PacTrans Presents

Playing the Cat-and-Mouse Game Between Traffic Routing and Signal Control with Three "Consoles": Results and Implications

With Michael Zhang

FRI
5.09

HUB 250 (UW)
10:30AM - 12:30PM PT

This event is free & open to the public!

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About the Seminar

In a transportation network, travelers often have many choices of routes between their origins and destinations, and a consensus is that they'll choose the shortest (fastest or cheapest) route. This choice process often involves route explorations and adjustments, which usually takes time to settle to a so-called "user equilibrium", under which travel costs (times/distances/fees) of chosen routes between each origin/destination pair would be equal and minimal. Travel delay is often a major component of the travel cost, and on urban streets, it is highly dependent on how the traffic signal is timed. Traffic signal timing, on the other hand, is highly influenced by traffic demand, which depends on travelers' choice of routes. This forms a cat-and-mouse game between traffic routing and traffic signal control.

In this talk, we'll examine this problem from three lens, with each lens serving as a "game console" through which we play out the routing/signal control game. In the first console, we play the game for the long run, in a time horizon of 5-30 years. In the second console, we play the game for middle run, in a time horizon of days to weeks. In the third and final console, we play the game for the short run, in a time horizon of hours. We'll review the results obtained under these game settings by others and our own work and discuss their implications.

Meet the Speaker

Michael Zhang is a Professor in the Department of Civil and Environmental Engineering at the University of California Davis. He is also a faculty member in the Graduate Programs of Applied Mathematics, Computer Science, and Transportation Technology and Policy at UC Davis. Prof. Zhang's research focuses on applications of systems theory to transportation systems analysis and operations. Specific topics include traffic flow theory, traffic control, traffic safety, transportation network models, and intelligent transportation systems such as Connected and Autonomous Vehicles.

Professor Zhang is one of the longest serving Associate Editors of Transportation Research, Part B: Methodological. He also served as an Area Editor of the Journal of Networks and Spatial Economics and Associate Editor of Transportation Science. He is on the International Advisory Committee of the International Symposium on Transportation and Traffic Theory, and was a member of the Committee on Traffic Flow Theory and Characteristics of the Transportation Research Board from 2000 to 2022. He obtained his PhD in Civil Engineering from UC Irvine in 1995 and has taught at University of Iowa before moving to UC Davis.

PacTrans Regional Transportation Seminar

PacTrans is the USDOT funded Region 10 UTC located at University of Washington.

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