Multi-Modal Intelligent Traffic Signal Control in a Connected Vehicle Environment

The connected vehicle system is based on vehicle-to-vehicle and vehicle-to-infrastructure communications using the 5.9 GHz spectrum and a new form of messaging called Dedicated Short Range Communications. Given the high-fidelity data available from vehicles that are equipped with DSRC radios, it is possible to provide intelligent traffic signal control that utilizes information about vehicle modes (e.g. passenger cars, transit buses, commercial trucks, emergency vehicles, and vulnerable road users – pedestrians and bicycles) that reduces delay and improves system operations. This seminar will introduce the connected vehicle system and show a mixed linear-integer programming model that has been developed, deployed and evaluated in the field for intelligent traffic signal control in a connected vehicle environment. Research opportunities using the connected vehicle technology will be discussed that expands well beyond traffic signals into the world of automated driving vehicles.

Bio:

Larry Head is a Professor of Systems and Industrial Engineering and Director of the Arizona Transportation Research Institute at the University of Arizona. He has over 25 years of systems engineering experience related to adaptive traffic signal control, signal priority, traffic management, and connected and automated driving vehicles. He serves on the Arizona Governor’s Task Force for Self-Driving Vehicles, is a member of the Transportation Research Board (TRB) Freeway Operations Committee and Intelligent Transportation Systems Committees, and a member of the SAE DSRC Technical Committee. He is an Associate Editor of Transportation Research – Part C.