



UTC Project Information	
Project Title	Enhancing Network Assignment Equilibrium Models for Capturing Emerging Shared-Use Mobility Services
University	University of Michigan
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Start and End Dates	1/1/2017 - 12/31/2018
Brief Abstract of Research Project	Driven by the development of vehicle connectivity and automation, shared-use mobility services are expected to play a major role in meeting urban mobility needs. However, existing network equilibrium models cannot adequately model these emerging services, as these models are trip centric, assigning vehicular trips to transportation networks. With shared-use mobility, vehicular trips are the outcome of the interactions between service operators and travelers, a missing ingredient in the current network equilibrium analysis methodology. In this study, we will enhance the methodology by explicitly modeling the behaviors of both service operators and travelers. We will consider two implementations of shared-use mobility: one of a decentralized system in which vehicles choose which areas to serve based on their individually defined utility functions, and one of a centralized system in which a shared-use mobility service provider optimally assigns vehicles to requests based on a system-level objective function. The proposed models are expected to enhance the planning practice for shared-use mobility services.
Most Relevant CCAT Research Thrusts	Modeling and Implementation

<p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p>	<p>Two different research methodologies focuses on user-level and system-level were implemented (in form of numerical experiments) on the Nguyen-Dupius network.</p>
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>N/A</p>
<p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project website 	<p>ccat.umtri.umich.edu</p> <p>1. Presentations</p> <p>(a) Peer-to-Peer Ridesharing: Using the Existing Passenger-Movement Capacity to Serve the Transportation Demand, Apr. 2018, Neda Masoud, ASCE speaker series, University of Michigan</p> <p>(b) An Optimization Framework for Shared Mobility in Dynamic Transportation Networks, 2017, Neda Masoud, Michigan Innovative Mobility Symposium, Ann Arbor, MI</p> <p>(c) Modeling Spatial Effects of Surge Pricing in Ride-Sourcing Markets, July 2017, Yafeng Yin, 2017 Conference for Computational Transportation Science, Lanzhou, China</p> <p>(d) Research Needs for Achieving Connected and Automated Mobility, August 2017, Yafeng Yin, Workshop for Future Mobility Systems, University of Illinois Urbana-Champaign</p> <p>(e) Modeling and Analysis of Ride-Sourcing Services, March 2018, Yafeng Yin, Invited Seminar, Tongji University, Shanghai, China</p> <p>2. Journal Papers/Reports</p> <p>(a) Zhengtian Xu, Zhibin Chen and Yafeng Yin (2019) Equilibrium Analysis of Urban Traffic Networks with Ride-Sourcing Services, Transportation Research Part B (to be submitted)</p> <p>(b) Tafreshian Amirmahdi and Neda Masoud (2019) Trip-based Graph Partitioning for Parallel Computing in Ridesharing, Transportation Reserach Part C (submitted)</p>