

学术报告会

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地点: 电院群楼2-410会议室

Globally Asymptotically Stable Sensor-based Simultaneous Localization and Mapping (SLAM)

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Abstract:

This talk focuses on the design, analysis, and experimental validation of a globally asymptotically stable (GAS) filter for simultaneous localization and mapping (SLAM), with application to unmanned aerial vehicles. The SLAM problem is formulated in a sensor-based framework and modified in such a way that the underlying system structure can be regarded as linear time varying for observability analysis and filter design purposes, from which a linear Kalman filter with GAS error dynamics follows naturally. The performance and consistency validation of the proposed sensor-based SLAM filter are successfully assessed with real data, acquired indoors, using an instrumented quadrotor.

Biography:

Carlos Silvestre received the Licenciatura degree in Electrical Engineering from the Instituto Superior Tecnico (IST) of Lisbon, Portugal, in 1987 and the M.Sc. degree in Electrical Engineering and the Ph.D. degree in Control Science from the same school in 1991 and 2000, respectively. In 2011 he received the Habilitation in Electrical Engineering and Computers also from IST. Since 2000, he is with the Department of Electrical Engineering of the Instituto Superior Tecnico, where he is currently an Associate Professor of Control and Robotics on leave. Since 2012 he is an Associate Professor of the Department of Electrical and Computers Engineering of the Faculty of Science and Technology of the University of Macau. Over the past years, he has conducted research on the subjects of navigation guidance and control of air and underwater robots. His research interests include linear and nonlinear control theory, coordinated control of multiple vehicles, gain scheduled control, integrated design of guidance and control systems, inertial navigation systems, and mission control and real time architectures for complex autonomous systems with applications to unmanned air and underwater vehicles.