



A Real-time Truck Characterization & Monitoring System through the Integration of Advanced Traffic Sensing Technologies - Towards Freight Mobility Living Laboratory (FML2)

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Virtual and In-person at 4080 AIRB, UCI

Friday, Nov. 18, 2022, Noon to 1 pm (Pacific)

A Hybrid Event! Lunch will be served.

Register here: <https://tinyurl.com/2dunfsmz>

Abstract: California's multiple major freight gateway and logistics facilities serve both the nation. But the economic, environmental, and local community impacts of trucks remain poorly measured. This seminar demonstrates the design and pilot implementation of the real-time, scalable, and cost-efficient FML2 by integration of advanced traffic sensing technologies. FML2 provides truck characterizations across multiple attributes and is deployed at more than 30 loop detection sites. We will first share the design of FML2 from edge computing, model development, communication architecture, and backend data storage to the web-based data dashboard to visualize the real-time detection and classification results, and then the development of a roadside LiDAR-based truck classification framework using a representation learning algorithm. Finally, we introduce a self-learning framework through the integration of inductive loops and LiDAR sensors to further enhance the robustness and resilience of the FML2.

Dr. Yiqiao Li is an Assistant Project Scientist at the Institute of Transportation Studies at UC Irvine (ITS-Irvine). She received a Ph.D. in civil and environmental engineering, focusing on transportation system engineering, from UC Irvine. Her research is focused on the development of traffic surveillance systems using advanced sensing technologies with an emphasis on truck activity monitoring, and the application of statistical and machine learning models to obtain critical traffic information. Dr. Li has presented and published her works at conferences and in journals such as IEEE Intelligent Transportation Systems, Transportation Research Record, and Transportation Research Part C: Emerging Technologies. One of her papers was selected as the best paper submitted to Travel Time, Speed, and Reliability Subcommittee at the 98th Transportation Research Board Annual Meeting.