Cyber-Physical Systems (CPS) Seminar Series

Title: Toward Human-Transportation Interaction with Ubiquitous Sensing and Applied Machine Learning

Speaker: Mr. Dongyao Chen, University of Michigan at Ann Arbor

Abstract: As the transportation ecosystem, e.g., vehicles, road infrastructures, becomes increasingly smarter, systems that can enhance the interaction between humans and transportation systems are of paramount importance to road safety and efficiency. Meanwhile, ubiquitous computing devices, such as smartphones and wearables, are empowered by ever-increasing sensing and communication capabilities. Although many existing applications have attempted to harvest the ubiquitous sensory data for facilitating transportation applications, e.g., navigation apps, they are often risk-prone, coarse-grained, and for special purposes.

This talk will cover two representative studies that are designed for improving the safety and efficiency of the transportation ecosystem in a scalable and efficient manner. First, I will introduce **VSense**, a real-time data analytics pipeline for detecting a vehicle's steering maneuver (i.e., left/right turn and lane change) only with commodity smartphone sensors. Second, I will present **TurnsMap**, a crowdsensing framework for analysis of risks at intersections. TurnsMap demonstrates a ubiquitous sensing + machine learning framework that is adaptive to numerous smart transportation applications.

Biography: Dongyao Chen is a Ph.D. candidate at the Computer Science and Engineering Department of the University of Michigan, Ann Arbor. Before joining Michigan, he received B.E. degree of Electrical Engineering from Shanghai Jiao Tong University. His research works have been published in several premier research conferences in mobile computing, including MobiSys, UbiComp, and CoNEXT. His current research interest is integrating ubiquitous sensing and applied machine learning for tackling real-world transportation challenges.
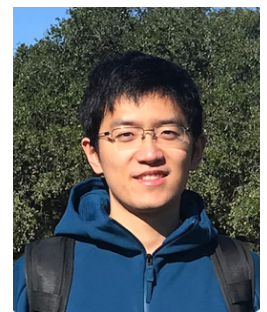
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Location: Student Commons 2504