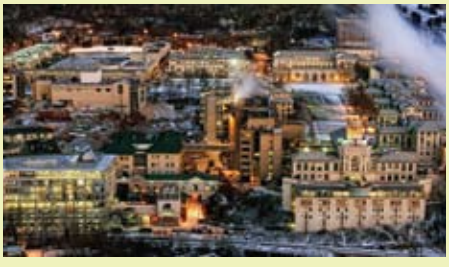
12:00 p.m. Lunch in the Schatz Room

1:30 p.m. *Stereo-based Perception for Autonomous Navigation in Natural Terrain*
Wes Huang, Applied Perception

2:15 p.m. *Presentation by Scott Thayer*
RedZone Robotics

Tour of Robot City

3:00 p.m. - 5:00 p.m. Off-campus location. Transportation provided—register early to ensure seat availability.



Having established a solid reputation in the robotics field, Carnegie Mellon University is an ideal venue for this symposium. Founded in 1900 and renowned for its outstanding arts and technology programs, Carnegie Mellon University concentrates on finding real answers to the problems facing society.

SPECIAL EVENTS

KEYNOTE SPEAKER

Dr. William "Red" Whittaker

Wednesday, June 4

9:00 a.m.

Dr. William "Red" Whittaker is the Fredkin Professor of Robotics, Director of the Field Robotics Center, and founder of the National Robotics Engineering Consortium, all at Carnegie Mellon University. His focus is on mobile robots that pick their own path through outdoor terrains, from the Dante robots that walked into active volcanoes to rovers that have trekked across deserts and Antarctic ice fields. He led Carnegie Mellon's Grand Challenge teams, culminating with the win of the 2007 DARPA Urban Challenge. Dr. Whittaker's portfolio includes the development of computer architectures for controlling mobile robots; modeling and planning for non-repetitive tasks; complex problems of objective sensing in random and dynamic environments; and integration of complete field robot systems.

Dr. Whittaker is widely known for his achievements in the robotics community. A few of his awards include: Engelberger Technology Award; Design News Special Achievement Award; Hero of Manufacturing Award; Aviation & Space Technology Award. Dr. Whittaker has advised twenty-three Ph.D. students, has sixteen patents, and has authored or co-authored over 150 publications.

WELCOME RECEPTION

Singleton Room Foyer

Wednesday, June 4

5:15 p.m. - 6:30 p.m.

ROBOTICS TOURS

The Field Robotics Center

Wednesday, June 4

4:15 p.m.

On-campus location.

The Field Robotics Center at Carnegie Mellon University is dedicated to the use of mobile robots for performing tasks in random or dynamic environments. This tour will show visitors a number of on-going projects related to operation in work sites and in natural terrain.

The New Robot City

Thursday, June 5

3:00 p.m. - 5:00 p.m.

Off-campus location. Transportation provided — register early to ensure seat availability.

The mission of Robot City is to move robots from the laboratory to life. This tour will provide participants with the opportunity to see Boss, the winning autonomous vehicle from the 2007 DARPA Urban Challenge, Sandstorm and Highlander from the 2005 Grand Challenge, in addition to other robots currently under development. Visitors will also have a chance to see the facilities used for development and testing of these vehicles.

REGISTRATION AND FEES

Maximum Savings!
Become an SAE Member and pre-register by May 16, 2008.

Registration and Fees	By May 16, 2008	After May 16, 2008
SAE Member	$595	$695
Non-member	$895	$995
Presenter	FREE	FREE
Exhibitor Booth Personnel (1 per booth)	FREE	FREE

NOTE: Registration fees include morning and afternoon coffee breaks, lunches, evening reception and tours, in addition to access to the symposium presentations and exhibit displays.

Onsite registration begins Wednesday June 4, 8:00 a.m

Conditions of Sale

All cancellations must be in writing and received by SAE prior to May 15, 2008. A $50 processing fee will be assessed for each cancelled registration that results in a refund. Refunds will not be issued if cancellation occurs on or after May 15, 2008. This policy includes special event and meal fees. For the SAE membership registration rates, member dues must be current at the start of the event. Children under 16 years of age are not permitted.

SAE will do what is feasible to make its events reasonably accessible to attendees. If you have special accommodation needs, please let us know in advance by calling 1-877-606-7323 (1-724-776-4970 outside U.S. and Canada). Accommodations requested on site will be provided only if possible for us to do so on short notice.

