

IAS Distinguished Lecture

Cooperative Road Freight Transport: Opportunities and Challenges in Networked Control

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Date : 12 March 2018 (Monday)

Time : 4:00pm – 5:30pm (*Light refreshments will be served from 3:30pm to 4:00pm*)

Venue : Connie Fan Multi-media Conference Room, 4/F, Cheng Yick-chi Building,
City University of Hong Kong



Abstract

Freight transportation is of outmost importance for our society. Road transport accounts for about 26% of all energy consumption and 18% of greenhouse gas emissions in the EU. Despite this influence, road goods transportation is mainly done by individual long-haulage trucks with no real-time coordination or global optimization. In this talk, we will discuss how modern information and communication technology supports a cyber-physical transportation system architecture with an integrated logistic system coordinating fleets of trucks traveling together in vehicle platoons. From the reduced air drag, platooning trucks traveling close together can save more than 10% of their fuel consumption. Control and estimation problems and solutions on various level of this transportation system will be presented. It will be argued that a system architecture utilizing vehicle-to-vehicle and vehicle-to-infrastructure communication enable robust and safe control of individual trucks as well as optimized vehicle fleet collaborations and new market opportunities. Extensive experiments done on European highways will illustrate system performance and safety requirements. The presentation will be based on joint work over the last ten years with collaborators at KTH and at the truck manufacturer Scania.

Biography

Karl Henrik Johansson is Director of the Stockholm Strategic Research Area ICT The Next Generation and Professor at the School of Electrical Engineering and Computer Science, KTH Royal Institute of Technology. He received MSc and PhD degrees from Lund University. He has held visiting positions at UC Berkeley, Caltech, NTU, HKUST Institute of Advanced Studies, and NTNU. His research interests are in networked control systems, cyber-physical systems, and applications in transportation, energy, and automation. He is a member of the IEEE Control Systems Society Board of Governors, the IFAC Executive Board, and the European Control Association Council. He has received several best paper awards and other distinctions. He is a Distinguished Professor with the Swedish Research Council and a Wallenberg Scholar and he has received the Future Research Leader Award from the Swedish Foundation for Strategic Research and the triennial Young Author Prize from IFAC. He is Fellow of the IEEE and the Royal Swedish Academy of Engineering Sciences, and he is IEEE Distinguished Lecturer.



All are welcome

Online registration: www.cityu.edu.hk/ias/event

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