

# Mahyar Amirgholy

ASSISTANT PROFESSOR

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## EDUCATION

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- 2016      **University of Massachusetts, Amherst**  
*Ph.D. Civil and Environmental Engineering*  
Thesis: 'Modeling Choice Problems with Heterogeneous User Preferences in the Transportation Network'  
*CUTC Milton Pikarsky Dissertation Award in Science and Technology, 2017*
- 2014      **Rutgers, the State University of New Jersey**  
*M.S. Civil and Environmental Engineering*  
Transportation Engineering
- 2011      **Sharif University of Technology**  
*M.S. Civil and Environmental Engineering*  
Transportation Planning
- 2008      **Amirkabir University of Technology**  
*B.S. Civil and Environmental Engineering*

## WORK AND RESEARCH EXPERIENCE

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- 2020-PRESENT      **Kennesaw State University**  
*Assistant Professor (Tenure-Track)*  
Civil and Environmental Engineering Department  
Transportation Engineering Group
- 2016-2019      **Cornell University**  
*Postdoctoral Research Associate*  
School of Civil and Environmental Engineering  
Transportation and System Engineering Group
- 2014-2016      **University of Massachusetts, Amherst**  
*Graduate Research Assistant*  
Civil and Environmental Engineering Department  
Transportation Engineering Group
- 2012-2014      **Rutgers, the State University of New Jersey**  
*Research Engineer*  
Center for Advanced Infrastructure and Transportation (CAIT)

## RESEARCH INTERESTS

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Automated Network and Highway Systems  
Cooperative Traffic Control for Autonomous Vehicles  
Network Modeling and Optimization  
Transportation Economics and Pricing  
Transportation System Sustainability  
Public Transportation  
Dynamic Ridesharing and Demand Responsive Systems  
Parking Design and Pricing

## HONORS AND AWARDS

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2017	Council of University Transportation Centers (CUTC) <b>Milton Pikarsky Award</b> for Outstanding Doctoral Dissertation in Science and Technology
2015	16 <sup>th</sup> University of Massachusetts Technical Day Best Presentation <b>Award</b>
2015	ITE Northeastern District Meeting Best Presentation <b>Award</b>
2015	International Road Federation (IRF) Traditional <b>Fellowship</b> Grant
2013	Rutgers University School of Engineering <b>Fellowship</b>
2013	International Transportation Economics Association Kuhmo-Nectar <b>Scholarship</b>
2012	Rutgers University School of Engineering <b>Fellowship</b>

## PUBLICATIONS

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### Peer-Reviewed Journal Papers

#### *Cooperative Control of Autonomous Vehicles*

1. **Amirgholy, M.**, Nourinejad, M., Gao, H.O. (2020). Optimal traffic control at smart intersections: automated network fundamental diagram. *Transportation Research Part B: Methodological*. [Manuscript](#)
2. **Amirgholy, M.**, Nourinejad, M., Gao, H.O. (2020). Autonomous vehicles at smart intersections: platoon coordination. *Transportation Research Part C: Emerging Technologies* (under review).

#### *Autonomous Vehicles: System Design and Management*

3. **Amirgholy, M.**, Shahabi, M., Gao, O.H. (2020). Traffic automation and lane management for communicating, autonomous, and human-driven vehicles. *Transportation Research Part C: Emerging Technologies*, 477-495 [Manuscript](#)
4. Nourinejad, M., **Amirgholy, M.** (2019). Parking pricing and design for regular and autonomous vehicles: a morning commute problem. *Transportmetrica B: Transport Dynamics* (under review).

