Connected Vehicle (CV) Technology for Improving Transit Operations

Host: Young-Jae Lee, PhD

Presenters: Jia Hu, PhD & Seyedehsan Dadvar, PhD Candidate

Date: Wednesday, April 26, 2017
Time: 1:00 PM – 2:00 PM ET
Transportation Program at Morgan State

- National Transportation Center (NTC)
- Department of Transportation and Urban Infrastructure Studies
- Department of Civil Engineering
- Department of City and Regional Planning
• In the School of Engineering
• Offers undergraduate and graduate programs (MS and Ph.D.) in transportation.
• The Department evolved from the Center for Transportation Studies, established in 1981 to offer the M.S. degree in transportation.
• The Department launched its one-of-a-kind undergraduate program, B.S. degree in transportation systems, in 2009, first in US.
• The Post Baccalaureate Certificate (PBC) in transportation in 2010.
• The Ph.D. degree in transportation and urban infrastructure systems in 2014.
• One of the largest transportation programs in the nation with an enrollment of 90 students (65 undergraduate students and 25 graduated students) in Spring 2017.
• The undergraduate program, B.S. in transportation systems, accredited by the Applied Science Commission of ABET, Inc.
• 5 full-time professors and 4 adjunct professors
Faculty Members at TUIS

Anthony A. Saka, Ph.D., P.E., PTOE, PTP, FITE, F.ASCE
- Chair & Professor

Andrew Farkas, Ph.D.
- Professor & Director of NTC at MSU
- Transportation economics and policy, logistics, public transportation and land use, electric vehicle commuting and willingness-to-pay for connected vehicles

Young-Jae Lee, Ph.D.
- Associate Professor

Mansoureh Jeihani, Ph.D., PTP
- Associate Professor and Graduate Program Coordinator
- Transportation Planning and Modeling, Traveler Behavior, Traffic Safety, Intelligent Transportation Systems, Transportation Economics

Celeste Chavis, Ph.D., P.E.
- Assistant Professor
- Traffic Operations, Public Transportation, School-Age Transportation, Non-Motorized Transportation, Paratransit, Transportation Equity & Environmental Justice

Safieh Laaly, D.Eng., Registered Landscape Architect
- Adjunct Professor
- Sustainable Transportation Strategies and Sustainable Developments, Transit Oriented Development (TOD)

Hyeon-Shic Shin, Ph.D.
- Assistant Professor (City Planning)
- Transportation Planning, Policy, Economics, Transportation safety, Freight Transportation Demand Management, Land use and transportation, Social/Environmental Justice
• Established by Congress under the ISTEA of 1991

• Member of regional and national research consortia such as CVI-UTC, MAUTC, NTC@UMD and MATS UTC.

• Leading Tier 1 University Transportation Center, the Urban Mobility & Transportation Center (UMEC), in partnership with the University of Maryland and Virginia Tech from 2017.

• Number of ongoing projects and 67 completed research projects.

• Internships and scholarships to undergraduate and graduate students

• Summer Transportation Institute for high school students, now in its 21st year, and this year added a similar program for middle-school students.

• Curriculum enrichment program for high school math and science teachers

• Partners with the Maryland State Highway Administration and Maryland Department of Transportation
Host: Dr. Young-Jae Lee

- Associate Professor of the Department of Transportation and Urban Infrastructure Studies at Morgan State University (MSU) in Baltimore, Maryland.
- B.S. and M.S. from the Seoul National University in Seoul, Korea.
- M.S. and Ph.D. from the University of Pennsylvania for optimizing a transit network design problem.
- His main research focuses are the improvement of transit systems, intelligent transportation systems, and optimizing transportation systems and traffic safety. He has conducted different types of research projects and published papers on improving public transportation systems, including network design, operational efficiency, and ITS application for public transportation. Dr. Lee has published over 60 research reports and journal and conference papers.
- Currently he is a committee member of the Transportation Research Board (TRB), (a division of the National Academies) Automated Transit Systems (AP040), an associate editor of the Korea Society of Civil Engineering (KSCE) Journal of Civil Engineering, and an associate editor of the Urban Rail Transit journal.
Presenter: Dr. Jia Hu

- Research associate at FHWA.
- Ph.D. from the University of Virginia, where he was involved in the research presented in this webinar.
- M.S. in Transportation Engineering from North Carolina State University and B.S. in Civil Engineering from Zhejiang University.
- Recipient of Best Scientific Paper-Americas Award from the ITS World Congress 2016, Research Associateship Award from the National Academy of Sciences, and Academic Excellence Award from the University of Virginia.
- Associate Editor of the American Society of Civil Engineers Journal of Transportation Engineering and an editorial board member of the International Journal of Transportation. A member of TRB Vehicle Highway Automation Committee and Simulation subcommittee of Traffic Signal Systems Committee, and a member of Advanced Technologies Committee of ASCE Transportation and Development Institute. He is also Chair of Vehicle Automation and Connectivity Committee of the World Transport Convention.
- Published over 40 journal and conference papers in the area of vehicle automation, transportation system operations and managements, and intelligent transportation systems. His research interests include connected and automated vehicles, microscopic simulation model application, system optimization, and transportation system sustainability.
Presenter: Seyedehsan Dadvar

- Ph.D. candidate and a graduate research assistant in the Department of Transportation and Urban Infrastructure Studies (TUIS) at Morgan State University.


- Involved in various research studies funded by Maryland State and regional and national agencies since March 2012, based in two major fields: roadway safety and new vehicular technologies. The CV projects that he has been involved in were “Applications of Connected Vehicle Infrastructure Technologies to Enhance Transit Service Efficiency and Safety, Part 2,” “Next Generation Transit Signal Priority with Connected Vehicle Technology,” and “Measuring User Acceptance of and Willingness-To-Pay,” all three of which were funded by Connected Vehicle/Infrastructure University Transportation Center (CVI-UTC).
Background

- Dr. Young-Jae Lee conducted three Connected Vehicle Infrastructure (CVI) technology-related research projects, funded by Connected Vehicle/Infrastructure University Transportation Center (CVI-UTC) consortium led by Virginia Tech, with Morgan State University and University of Virginia. This webinar provides three presentations from the two research projects related to transit operation:

  - Transit Signal Priority based on Connected Vehicle Technology (TSPCV): Jia Hu
  - TSPCV Experiment at the Virginia Tech Smart Road: Seyedehsan Dadvar
  - Perception and Acceptability Analysis on User Location-Based Transit Mobile Application: Young-Jae Lee and Seyedehsan Dadvar

- The first two presentations are from the project “Next Generation Transit Signal Priority,” which was conducted with Professor Byungkyu Brian Park and Dr. Jia Hu at the University of Virginia. The first presentation introduces the theoretical background of the various cases (progression and conflict requests) of TSPCV. The second presentation shows the results of the TSPCV experiments at the Virginia Tech Smart Road.

- The third presentation is drawn from the research project, “Applications of Connected Vehicle Infrastructure Technologies to Enhance Transit Service Efficiency and Safety.” The research team developed the user location-based transit mobile app which allows the communication between users, driver, and the transit agency. This presentation shows survey results from potential users about their perception and acceptability of the user location-based mobile app.