TO REGISTER

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Email: CustomerService@sae.org

HOTEL AND TRAVEL INFORMATION

The symposium will take place at
Carnegie Mellon University (CMU)
Singleton Room, Roberts Hall,
5000 Forbes Avenue, Pittsburgh, PA 15213
Phone: 1-412-268-2000
www.cmu.edu

Recommended Hotels

The following list of nearby hotels is provided for your convenience. All attendees are responsible for making their own lodging and travel arrangements.

Holiday Inn Select Pittsburgh @ University Center (Oakland)
Phone: 1-877-410-6681
www.hiselect.com

Courtyard Pittsburgh Shadyside
Phone: 1-412-683-3113
www.courtyard.com

Residence Inn Pittsburgh University/Medical Center
Phone: 1-412-621-2200
www.residenceinn.com

Wyndham Pittsburgh – University Place
Phone: 1-412-683-2040
www.wyndham.com

Quality Inn University Center
Phone: 1-412-683-6100
www.qualityinn.choicehotels.com

Hampton Inn Pittsburgh University Center
Phone: 1-412-681-1000
www.hamptoninn.com



MARKETING SOLUTIONS

An event with great appeal requires the same type of attractive platform in which to showcase your company's products and services! Capture the attention of this highly targeted audience of:

- Software Engineers
- Control & Navigation Engineers
- Manufacturers
- Suppliers
- Government Officials

PARTNERSHIP PACKAGE: $5,000

Partnerships are available for multiple companies; all partners receive all benefits

Partner with SAE in the 2008 Driver Assist and Autonomous Vehicle Technology Symposium and benefit from the following:

Receive credit via signage and recognition as a sponsor of the following networking events:

- Welcome Reception
- Luncheons on Wednesday and Thursday
- Refreshment breaks on Wednesday and Thursday

Additional benefits include:

- Recognition as a Partner with SAE in the Driver Assist and Autonomous Vehicle Technology Symposium on event
- One complimentary tabletop exhibit
- Two complimentary symposium registrations
- Recognition via the event website page and in all symposium related promotions
- Recognition as a Partner with SAE in the on-site event handout
- Special thank you from the Keynote speaker and an opportunity to display your corporate logo on the welcoming slide presentation
- Reach attendees through a one-time third party post-event complimentary attendee list rental
- Recognition in event handout (includes brief description of the company)

TABLETOP DISPLAY OPTION:..... $2,000

This option includes:

- One table top display space (includes one table with two chairs)
- One complimentary conference registration
- Recognition in the event handout with brief company description

For more information or to take advantage of these opportunities contact:

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RELATED RESOURCES FROM SAE INTERNATIONAL

Multiplexed Networks for Embedded Systems: CAN, LIN, FlexRay, Safe-by-Wire...

By Dominique Paret

Multiplexed Networks for Embedded Systems provides a comprehensive introduction to automotive multiplexed network buses, covering the technical principles, components, implementation issues, and applications of numerous systems.

A valuable guide to embedded systems for a wide range of applications, this book features thorough coverage of:

- Controller Area Network (CAN)
- Local Interconnect Network (LIN)
- Time-triggered CAN (TTCAN)
- FlexRay
- X-by-Wire
- Fail-Safe-System Basis Chip (SBC)
- Other gateways
- Safe-by-Wire
- 12C
- Media Oriented Systems Transport (MOST)
- and more

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IVI Technology and Intelligent Transportation Systems

The 15 papers in this intelligent vehicle technology publication cover vehicle navigation, collision avoidance, sensor and camera based autonomous driving and parking, vehicle to vehicle communications, and more. Practical examples and applications of sensors, software, control logic, and data used to assist, control, and/or guide the driver and/or vehicle are also included.

$75.96 SAE Member
$94.95 Nonmember
Product Code: SP-2099

Vehicle Sensors and Actuators, 2007

Modern automotive customers need safer vehicles with little or no impact to the environment. The 19 papers in the publication present the latest research and development on novel sensors, actuators, and sensor fusion that are critical to deliver the function of today's complex automotive systems.

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$104.95 Nonmember
Product Code: SP-2124

Distributed Automotive Embedded Systems

By Ronald K. Jurgen

Automotive embedded systems are distributed throughout modern vehicles using multiple vehicle networks partitioned across a variety of different electronic modules. As more complex control systems are used in automobiles, more distributed automotive embedded systems will be needed.

This book contains 88 papers covering the past seven years (2001-2007) of research on the varying aspects of distributed embedded systems. Topics covered include:

- Controller Design/Development
- Software Design/Development
- Communication Networks/Systems
- Model-Based Hardware/Software/Network Developments
- System Testing/Diagnostics
- Implementation Examples

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Actual shipping charges will be added.

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