香港科技大學
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

土木及環境工程學系
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

SEMINAR

ROAD INTERNAL BOUNDARY CONTROL FOR LANE-FREE TRAFFIC OF CONNECTED AUTONOMOUS VEHICLES

Speaker

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Abstract

Technologies of connected autonomous vehicles (CAVs) that evolve rapidly will eventually eliminate safety hazards caused by human factors, and enable CAVs to run in a lane-free manner. This will significantly improve the usage of road resources, by reducing the average lateral spacing of CAVs without hindering safety. As such, the currently rigid road boundary between bi-directional traffic flows could be "softened", and the resulting virtual/electronic internal boundary of a road may be regulated in real-time to adapt the road resource allocation to unbalanced bi-directional traffic demands of CAVs. This talk reports on some first results of freeway and urban internal boundary control (IBC) for lane-free traffic of CAVs. It introduces the operational mechanism of IBC, and presents the integrated control results of IBC and ramp metering on freeways as well as coordinated control results of IBC and intersection signal control in the urban case.

Biography

Yibing Wang got his PhD from Tsinghua University. He was a postdoc and research fellow at Technical University of Crete, Greece. He was a senior lecturer at Monash University, Australia. Since 2013, he has been a full professor at Institute of Intelligent Transportation Systems, Zhejiang University. He was elected into the Zhejiang QianRen Program, and recognized as Leading Academic Talent in International Road Transport Science and Technology by the China Highway and Transportation Society. He is a Senior Editor for IEEE Transactions on Intelligent Transportation Systems and an Associate Editor for Transportation Research Part C. He served as the program chair/co-chair/vice-chair of IEEE International Conference on Intelligent Transportation Systems for a number of times. His research interests include modeling, surveillance, control and optimization of transportation systems.

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