**Abstract:**

In recent years, Vehicle-to-Everything(V2X) communication has been an emerging area of interest attracting both the industry and academy societies to develop. Which is a new emerging service for the next generation of cellular network(5G). V2X communication can provide plenty of applications such as transmitting safety-related messages to drivers in order to avoid collision or transmitting multimedia for infotainment. However, V2X communication faces certain technical challenges. For example, the fast mobility of vehicles in highway scenario requires much larger transmission range which cannot be guaranteed by a single-hop direct V2X communication. A two-hop direct V2X communication has been proposed to increase the packet transmission range and improve the reliability of the system. In this work, the transmitter in highway tries to communicate with all nearby receivers in the proximity of itself by transmitting packets. And some vehicles will be selected as relays to retransmit the received packets among these receivers. In order to select proper receivers as relays, certain context information like real-time location of vehicles or local environment is collected and applied for relay selection. Through selecting relay and retransmitting packets, the receivers which are inside the targeted communication range but far away from the transmitter have a possibility to receive the packet successfully and therefore packet reception ratio can be increased. Moreover, resource allocation among different hops has been related to the optimization problem according real-time system condition. Last but not least, in order to inspect on the performance of the direct V2X communication with different resource allocations, we have implemented a system-level simulator.