

IROS 2008 2nd Workshop on
Planning, Perception and Navigation for Intelligent Vehicles
Nice, September 26, 2008

PROGRAM

9:00 -9:10 Opening

Session S1: Path Planning, Navigation and Systems

9:10-9:30 A study of integrity indicators in outdoor navigation systems for modern road vehicle applications

Rafael Toledo-Moreo, José Santa, Miguel A. Zamora-Izquierdo, Benito Úbeda, Antonio F. Gómez-Skarmeta, (U. Murcia, Spain)

9:30-9:50 A hierarchical approach to safe vehicle navigation in dynamic urban scenarios

Kristijan Macek, Dizan Vasquez, (ETHZ, CH), Thierry Fraichard, (INRIA, France), Roland Siegwart, (ETHZ, CH)

9:50-10:10 Design of an urban driverless ground vehicle

R. Benenson, M. Parent (INRIA, France)

10:10-10:30 Path planning challenges for planetary robots

Yoshiaki Kuwata, Alberto Elfes, Mark Maimone, Andrew Howard, Mihail Pivtoraiko (JPL, USA), Thomas Howard (CMU, USA), and Adrian Stoica (JPL, USA)

10:30-10:50 Coffee Break

Session S2: Lidar and Vision-based Perception

10:50 - 11:10 Context-Aware Object Priors

Alexander Bachmann and Michael Balthasar (U. Karlsruhe, Germany)

11:10 - 11:30 Influence of intrinsic parameters over extrinsic calibration between a multi-Layer lidar and a camera

Sergio A. Rodriguez F., Vincent Frémont and Philippe Bonnifait (U. Compiègne, France)

11:30 - 11:50 A bayesian multisensor fusion approach integrating correlated data applied to a real-time pedestrian detection system

Laurence Ngako Pangop, Roland Chapuis, Sebastien Bonnet, Sebastien Cornou and Frederic Chausse (France)

11:50 - 12:10 Bayesian occupancy filter based "Fast Clustering-Tracking" algorithm

Kamel Mekhnacha (Probayes SAS, France), Yong Mao (INRIA, FR), David Raulo (Probayes SAS, FR) and Christian Laugier (INRIA, France)

12:10 - 12:30 On using Cell broadband engine for object detection in ITS
Luciano Oliveira, Ricardo Britto and Urbano Nunes (ISR/U. Coimbra, Portugal)

12:30 - 14:00 Lunch

14:00 - 14:40 Invited Talk - Towards the Perfect Pedestrian Detection System?
Alberto Broggi (U. Parma, Italy)

Session S3: Vision-based Perception

14:40 - 15:00 Temporal coherence analysis for intelligent headlight control
Antonio López (UAB, Spain), Jorg Hilgenstock (Volkswagen AG), Andreas Busse (Carmeq GmbH), Ramón Baldrich, Felipe Lumbreras, Joan Serrat (UAB, Spain)

15:00 - 15:20 Registration-based moving object detection from a moving camera
Angel D. Sappa (UAB, Spain), Fadi Dornaika (IGN, France), David Gerónimo and Antonio López (UAB, Spain)

15:20 - 15:40 Real-time visual detection of vehicles and pedestrians with new efficient adaBoost features
Fabien Moutarde, Bogdan Stanciulescu and Amaury Breheret (ENSMP, France)

15:40 - 16:00 Forward collision detection based on elevation map from dense stereo
Sergiu Nedevschi, Andrei Vatavu, Florin Oniga (T.U. of Cluj-Napoca, Romania)

16:00 - 16:20 Coffee Break

Session S4: Perception and Localization

16:20 - 16:40 A Monte Carlo approach for collision probability computation
Alain Lambert (U. Paris Sud-XI, France), Guillaume Saint Pierre and Dominique Gruyer (INRETS/LCPC, France)

16:40 - 17:00 Polynomial extended Kalman filter in a SLAM framework
François Chanier, Paul Checchin, Christophe Blanc and Laurent Trassoudaine (U. Clermont-Ferrand, France)

17:00 - 17:20 Switching multirobot collaborative localization in symmetrical environments
F. Abrate, B. Bona, M. Indri, S. Rosa and F. Tibaldi (Politecnico di Torino, Italy)

17:20 - 17:40 Real time extraction of road border lines using simple statistical descriptors
M. Oliveira, V. Santos (U. Aveiro, Portugal)

17:40 Closing
Invited Talk

Towards the Perfect Pedestrian Detection System?

Alberto Broggi

Dipartimento di Ingegneria dell'Informazione
Università di Parma

Abstract: The localization of pedestrians on a vehicle's path is of paramount importance to increase road safety. Many systems have been developed lately, which are aimed at detecting any pedestrian in front of a moving vehicle. Different sensors, technologies, and approaches, have been studied and implemented, each with its own peculiarities and performance. Unfortunately the performance of these systems are very far from ideal, in terms of both correct detections and false alarm rate. Does it mean that we are following the wrong approach? Should we look into different approaches and test different ideas? The talk presents some comparative performance and delineates a new innovative approach that might possibly lead to some further performance improvement.



Speaker Bio-Sketch: Alberto Broggi is a professor of computer engineering at the University of Parma, Italy, and the director of the VisLab-Artificial Vision and Intelligent Systems Lab where he works with about 20 researchers and doctorate candidates. Broggi's main research interests relate to the application of artificial vision techniques in the automotive field.

Broggi joined the University of Parma in 2001 after a three-year period spent as associate professor of artificial intelligence at Pavia University, Italy. He was the coordinator of the ARGO Project, aimed at developing a computer vision system for automated driving of a passenger vehicle. Currently he coordinates projects that use daytime and infrared vision technology for pedestrian detection, as well as obstacle, lane and vehicle detection. His research interests, besides real-time computer vision algorithms for automated vehicle navigation, include low-cost architectures to be integrated on unmanned vehicles.

Broggi continues to serve as editor-in-chief for IEEE Transactions on Intelligent Transportation Systems (T-ITS), an international scientific journal for the ITS field, a position he has held since 2004. He is also the author of more than 150 scientific publications and patents developed with automotive companies.