



THE CHINESE UNIVERSITY OF HONG KONG
Department of Information Engineering
Seminar

Cooperative Perception Empowered by Connected Intelligence

by

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Date : 25 July 2023 (Tuesday)

Time : 11:00am – 12:00pm

Venue : Rm 833, Ho Sin Hang Engineering Building, CUHK

Abstract

In recent years, the environmental perception capabilities of individual vehicles have significantly improved. However, actual driving scenarios are much more complex than existing datasets, with challenging dynamics. As a result, relying solely on a single vehicle's perspective cannot satisfy the basic needs of fully autonomous driving.

Compared to single-vehicle perception, cooperation among connected vehicles is expected to result in more comprehensive and accurate environment perception. In this talk, we will introduce the research progress in the information fusion of multiple vehicles, multiple perspectives, and multiple information sources. In addition, uncertain factors in the real world, such as poor road conditions or extreme weather, can also affect the quality of the data collected by sensors, resulting in abnormal outputs of perception algorithms. Therefore, we further explore an evaluation framework capable of measuring the ability of neural networks to perceive environmental changes. Based on this, we also implement the semantic fusion of multi-vehicle object detection, aiming to overcome the limitations of single-vehicle perception and improve the ability and reliability of autonomous vehicles to cope with environmental changes. Future research directions towards the cooperative perception empowered by connected intelligence will also be discussed.

Biography

Xihu Zheng is currently an Assistant Professor with the Intelligent Transportation Thrust of the Systems Hub, at Hong Kong University of Science and Technology (GZ). He received the Ph.D. degree in Electrical and Computer Engineering from the University of Minnesota, Minneapolis. He has published 20 papers on peer-review journals and conferences, including IEEE Internet of Things Journal, IEEE Transactions on Intelligent Transportation Systems, IEEE Transactions on Systems, Man, and Cybernetics: Systems, etc. He is currently an Associate Editor for IEEE Transactions on Intelligent Vehicles. His current research interests include data mining, multi-agent information fusion, multi-modal data fusion and data analysis in intelligent transportation system and ITS related intelligent systems, by exploiting different data modalities, and leveraging various optimization and machine learning techniques.

**** ALL ARE WELCOME ****