

Transportation Center Seminar.....

“Modeling Driver Behavior in a Connected Environment: Integration of Microscopic Traffic Simulation and Telecommunication Systems”

Alireza Talebpour

PhD Candidate
Department of Civil and
Environmental Engineering
Northwestern University



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4:00 - 5:00 pm

Location:

Transportation Center
Chambers Hall
600 Foster, Evanston
Lower level

Abstract Connected and automated vehicles will change the future of our surface transportation system. Connected Vehicles Technology (CVT) provides the opportunity to create an interconnected network of moving vehicular units and stationary infrastructure units, in which individual vehicles can communicate with other vehicles (i.e. Vehicle-to-Vehicle communications) and other agents (e.g. a centralized traffic management center through Vehicle-to-Infrastructure communications) in a collaborative and meaningful manner. The real-time information provided by CVT allows drivers to become more aware of their surrounding traffic condition and to maneuver safely and more efficiently. Furthermore, in comparison with on-board sensing technologies, which provide the necessary information to myopically operate automated vehicles, CVT can improve the efficiency and reliability of the system-level performance of a driver-less transportation network. This presentation will introduce a comprehensive simulation framework to model driver behavior in a connected driving environment with connected and automated vehicles. The framework, which consists of a microscopic traffic simulator integrated with a discrete-event wireless communications network simulator, forms a basis for exploring the properties of the resulting traffic systems, and for assessing system-level impacts of these technologies. Special focus will be made on the effects of connected and automated vehicles on the stability of traffic flow, as well as the effectiveness of speed harmonization systems in controlling breakdown formation, preventing speed drop, maintaining higher flow rates, and reducing emissions.

Bio Alireza Talebpour is a PhD Candidate in Transportation Systems Analysis and Planning at Northwestern University. He specializes in traffic flow theory and safety analysis, with emphasis on topics related to connected and automated vehicles. Alireza received the B.S. and M.S. degrees in civil and environmental engineering from Sharif University of Technology.