

TC TRIENNIAL REVIEW REPORT (2006-2008)

(Co-chairs: Urbano Nunes, Christian Laugier, and Alberto Broggi)



Robotics & Automation Society

IEEE Robotics and Automation's Technical Committee

Autonomous Ground Vehicles and Intelligent Transportation Systems

(1) Honest assessment of TC over past 3 years, goals for next 3 years, and the feasibility of retiring the TC

- Assessment of TC over past 3 years:

The TC organized definitely a good set of initiatives which were well received by conference attendees and authors. The high number of participants to the various workshops and special issues witness this claim

- Objective:

To keep the initial general objective that consists in catalyzing the interaction between RAS and the Intelligent Transportation Systems Societies.

- Main goals for the next 3 years period:

Besides the Workshops organized at ICRA, IROS and ITSC conferences we are planning to organize 1 or 2 journal special issues and possibly an edited Springer book. Members of the TC will organize the future conferences IEEE ITSC2010 (Portugal) and IEEE IROS 2012 (Portugal).

- The opinion of the TC chairs is that it is important to maintain this TC both for the RAS and ITS societies, while maintaining the objective stated above. During the last 3 years period, we have had a good set of initiatives that obtained a very good response from the scientific community; the potential is still present and it's definitely not to be turned down.

(2) List of activities during past three years (which should include, but not limited to, the expected activities listed above)

- IROS 2009 3rd Workshop on Planning, Perception and Navigation for Intelligent Vehicles Workshop October 15, 2009 - St. Louis, USA (Organizers: Urbano Nunes and Christian Laugier)

- ICRA 2009 Workshop on Safe Navigation in Open and Dynamic Environments: Applications to Autonomous Vehicles Workshop, Kobe, Japan (Organizers: Philippe Martinet, Christian Laugier, and Urbano Nunes)

- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2008) Conference, Nice, France. Members of the Autonomous Ground Vehicles and ITS TC were actively involved in IROS 2008: Christian Laugier was the Program Chair.

- IROS 2008 2nd Workshop on Planning, Perception and Navigation for Intelligent Vehicles Workshop, Nice, France (Organizers: Urbano Nunes, Christian Laugier, and Alberto Broggi)

- IROS 2007 Workshop on Safe Navigation in Open and Dynamic Environments: Applications to Autonomous Vehicles Workshop October 29, 2007 - San Diego, USA (Organizers: Christian Laugier, Urbano Nunes, and Hadi Moradi)
- ICRA 2007 Workshop on Planning, Perception and Navigation for Intelligent Vehicles Workshop, Rome (Organizers: Urbano Nunes, Christian Laugier, and Alberto Broggi)
- IROS 2006 Track of Special Sessions on Perception and Navigation for Automated Vehicles Organized Session October 11, 2006 - Beijing, China (Organizers: Urbano Nunes, Ming Yang, and Michel Parent)
- IROS 2006 Workshop on Safe Navigation in Open and Dynamic Environments - Autonomous Systems versus Driving Assistance Systems Workshop, Beijing, China (Organizers: Christian Laugier, and Roland Siegwart)
- See also the list of organized journal special issues (item 4).

