Good morning,
You are invited to attend our weekly ECE Graduate Seminar.

Old Dominion University
College of Engineering and Technology
Department of Electrical and Computer Engineering

All lectures to be held at 3:00pm on Fridays online at ODU DL: ECE 731 831 Grad Seminar

For more information, contact Dr. Chung Hao Chen at (757) 683-3475 or email cxchen@odu.edu.

Friday, October 22, 2021 Seminar Topic:

AN EXTENSIBLE CO-SIMILATION FRAMEWORK FOR SUPPORTING COOPERATIVE DRIVING AUTOMATION RESEARCH by Defu Cui, Ph.D. Candidate in the Department of Computational Modeling and Simulation Engineering at Old Dominion University

Abstract:
The emergence of automated vehicles (AVs) and cooperative automated vehicles (CAVs) are expected to largely reshape our mobility systems. Nevertheless, the limited deployment of AVs and/or CAVs on roads makes it very difficult to fully assess their impact and interactions with other road users. As such, advanced simulations are often sought for conducting accelerated tests for AVs and/or CAVs in virtual environment. However, existing off-the-shelf simulators are typically focused on conventional traffic simulation and human driving simulation contexts. Advanced simulators enabling core functionalities (e.g., sensing and communication) of AVs and CAVs are underexploited. In this study, we aim to develop a realistic co-simulation framework for testing autonomous driving and cooperative driving automation (CDA). To support AV and CAV community to develop and deploy AV and CAV technologies, the proposed co-simulation framework utilizes the open-source concept. This framework integrates multiple open-source platforms, including Eclipse Mosaic simulation framework, SUMO traffic simulator, and CARLA autonomous vehicle driving simulator, to create a holistic collection of simulation models for enabling AV and CAV simulation in mixed traffic environments. The developed co-simulation models have been tested with different scales of networks and traffic flow. It has been shown to be capable of supporting faster-than-real-time simulation for accelerated test with more realistic scenarios. In addition, the developed co-simulation framework is proved to be extensible with the inclusion of other network simulators for supporting V2X communication among vehicles.

Bio:
Defu Cui is a graduate research assistant and is pursuing a PhD degree in modeling and simulation in the Department of Computational Modeling and Simulation Engineering. His research interests include medical modeling and simulation, virtual reality and augmented reality, and autonomous driving simulation.