

Sevin Mohammadi

✉ [sm4894 at columbia dot edu](mailto:sm4894@columbia.edu) [in](#) [sevin90](#) [GitHub](#) [Google Scholar](#)

<u>EXPERTISE</u>	Data Science Predictive Machine Learning Statistical Inference Quantitative Research		
<u>EDUCATION</u>	Columbia University in the City of New York, NY (Jan '20 to Dec '24) Ph.D. in Civil Engineering & Engineering Mechanics , GPA: 4.06/4.00 <i>Thesis:</i> Geospatial probabilistic machine learning for analyzing urban vehicular mobility patterns With decision-making application. University of Tennessee Knoxville, TN (Aug '17 to Dec '19) M.S. in Civil Engineering , GPA: 3.9/4.0		
<u>COURSEWORK</u>	Signal Processing & Noise Infrastructure Systems Optimization Transportation Analytics & Logistics Causal Inference for Data Science Uncertainty & Risk Big Data in Transportation Data Analysis & Modeling Statistical Inference Bayesian Machine Learning Deep Learning Reinforcement Learning		
<u>PROFESSIONAL EXPERIENCE</u>	Columbia University in the City of New York, <i>Smart Cities Lab and Center for Smart Streetscape</i> • <i>Associate Researcher</i> (Jan '25 to present) <ul style="list-style-type: none">Developed a dynamic, penalty-based decision-making system for EMS dispatch optimization, leveraging heuristic policy and simulation to improve response times in high-demand urban environments. • <i>Graduate Researcher, Teaching Assistant, and Student Leadership Council</i> (Jan '23 to Dec '24) <ul style="list-style-type: none">Developed NLP-enabled trajectory analysis using Transformer architecture, integrating context-aware deep learning and geospatial analytics for accurate path inference in urban road networks.Designed a probabilistic framework for travel time prediction using Bayesian regression with random parameters, enhancing uncertainty quantification and risk assessment in transportation systems.Applied Bayesian neural networks with physics-aware regularization to model travel time variability, addressing data imbalances and improving predictive accuracy in transportation analytics.Developed a probabilistic decision-making toolbox for hospital recommendation, successfully deployed by the Fire Department of New York, transforming data analyses into actionable insights. The University of Tennessee, Knoxville, <i>Center for Transportation Research</i> • <i>Graduate Researcher and Teaching Assistant</i> (Aug '18 to Dec '19) <ul style="list-style-type: none">Identified correlations between environmental factors and driving behavior by applying data mining to mobility time series and developing a random parameter binary logit model for predictive analysis.		
<u>SKILLS</u>	Programming: Python, SQL, R DS: NumPy, Pandas, GeoPandas, Scikit-learn, NetworkX, TensorFlow, Pytorch, PyMC3 Others: Git, Shell Soft: Critical Thinking, Active Learning, Communication, Adaptability.		
<u>JOURNAL PUBLICATIONS</u>	<ol style="list-style-type: none">[1] S. Mohammadi, A. Smyth, "NLP-enabled trajectory map-matching in urban road networks using Transformer seq2seq model," IEEE Intelligent Transportation Systems, <i>revision submitted</i>, 2025.[2] S. Mohammadi et al., "Dynamic penalty-based dispatching decision-making for improved EMS response in urban environments: a heuristic approach," Frontiers in Future Transportation, <i>under review</i>, 2025.[3] S. Mohammadi et al., "Probabilistic prediction of trip travel time and its variability using hierarchical Bayesian learning," Journal of Risk and Uncertainty in Engineering Systems, 2023.[4] A. Olivier et al., "Bayesian neural networks with physics-aware regularization for travel time modeling from imbalanced data," Computer-Aided Civil Infrastructure Engineering, 2023.[5] A. Olivier et al., "Data analytics for improved closest hospital suggestion for EMS operations in NYC," Sustainable Cities and Society, 2022.[6] E. L. de Larrea et al., "Simulating NYC hospital load balancing during COVID-19," IEEE: WSC, 2021.[7] E. Sanabria et al., "Short-term adaptive emergency call volume prediction," IEEE: WSC, 2021.[8] S. Mohammadi et al., "The role of drivers' social interactions in their driving behavior: empirical evidence and implications for car-following and traffic flow," TR Part F: Traffic Psychology and Behavior, 2021.		
<u>AWARDS</u>	<ul style="list-style-type: none">Columbia University Academic Award for full tuition, research and teaching assistantships 2020-2024INFORMS Doing Good with Good O.R. student paper competition finalist 2021Morgan Stanley Women in Quantitative Finance Mentorship Program 2022The New York City Women in Transportation Leonard Braun Memorial Scholarship 2022University of Tennessee Academic Award for full tuition, research and teaching assistantships 2017-2019		