

SEMINAR
Co-Sponsored by the University of California
Transportation Center (UCTC)

Friday, February 14, 2014
9:30 – 10:30 am
Seminar Room 4080 AIR Building

**BIG DATA TO BIG DISCOVERIES AND BIG DECISIONS:
CHALLENGES AND OPPORTUNITIES FOR TRANSPORTATION PROFESSIONALS**

Dr. Yin Hai Wang, Professor
Department of Civil Engineering
University of Washington

Transportation involves human, infrastructure, vehicle, and environmental interactions and is therefore a very complicated system. Traditionally, transportation has been studied through classical methods, typically with ideal assumptions, limited data support, and poor computing resources. While the theories (such as traffic flow and driver behavior models) developed through these efforts provide valuable insights in understanding transportation-related issues, they are often ineffective in large-scale transportation system analysis with massive amount of data. Also, transportation activities have been found affecting public health, air quality, environmental sustainability, etc., but our understanding in these relationships has been trivial and far from complete.

With recent advances in sensing, networking, and computing technologies, more and more transportation-related data and computational resources become available. These new assets are likely to bring in new opportunities to understand transportation systems better and address those critical transportation issues in a faster, more accountable, and more cost-effective way. From big data to big discoveries and big decisions: what is the gap and what needs to be done? Clearly, a new theoretical framework is needed to integrate the quickly growing massive amount of data, typically from numerous sources of varying spatial and temporal characteristics, into the large-scale transportation problem solving and decision making processes. Efforts along this line are likely to form up a new subject area, namely e-science of transportation, in the years to come. The speaker will share his vision and pilot research in linking big data to big discoveries and big decisions through his talk.

Dr. Yin Hai Wang is a professor in transportation engineering at the University of Washington (UW). He has a Ph.D. in transportation engineering from the University of Tokyo (1998), a master's degree in computer science from the UW, and another master's degree in construction management and a bachelor degree in civil engineering from Tsinghua University, China. Dr. Wang is the founding director of the Smart Transportation Applications and Research Laboratory (STAR Lab) at the UW. He also serves as the director for Pacific Northwest Transportation Consortium (PacTrans), USDOT University Transportation Center for Federal Region 10.

Dr. Wang's active research fields include traffic sensing, transportation safety, e-science of transportation, traffic operations, traffic simulation, and intelligent transportation systems (ITS). He has over 170 academic publications and delivered more than 240 academic talks. He was the winner of the ASCE Journal of Transportation Engineering Best Paper Award for 2003. Dr. Wang serves as members of three Transportation Research Board committees: Transportation Information Systems and Technology Committee (ABJ50), Freeway Operations Committee (AHB20), and Highway Capacity and Quality of Services (AHB40). He is currently on the Board of Governors for the ASCE Transportation & Development Institute. He was an elected member of the Board of Governors for the IEEE ITS Society from 2010 to 2013. Additionally, Dr. Wang is associate editor for three journals: Journal of ITS, Journal of Computing in Civil Engineering, and Journal of Transportation Engineering.