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Invited Lecture

Connected and Automated Vehicles (CAVs): Challenges and Opportunities for Traffic Operations

Department of Civil and Environmental Engineering of the University of California at Berkeley, USA

Thursday May 31st, 2018, 15:00
Railways Amphitheater, Materials Resistance Building, NTUA Campus

ABSTRACT: The deployment of connected and automated vehicles (CAVs) brings significant challenges and opportunities to the operation and management of highway facilities. This lecture presents work in progress on investigating the traffic flow characteristics of mixed stream of CAVs and human-driven vehicles at signalized intersections and freeways and obtaining estimates of capacities and delays through analysis and simulation. The role of CAVS in control and design strategies is explored (e.g., multimodal transit priority, dynamic lane allocation, eco-driving). We also discuss the modeling challenges because of the lack of field data on CAV operation and performance, the dependence of predictions on CAVs penetration rate, which will change over time, and the potential capacity decrease because of safety concerns.

Prof. Alexander Skabardonis is an internationally recognized expert in traffic flow theory and models, traffic management and control systems, intelligent transportation systems (ITS), energy and environmental impacts of transportation. He is a Professor at the University of California, Berkeley, and former Director of California PATH, a statewide ITS research center. He has worked extensively in the development and application of models and techniques for traffic control, performance analysis of highway facilities and applications of advanced technologies to transportation. He is a lifetime member of the Transportation Research Board (TRB) Traffic Flow Theory Committee, and member of TRB Freeway Operations, Highway Capacity and Quality of Service Committees and several subcommittees, and editorial boards of transportation journals. In 2013 he received the lifetime achievement award for his contributions in transportation engineering from the Hellenic Institute of Transportation Engineers (HITE).