上海交通大学自动化系
Department of Automation
Shanghai Jiao Tong University

系统控制与信息处理教育部重点实验室
Key Laboratory of System Control and Information Processing, Ministry of Education

学术报告会

时间：2017年12月7日(周四) 14:00-15:00
地点：电院群楼2-412会议室

Design and Development of An Automatic Steering Control and Precision Docking System for Bus Rapid Transit Service

李大川 博士

加州伯克利大学

Abstract:

The autonomous operation of Bus Rapid Transit (BRT) involves complex curving tracks, narrow lane/docking stations, and non-linear dynamics of articulated vehicles, posing significant challenges to automatic steering and docking system design. A robust and high-precision steering controller is required to ensure lane-keeping and docking performance. In this presentation, an automatic steering control and precision docking system is designed based on frequency-shaping and optimal feedforward preview control. A look-down magnetic reference system is developed to provide high-precision lane deviation and yaw information. Implementation and demonstration on an 18-m articulated vehicle demonstrates the system can achieve precision-level lane keeping and docking precision.

Biography:

李大川，加州伯克利大学（University of California, Berkeley）博士后研究员。2015 年于清华大学获博士学位。曾获国家奖学金、山东大学校长奖学金。先后参与大型客机国家科技重大专项 4 项，中航工业产学研专项 3 项，美国加州交通部专项课题 2 项。主要研究方向为航空电子系统设计与仿真，自主无人机系统设计，无人机系统自主运动规划、导航与控制，车辆自动驾驶/辅助驾驶系统控制器设计，智能交通系统等。