



UTC Project Information	
Project Title	Trajectory Based Traffic Control with Low Penetration of Connected and Automated Vehicles
University	University of Michigan
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Funding Source(s) and Amounts Provided (by each agency or organization)	CCAT \$150,000
Total Project Cost	\$150,000
Agency ID or Contract Number	69A3551747105
Start and End Dates	2/1/2018 - 12/31/2019
Brief Abstract of Research Project	<p>Traffic control is a critical component of the transportation infrastructure. The state-of-the-practice real-time signal control strategies including vehicle actuated control and adaptive control rely heavily on infrastructure-based sensors, including in-pavement or video based loop detectors for data collection. However, there are significant limitations using the infrastructure based detection. With the advances in CAV technologies, equipped vehicles can communicate with each other (vehicle-to-vehicle, V2V) and with the infrastructure (vehicle-to-infrastructure, V2I) through wireless communications. Therefore, real-time vehicle data can be collected by the infrastructure, from which vehicle trajectories can be constructed. The new source of data provides a much more complete picture of the traffic conditions around the intersection so that traffic controllers should be able to make “smarter” decisions. Meanwhile, trajectories of CAVs can also be controlled along with traffic signals to further improve traffic efficiency and gain environmental benefits. As a result, the control framework is extended from one dimension (temporal) to two dimensions (spatiotemporal). This project aims at developing new science and technology of vehicle trajectory based traffic control, especially under lower penetration of CAVs. The critical research question is how to cooperatively plan CAV trajectories and traffic signals to further improve the intersection operations regarding safety, mobility, and sustainability.</p>

Most Relevant CCAT Research Thrusts	Control and Operations
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	Ongoing.
Impacts/Benefits of Implementation (actual, not anticipated)	
Web Links <ul style="list-style-type: none">• Reports• Project website	ccat.umtri.umich.edu