### *Urban Network Modeling and Congestion Pricing*

5. Yildirimoglu, M., Ramezani, M., **Amirgholy, M.** (2020). Staggered work schedules for congestion mitigation: a morning commute problem. (under review)
6. **Amirgholy, M.**, Gao, H.O. (2017). Modeling the dynamics of congestion in large urban networks using the macroscopic fundamental diagram: user equilibrium, system optimum, and pricing strategies. *Transportation Research Part B: Methodological*, 215-237. [Manuscript](#)
7. **Amirgholy, M.**, Rezaeestakhruie, H., Poorzahedy, H. (2015). Multi-objective cordon price design to control long-run adverse traffic effects in large urban areas. *Netnomics: Network Research and Electronic Networking*, 16(1-2) 1-52. [Manuscript](#)

### *Dynamic Ridesharing and Demand Responsive Systems*

8. Rahimi, M., **Amirgholy, M.**, Gonzales, E.J. (2018). System modeling of demand responsive transportation services: evaluating cost efficiency of service and coordinated taxi usage. *Transportation Research Part E: Logistics and Transportation Review*, 66-83. [Manuscript](#)
9. **Amirgholy, M.**, Gonzales, E.J. (2016). Demand responsive transit systems with time-dependent demand: user equilibrium, system optimum, and management strategy. *Transportation Research Part B: Methodological*, 234-252. [Manuscript](#)

### *Sustainable Design of Multimodal Transit Systems*

10. **Amirgholy, M.**, Shahabi, M., Gao, H.O. (2017). Optimal design of sustainable transit systems in congested urban networks: a macroscopic approach. *Transportation Research Part E: Logistics and Transportation Review*, 261-285. [Manuscript](#)

### *Choice Problems with Heterogeneous User Preferences*

11. **Amirgholy, M.**, Golshani, N., Schneider, C., Gonzales, E.J., Gao, H. O. (2017). An advanced traveler navigation system adapted to route choice preferences of the individual users. *International Journal of Transportation Science and Technology*, No. 17-05826. [Manuscript](#)
12. **Amirgholy, M.**, Gonzales, E.J. (2017). Analytical equilibrium of bicriterion choices with heterogeneous user preferences: application to the morning commute problem. *Transportmetrica B*, 1-33. [Manuscript](#)
13. **Amirgholy, M.**, Gonzales, E.J. (2017). Efficient frontier of route choice for modeling the equilibrium under travel time variability with heterogeneous traveler preferences. *Economics of Transportation*, 11, 1-14. [Manuscript](#)

### Peer-Reviewed Conference Proceedings

#### *Cooperative Control of Autonomous Vehicles*

1. **Amirgholy, M.**, Nourinejad, M., Gao, O.H. (2020). Cooperative control of autonomous vehicles at smart intersections. *Transportation Research Board 100<sup>th</sup> Annual Meeting (Virtual)*, Paper Number 21-00710. [Manuscript](#)
2. **Amirgholy, M.**, Nourinejad, M., Gao, O.H. (2020). Cooperative traffic control: automated network fundamental diagram. *Transportation Research Board 99<sup>th</sup> Annual Meeting*, 12-16 January, Washington D.C., Paper Number 20-00627. [Manuscript](#)

### *Autonomous Vehicles: System Design and Management*

3. **Amirgholy, M.**, Shahabi, M., Gao, O.H. (2019). Lane management and dynamic platoon control in interregional corridors with a mixed demand of communicant, autonomous, and human-driven vehicles. *Transportation Research Board 98<sup>th</sup> Annual Meeting*, 13–17 January, Washington D.C., Paper Number 19-00810. [Manuscript](#)
4. Nourinejad, M., **Amirgholy, M.** (2019). Parking pricing and design in the morning commute problem with regular and autonomous vehicles. *Transportation Research Board 98<sup>th</sup> Annual Meeting*, 13–17 January, Washington D.C., Paper Number 19-01562. [Manuscript](#)

