



University at Buffalo

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Emerging Applications in Cyber Transportation Systems

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ABSTRACT

Cyber Transportation Systems (CTS) combine recent advance in information, communication and automation technologies in the field of road transport. CTS aim to provide advanced applications that improve road safety, traffic efficiency and sustainability of transport networks: Wireless communications allow vehicles and infrastructure to collaborate, and “Big Data” make it possible to monitor and predict the states of the systems. Subsequently, we could improve the control and management actions. This talk provides two examples of emerging applications in CTS. The first example explores the opportunity for cooperative vehicle and intersection control to contribute to a more sustainable transportation system. The second example proposes a new rideshare scheme for electric taxi fleet. I will also introduce our design and development of an integrated-traffic-driving-networking simulator (ITDNS). Such an ITDNS is not only useful for evaluating the proposed CTS applications that require simulation models from multiple disciplines, but also is an essential tool for studying human factor issues in the design, evaluation and optimization of other advanced CTS applications. Finally, I will conclude this talk with our on-going project on vehicular sensing (i.e., using drivers’ smart phone to collect data) and its future extensions.

Bio

Yunfei Hou is a PhD candidate in the Department of Computer Science and Engineering at the University at Buffalo (SUNY). His current research interests include applications in transportation cyber-physical systems, and cyber technologies for transportation engineering by considering human factors and driver perception. Recent projects span areas such as intersection management with connected vehicle technologies, electric taxi-sharing and taxi fleet dispatch, and on-road infotainment services. He has 13 refereed publications in premium conferences and journals such as INFOCOM, GLOBECOM, TRANSPORT RES C-EMER, and IEEE Trans. Veh. Technol. He receives a Best Digest Paper Award in ICCVE 2014. His research is supported by the NSF, DOT and NREL.