

PacTrans presents

Professor Henry Liu



PacTrans Regional
Transportation
Seminar Featuring
Henry Liu

Webinar Link

<https://youtu.be/6oNvcbqrUJO>

About PacTrans

PacTrans is the USDOT designated University Transportation Center for Federal Region 10. Our focus is developing data-driven solutions to the diverse mobility challenges in the Pacific Northwest.

Incorporating seven universities in Region 10, we strive to be the region's research engine, technology transfer showcase, education leader, workforce development base, and collaboration platform.

All events are free and open to the public. Reception to follow and all are welcome.

Regional Transportation Seminar

Critical Scenario Generation for Accelerated Testing of Autonomous Vehicles

Friday February 14 | 11:00a.m. | HUB 334

Testing and evaluation is a critical step for the development and deployment of autonomous vehicles (AVs), and yet there is no systematic framework to generate testing scenarios. Given an operational design domain (ODD) of an autonomous vehicle, the testing scenario library is defined as a set of critical scenarios that can be used to accelerate AV testing and evaluation. In this talk, we will provide a general framework for the testing scenario library generation (TSLG) problem. Each scenario is evaluated by a newly proposed measure, scenario criticality, which can be computed as a combination of maneuver challenge and exposure frequency. To search for critical scenarios, an auxiliary objective function is designed, and a multi-start optimization method along with seed-filling is applied. For high dimensional scenarios, reinforcement learning based technique is applied to enhance the searching method. The proposed framework is theoretically proved to obtain accurate evaluation results with much fewer number of tests, if compared with the on-road test method.

Professor Henry Liu is a Professor in the Department of Civil and Environmental Engineering at the University of Michigan, Ann Arbor. He is also a Research Professor at the University of Michigan Transportation Research Institute and the Director for the Center for Connected and Automated Transportation (USDOT Region 5 University Transportation Center). From July 2017 to August 2019, he was on leave from the University of Michigan and served as Vice President and Chief Scientist on Smart Transportation for DiDi Chuxing in China, one of the largest mobility service providers in the world. While he was with DiDi, he established and led the Urban Transportation Business Unit. Dr. Liu received his Ph.D. degree in Civil and Environmental Engineering from the University of Wisconsin at Madison in 2000 and his Bachelor degree in Automotive Engineering from Tsinghua University (China) in 1993. Dr. Liu's research interests focus on transportation network monitoring, modeling, and control, as well as mobility and safety applications with connected and automated vehicles.



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