### *Urban Network Modeling and Congestion Pricing*

5. **Amirgholy, M.**, Gao, H.O. (2018). Dynamic congestion tolling and taxing in large urban regions using the network macroscopic fundamental diagram. *Transportation Research Board 97<sup>th</sup> Annual Meeting*, 7–11 January, Washington D.C., Paper Number 18-01774. [Manuscript](#)
6. **Amirgholy, M.**, Liu, L., Gao, H.O. (2017). Modeling dynamics of congestion in urban networks using the macroscopic fundamental diagram. *Transportation Research Board 96<sup>th</sup> Annual Meeting*, 10–14 January, Washington D.C., Paper Number 17-06007. [Manuscript](#)

### *Dynamic Ridesharing and Demand Responsive Systems*

7. **Amirgholy, M.**, Gonzales, E.J. (2016). Operation and management strategies for demand responsive transit systems with time-dependent demand. *Transportation Research Board 95<sup>th</sup> Annual Meeting*, 10–14 January, Washington D.C., Paper Number 16-4579. [Manuscript](#)
8. Rahimi, M., **Amirgholy, M.**, Gonzales, E.J. (2014). Continuum approximation modeling of ADA paratransit operations in New Jersey. *Transportation Research Board 93<sup>th</sup> Annual Meeting*, 10–14 January, Washington D.C., Paper Number 14-4864. [Manuscript](#)

### *Sustainable Design of Multimodal Transit Systems*

9. **Amirgholy, M.**, Shahabi, M., Gao, H.O. (2017). Designing a sustainable transit system in grid urban networks using the macroscopic fundamental diagram. *Transportation Research Board 96<sup>th</sup> Annual Meeting*, 10–14 January, Washington D.C., Paper Number 17-06040. [Manuscript](#)

### *Choice Problems with Heterogeneous User Preferences*

10. **Amirgholy, M.**, Golshani, N., Schneider, C., Gonzales, E.J. (2017). An advanced traveler navigation system adapted to route choice preferences of the individual users. *Transportation Research Board 96<sup>th</sup> Annual Meeting*, 10–14 January, Washington D.C., Paper Number 17-05826. [Manuscript](#)
11. **Amirgholy, M.**, Gonzales, E.J. (2017). Efficient frontier of the trip schedules in the morning commute problem: user equilibrium, system optimum, and dynamic pricing. *Transportation Research Board 96<sup>th</sup> Annual Meeting*, 10–14 January, Washington D.C., Paper Number 17-05891. [Manuscript](#)
12. **Amirgholy, M.**, Gao, H.O., Gonzales, E.J. (2017). Using tradable credits for dynamic pricing of a bottleneck with heterogeneous user preferences and value of time. *58<sup>th</sup> Annual Transportation Research Forum*, 20–21 April, Chicago, Illinois. [Extended Abstract](#)

13. **Amirgholy, M.** (2016). Modeling choice problems with heterogeneous user preferences in transportation network. *Transportation Research Board 95<sup>th</sup> Annual Meeting*, 10–14 January, Washington D.C., Paper Number P16-1773. [Manuscript](#)
14. **Amirgholy, M.**, Gonzales, E.J. (2016). Efficient frontier of route choices under travel time variability. *Transportation Research Board 95<sup>th</sup> Annual Meeting*, 10–14 January, Washington D.C., Paper Number 16-5800. [Manuscript](#)
15. **Amirgholy, M.**, Gonzales, E.J. (2015). Efficient frontier of route choice for equilibrium under travel time variability with heterogeneous traveler preferences. *56<sup>th</sup> Annual Transportation Research Forum*, 12–14 March, Atlanta, Georgia. [Manuscript](#)

