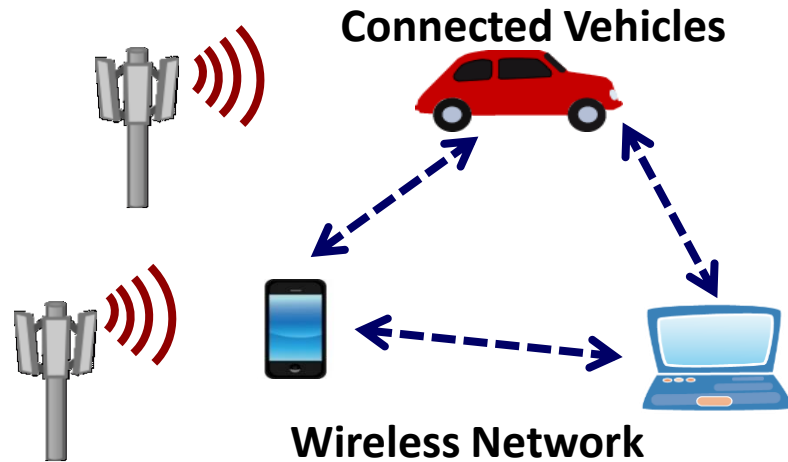# Control and Optimization of Cyber-Physical Systems

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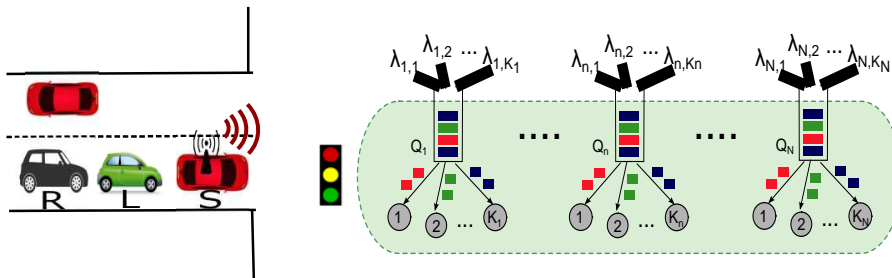**Connected Vehicles**

Wireless Network

Problem Statement and Motivation

- Dramatic growth of connected devices and vehicles require efficient network control mechanisms to utilize available resources
- We seek for an efficient scheduling and routing mechanism for connected devices and vehicles by taking into account:
  - Heterogeneous communications between connected vehicles
  - Head-of-Line (HoL) blocking

Technical Approach

- We use queuing theory and network optimization to control and schedule traffic/data flows to achieve optimal delay and throughput .

Key Achievements and Future Goals

- S. Zhou and H. Seferoglu, ``Connectivity-Aware Traffic Phase Scheduling for Heterogeneously Connected Vehicles,'' *in Proc. of ACM CarSys,* New York City, NY, Oct. 2016.
- S. Zhou, H. Seferoglu, and E. Koyuncu, ``Blocking Avoidance in Wireless networks,'' *in Proc. of IEEE ITA*, San Diego, CA, Feb. 2016.
- S. Zhou and H. Seferoglu, ``Blocking Avoidance in Transportation Systems,'' *in Proc. of IEEE Allerton,* Urbana, IL, Sep. 2015.
- Future goals:
  - Traffic routing mechanisms for connected vehicles with selfish drivers and random deviations.