University of Waterloo

IEEE KW Section

Department of Electrical and Computer Engineering

and

KW IEEE Section, SMC Chapter Seminar

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"Managing Localization Uncertainties for Intelligent Vehicles"

Thursday April 23, 2009

10:30am – 12:00pm
EIT 3141

ALL ARE WELCOME!
Please see attached abstract.

“Managing Localization Uncertainties for Intelligent Vehicles”

Intelligent Vehicles are robotic systems that perceive the driving environment to assist the driver in safe vehicle operation by providing pertinent information or by controlling directly the vehicle. In this perception process, global localization is useful to retrieve contextual information often stored in a geographical database. Global Navigation Satellite Systems (GNSS) - like GPS, which is an affordable technology currently - provide global localization on the scale of the planet. A natural GNSS receiver uses only pseudo-ranges and Doppler measurements to compute an estimate of its location in ECEF coordinates, whatever the mobile: a pedestrian, plane, boat, car, etc. For ground localization, satellite outages and multi-path can occur frequently, particularly in urban areas. The quality of the positioning service therefore changes a lot depending on the local context. This talk deals with this issue in the context of a multi-source system since modern vehicles are often equipped with dead-reckoning sensors (such as wheel-speed measurements, easily accessible on a CAN bus), road navigable maps, lidars and cameras.