(3) List of outreach activities outside the RAS

- Workshop on ITS Experiences in Europe Workshop June 18, 2009 - Murcia, Spain (Contact Information: Rafael Toledo-Moreo)
- Field and Service Robotics Conference (FSR 2007) Conference July 9-12, 2007, France (General Chair: Christian Laugier and General Cochair: Roland Siegwart)
- Workshop on ITS Applications and European Electronic Tolling, June 9, 2009, Bucharest, Romania (Contact Information: Rafael Toledo-Moreo).
- IEEE IV2009, Keynote Speech: High Levels of Automation in Next Generation Vehicles, Xi'an, Shaanxi, China. Keynote Speech by Alberto Broggi on IEEE Intelligent Vehicles Symposium (IV'09)
- IEEE Intelligent Transportation Systems Conference (ITSC 2008) Conference Beijing, China, Members of the TC were actively involved: Urbano Nunes was a Program Co-Chair.
- IEEE Intelligent Vehicle Symposium (IV 2008) Conference June 4, 2008 - Eindhoven, the Netherlands. Members of the Intelligent Transportation Systems TC were actively involved in organizing the IEEE IV 2008. Bart van Arem was General Chair and Bart De Schutter was the Program Chair of the Conference.
- IEEE International Conference on Vehicular Electronics and Safety (ICVES07) Conference, Beijing, China. Members of the Autonomous Ground Vehicles and ITS TC were actively involved: Urbano Nunes was the Program Chair.
- First Asia-Europe Symposium on Intelligent Vehicles Event - Symposium, May 22, 2007 – Shanghai (Organizer: Ming Yang; several talks by TC members).
- Eurocast 2007 Workshop on Cybercars and Intelligent Vehicles Workshop, Las Palmas (Organizers: Michel Parent, Garcia-Rosa Ricardo)
- IEEE Intelligent Transportation Systems Conference (ITSC 2006) Conference September 17, 2006 - Toronto, Canada. Members of the Intelligent Transportation Systems TC were actively involved: Urbano Nunes was the Program Chair, and Alberto Broggi was a Program Co-Chair of the Conference.
- Urbano Nunes was recipient of an Outstanding Service Award of IEEE ITS Society for his Leadership and Service in Organizing the 2006 IEEE ITSC 2006, Toronto. Urbano Nunes was the ITSC 2006 Program Chair.
- Two Special Sessions on "Cybercars Technology and Trends" at IEEE ITSC 2006 (Organizers: Urbano Nunes, Michel Parent, and Laurent Trassoudaine).
- IEEE Intelligent Vehicle Symposium (IV 2006) Conference June 13, 2006 - Tokyo, Japan. Members of the TC were actively involved: Katsushi Ikeuchi was the General Chair, and Christian Laugier a Program Cochair.

(4) List of important publications over past 3 years in TC area.

- Special Issue of Journal of Intelligent and Robotic Systems on: Co-operative Robots, Machines and Systems (ongoing) (Guest-Editors: Ljubo Vlacic *et al.*)
- Special Issue of IEEE Transactions on Intelligent Transportation Systems on: Perception and Navigation for Autonomous Vehicles (ongoing) (Guest-Editors: U. Nunes, Christian Laugier and Mohan Trivedi)
- Special Issue of Int. Journal of Intelligent Information and Database Systems (IJIIDS) on: Information Processing in Intelligent Vehicles and Road Applications (May, 2008) (Guest Editor: Rafael Toledo-Moreo).
- Special Issue of IEEE Transactions on Intelligent Transportation Systems: Special Issue on ITSC06 (March 1, 2008) (Guest-Editors: U. Nunes *et al.*)
- Special Issue of Int. Journal of Vehicle Autonomous System (IJVAS) on: Advances in Autonomous Vehicle Technologies for Urban Environment (January 1, 2008) (Guest Editors: Danwei Wang, Shuzhi Sam Ge, and Christian Laugier)
- Field and Service Robotics Conference (FSR 2007): Publication of the proceedings in a Springer STAR book, n. 42, 2008 (Editors: C. Laugier and R. Siegwart)
- Publication of a special issue of the Journal of Field Robotics (JFR), vol 25, issue 6/7, July 2008 (Guest Editors: C. Pradalier, A. Martinelli, C. Laugier, R. Siegwart)
- Publication of a special issue of the International Journal of Robotics Research (IJRR), vol 28, n. 2, February 2008 (Guest Editors: C. Laugier, A. Martinelli, C. Pradalier, R. Siegwart)
- Autonomous Navigation in Dynamic Environments Publication – Book, 2007 – Springer Tracts in Advanced Robotics (Guest Editors: C. Laugier and Raja Chatila)

(5) number of members of each year in the past three years

Presently the TC has 185 members. The number of members increased in the last three years approximately 50 per year.

(6) summary of top three technical innovations in the area during the past three years

- DARPA challenges which gave a great impulse to new technologies and also experimentally proved the potential feasibility of the autonomous navigation concept.
- “Cybercars technologies” developed with a large support from EU, i.e. with several EU projects involving research institutes, industrial companies, and users (European cities). Some of these technologies have already been used for industrial applications. Future transportation systems based on these technologies are currently under development.
- Several incremental innovations for Advanced Driver Assistance Systems.

(7) Recommendations (and alternates) for new co-chairs: one from each primary region.

We propose to add a 4th co-chair and renew each year, starting in 2010, one TC co-chair. Another objective is to balance co-chairs by the different regions of the world. Recommendation for a new co-chair: Prof. Ljubo Vlacic (l.vlacic@griffith.edu.au), Griffith University, Australia.

(Webpage: <http://tab.ieee-ras.org/committeeinfo.php?tcid=10>)

April 28, 2009