Bio: Seyhan Uçar is currently working as a Principal Researcher in Intelligent Mobility Systems at InfoTech Labs, Toyota Motor North America USA. He received his B.Sc. degree in Computer Engineering from İzmir Institute of Technology in 2011. He received his M.Sc. and a Ph.D. degree in Computer Science and Engineering from Koç University in 2013 and 2017, respectively. Throughout his M.Sc. studies, he worked on developing multi-hop clustering algorithms and Long-Term Evaluation (LTE) based heterogeneous architectures for vehicular ad hoc networks. During his Ph.D., he focuses on Visible Light Communication (VLC) and automated car following (or platooning) where a group of vehicles travels within close proximity through communication. In his work, the joint usage of IEEE 802.11p and VLC is investigated to achieve secure and efficient architecture for platoon management and communication. He is now working on intelligent transportation systems and applications and analyzing the impact of connected vehicles on transportation safety and management.

Abstract: Traditional traffic law enforcement and control measures, such as police force efforts and insurance repercussions, are relatively effective at addressing serious anomalous driving behavior, i.e., through fines, penalties and in worst cases, criminal charges. However, small scale anomalous driving behavior who are engaged in Aggressive/Distracted/Reckless (ADR) driving is more difficult for the traditional enforcement infrastructure to detect, much less address. Detection of such ADR driving behavior is important, otherwise, it may jeopardize the safety of other vehicles as well as the efficiency of the transportation system. In this talk, I will introduce the cooperative anomalous driving behavior detection and management system. The system leverages vehicles’ onboard resources to determine a measure of the effect that the ADR behavior has had on other vehicles and generates control instruction(s) to mitigate the negative effect of abnormal drivers. A hierarchical edge computing architecture is designed to enable cooperative anomalous driving behavior detection and management system at the city-scale and its benefit is shown through large scale simulations performed in AIMSUN.