

TRANSPORTATION SEMINAR

The Five Elements of Agent-based Modeling—a Transportation Perspective

Thursday, October 26, 2017
Noon to 1:00pm

Please join us in College Avenue Commons (CAVC) room 425 

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Motivated by the need to model a complex and evolving intelligent transportation system in a collaborative framework, we utilize and describe the five basic elements of agent-based modeling with several implementation examples from the VT-SCORES research lab. The research components discussed range from driver behavior, car-following models, adaptive control, connected vehicles, and variable speed limit applications. We will show examples of extracting driver behavior from large datasets, modeling evolving system behavior with intelligent agents, integration of state machines and communication frameworks in a connected vehicles environment, and the ramifications of neglecting learning in modeling. The presented agent-based framework is intermodal, and can incorporate performance characteristics and needs of different users (cars, trucks, busses, pedestrians, and bikes). We will also address emergency vehicles current and future applications and the impact of path-based priority tunnels provided for emergency vehicles in each application.

Dr. Abbas is an Associate professor in the transportation infrastructure and systems engineering program. He holds a Ph.D. in civil engineering with a specialization in transportation systems from Purdue University (2001). Dr. Abbas has wide experience as a practicing transportation engineer and a researcher. Before joining Virginia Tech, he served as the Corridor Management Team Leader at the Texas Transportation Institute (TTI). Dr. Abbas developed and implemented more than ten systems in the areas of transportation modeling, management, and control. He has served as a member of the Transportation Research Board (TRB) Traffic Signal Systems Committee, Artificial Intelligence and Advanced Computing Applications Committee, and the Joint Subcommittee on Intersections. Dr. Abbas has been the PI or Co-PI for more than 20 research projects, totaling more than \$4 million, and has authored/co-authored more than 150 peer-reviewed journal and conference publications. He is a recipient of the G. V. Loganathan Faculty Achievement Award for Excellence in Civil Engineering Education and the TTI/Trinity New Researcher Award for his significant contributions to the field of Intelligent Transportation Systems and Traffic Operations.

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