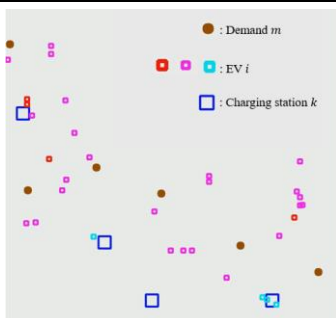
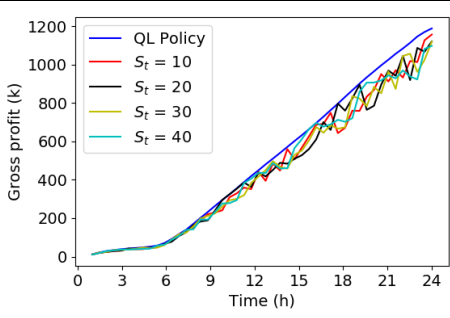


Grant Deliverables and Reporting Requirements for UTC Grants

UTC Project Information	
Project Title	Demand-Driven Operational Design for Shared Mobility with Ride-pooling Options
University	University of South Florida Cornell University
Principal Investigator	Xiaopeng Li Samitha Samaranayake
PI Contact Information	xiaopengli@usf.edu 813-974-0778 samitha@cornell.edu 607-255-5785
Funding Source(s) and Amounts Provided (by each agency or organization)	USDOT: \$65,728 USF: \$17,760; Cornell: \$15,230
Total Project Cost	\$98,718
Agency ID or Contract Number	Sponsor Source: Federal Government CFDA #: 20.701 Agreement ID: 69A3551747119
Start and End Dates	Start date: 10/01/2018 End date: 9/30/2019
Brief Description of Research Project	This project aims to develop a demand-driven approach for shared mobility operations with machine learning and math programming methods. The objective of this approach is to incorporate economic, environment and equity impacts over an entire operational cycle. Both ride-hailing systems (e.g. Lyft) and ride-pooling systems (e.g. UberPool) are investigated. The developed models are always tested with real-world taxi data including detailed trajectories of vehicles and their loading states.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	  <p>We developed an EV sharing system to compare the performance of the proposed Q learning method and traditional optimization models. The results indicate that the proposed DQN-based approach for rebalancing ride sharing vehicles has</p>

	better performance than the traditional models in terms of both level of service and operational cost when operating the ride sharing system in real time.
Impacts/Benefits of Implementation (actual, not anticipated)	The results show that if we apply the proposed Q-learning method to existing ride-sharing systems, we can obtain higher gross profit, lower operational cost and higher level of service.
Web Links ^[1] • Reports • Project website	http://ctech.cee.cornell.edu/final-project-reports/