## PRESENTATIONS

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1. **Amirgholy, M.** (2020). Autonomous vehicles: traffic automation and lane management. *Southern Polytechnic College of Engineering and Engineering Technology (SPCEET) Research Seminar*, Kennesaw State University, Georgia.
2. **Amirgholy, M.**, Gao, H.O., Gonzales, E.J. (2016). Dynamic pricing of a bottleneck with heterogeneous user preferences and value of time using tradable credits. *INFORMS Annual Meeting*, 13–16 November, Nashville, Tennessee.
3. **Amirgholy, M.**, Shahabi, M., Gao, H.O. (2016). Optimal design of the large-scale transit systems in urban regions using the macroscopic fundamental diagram. *INFORMS Annual Meeting*, 13–16 November, Nashville, Tennessee.
4. **Amirgholy, M.**, Gonzales, E.J. (2015). Optimizing operation and pricing of demand responsive transit systems for time-dependent demand. *UMass Tech Day*, 26 March, Amherst, Massachusetts. (Best Presentation Award)
5. **Amirgholy, M.**, Gonzales, E.J. (2015). Demand responsive transit: system optimization and dynamic pricing. *Institute of Transportation Engineers Northeastern District Annual Meeting*, 13–15 May, Albany, New York. (Best Presentation Award)
6. **Amirgholy, M.**, Gonzales, E.J. (2015). Bi-objective traffic assignment using the efficient frontier of route choice. *UMass Tech Day*, 26 March, Amherst, Massachusetts.
7. Rahimi, M., **Amirgholy, M.**, Gonzales, E.J. (2015). Geographic alignment of service regions for paratransit in New Jersey. *UMass Tech Day*, 26 March, Amherst, Massachusetts.
8. **Amirgholy, M.**, Gonzales, E.J. (2014). Route choice modeling under travel time variability. *UMass Tech Day*, 27 March, Amherst, Massachusetts.
9. Rahimi, M., **Amirgholy, M.**, Gonzales, E.J. (2014). Dynamic optimal fare for ADA paratransit service. *UMass Tech Day*, 27 March, Amherst, Massachusetts.
10. **Amirgholy, M.**, Rahimi, M., Gonzales, E.J. (2014). Route choice modeling under travel time variability. *UMass Tech Day*, 27 March, Amherst, Massachusetts.
11. Rahimi, M., **Amirgholy, M.**, Gonzales, E.J. (2013). Geographic alignment of service regions for paratransit in New Jersey. *INFORMS Annual Meeting*, 6–9 October, Minneapolis, Minnesota.

12. **Amirgholy, M.**, Poorzahedy, H. (2011). Long run effects of CBD cordon pricing in large cities. *Seminar on Economic Dimensions of Urban Transportation*, 13–15 December, Tehran, Iran.

## RESEARCH GRANTS

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1. Spurlock, C.A. (PI), **Amirgholy, M.** (Co-PI) (2020). Geo-economics system modeling. *U.S. Department of Transportation* through *Federal Highway Administration* – in collaboration with *Lawrence Berkeley National Laboratory (Berkeley Lab)*. Grant Number DE-AC02-05CH11231. 24 months. \$1,450K (potential for extension to \$3,500K over 5 years).
2. Gonzales, E.J. (PI), **Amirgholy, M.** (Co-Author) (2014). Route choice in congested grid networks. *United States Department of Transportation* through *the New England Region 1 University Transportation Center*. Grant Number DTRT13-G-UTC31.

## TEACHING EXPERIENCE

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### **Data Collection and Analysis (ENGR 3305)**

#### *Course Instructor*

Required undergraduate course introduces students to applied statistics and probability in engineering.

### **Probabilistic Analysis and Reliability (CE 6003)**

#### *Course Instructor*

Graduate elective course covering statistical modeling and probabilistic analysis in civil engineering.

## SERVICE

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### *Editorial Work*

Sustainability: Special Issue on "[Autonomous Vehicles: Future of Transportation Sustainability](#)"

#### *Guest Editor*

### *Review Work*

Transportation Science

Transportation Research Part B: Methodological

Transportation Research Part C: Emerging Technologies

Transportation Research Part D: Transport and Environment

Transportation Research Part E: Logistics and Transportation Review

Transportmetrica A: Transport Science

IEEE Transactions on Engineering Management

IEEE Intelligent Transportation Systems Society Conference Management System

International Journal of Sustainable Transportation

Transportation Research Board Annual Meeting