

Grant Deliverables and Reporting Requirements for UTC Grants

UTC Project Information	
Project Title	Optimizing CAV platoon movements in a signalized road network for travel and energy efficiency
University	University of California, Davis
Principal Investigator	Michael Zhang
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Funding Source(s) and Amounts Provided (by each agency or organization)	USDOT: \$120,000 UCD: \$60,000
Total Project Cost	\$180,000
Agency ID or Contract Number	Sponsor Source: Federal Government CFDA #: 20.701 Agreement ID: 69A3551747119
Start and End Dates	Start date: 04/01/2021 End date: 03/31/2022
Brief Description of Research Project	Our previous work to optimize CAV platoon movements through an isolated intersection has shown that considerable savings (up to 40%) in both travel time and fuel use can be achieved. In this research, we attempt to solve the CAV platoon optimization problem for a network of signalized intersections, which presents several challenges that our previous work did not address. In this research, we propose a cooperative platoon-trajectory-optimization framework that consists of four components: optimal route planning to identify the CAVs travel paths based on the real-time traffic state, a lane-changing strategy to form platoons for different travel directions, boundary control for generating the initial and final states of optimization, and a platoon-trajectory-optimization method to minimize the fuel consumption and travel time. Simulation studies will be carried out to evaluate the system performance of the proposed framework in reducing fuel consumption and travel delay.

Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	
Impacts/Benefits of Implementation (actual, not anticipated)	
Web Links • Reports • Project Website	http://ctech.cce.cornell.edu/final-project-reports/