Md Muhtashim Shahrier

shahriermuhtashim@gmail.com Dhaka, Bangladesh muhtashimshahrier.github.io

github.com/muhtashimshahrier

PROFILE

Transportation engineering graduate from BUET with a focus on machine learning, optimization, and uncertainty-aware modeling of urban mobility systems. Passionate about advancing resilient and equitable transport solutions through interdisciplinary research.

EDUCATION

Bachelor of Science, Civil Engineering 02/2020 – 03/2025
Bangladesh University of Engineering and Technology (BUET)
Major in Transportation Engineering, Minor in Structural Engineering
CGPA: 3.96/4.00 (5th out of 211 students)

RESEARCH INTERESTS

Machine learning for urban mobility, uncertainty-aware transport modeling, and data-driven optimization for resilient and equitable systems.

RESEARCH EXPERIENCE

Research Assistant 11/2023 – Present
Integrated Traffic Mobility and Safety (ITMS) Lab
Department of Civil Engineering, BUET
Supervisor: Dr. Md. Hadiuzzaman

Undergraduate Thesis
Application of Chaos Theory to Evaluate Pedestrian Behavior Using Deep Learning-Based Video Analytics in Different Diurnal Variations
Supervisor: Dr. Md. Hadiuzzaman
Developed a deep learning and chaos-theoretic framework to evaluate pedestrian behavior across diurnal variations in Bangladesh; trained a YOLOv8 model for nighttime detection, applied DeepSORT for trajectory extraction, and quantified unpredictability using Lyapunov Exponent and Approximate Entropy.

Publications

- Arif, S. S., **Shahrier, M. M.**, Haque, N., Raihan, M. A., & Hadiuzzaman, M. (2025). *CNN-based framework for pedestrian age and gender classification using far-view surveillance in mixed-traffic intersections.* Accepted for presentation at the 105th Annual Meeting of the Transportation Research Board (TRB 2026), Washington, D.C.
- Anjum, S., **Shahrier, M. M.**, Haque, N., Raihan, M. A., & Hadiuzzaman, M. (2025). *Reinforced modeling of motorcycle crash severity*: *Tackling underreporting through questionnaire-based insights.* Accepted for presentation at the 105th Annual Meeting of the Transportation Research Board (TRB 2026), Washington, D.C.
- Rucunuzzaman, M., Hasanat-E-Rabbi, S., **Shahrier, M. M**., Raihan, M. A., & Hadiuzzaman, M. (2025). *Segment-level modeling of explanatory factors of crash frequency on undivided two-lane highways using zero-inflated negative binomial models.* Accepted for presentation at the 105th Annual Meeting of the Transportation Research Board (TRB 2026), Washington, D.C.

- **Shahrier, M. M.**, Haque, N., & Hadiuzzaman, M. (2025). *Deep learning-based nighttime road users' detection and tracking in urban mixed traffic environments of Bangladesh.* International Conference on Civil Engineering Research & Innovations (ICCEI 2025), RUET, Rajshahi, Bangladesh.
- Iftakhar, M. S., **Shahrier, M. M.**, Raihan, M. A., & Hadiuzzaman, M. (2025). *Identifying factors contributing to heavy vehicle crash severity in Bangladesh through comparative severity modeling.* International Conference on Civil Engineering Research & Innovations (ICCEI 2025), RUET, Rajshahi, Bangladesh.
- **Shahrier, M. M.**, Iftakhar, M. S., Hadiuzzaman, M., & Haque, N. (2025). *Challenges and policy directions for battery-powered rickshaws in Dhaka's urban mobility landscape.* International Conference on Civil Engineering Research & Innovations (ICCEI 2025), RUET, Rajshahi, Bangladesh.

AWARDS

- **Dean's Award** – Outstanding academic performance in every academic year.
- **BUET Academic Merit Scholarship** – Awarded in each term for academic excellence.
- **International Youth Math Challenge 2023** – Silver Medalist.

ACADEMIC PROJECTS

Capstone Project: Multifaith Center Development in Azimpur, Dhaka
Led a 7-member team to design a Multifaith Center in Dhaka, conducting feasibility studies, structural design, and a Traffic Impact Assessment using ITE trip generation and HCM-based LOS analysis.

INDEPENDENT PROJECTS

Road Segment Importance Prediction with Graph Neural Networks (GNNs)
Built a city-scale GNN pipeline on Dhaka's road network (~250k edges), demonstrating improved accuracy over MLP baselines for road segment importance classification.

Bus Route Access Heatmap of Dhaka
Developed a GIS-based heatmap of Dhaka's bus service coverage by integrating scraped route data and population density, identifying underserved areas.

Facility Location Optimization on a Synthetic Grid Using Monte Carlo Simulation
Simulated facility location decisions under uncertain travel times using Monte Carlo methods on synthetic grids, illustrating robustness of optimized placements.

TECHNICAL SKILLS

- **Programming Languages & Tools**: Python, MATLAB, C++, C
- **Data Science & ML Libraries**: NumPy, Pandas, Roboflow
- **Computer Vision & Deep Learning**: YOLOv8, DeepSORT, OpenCV
- **Modeling & Simulation**: OSMnx, NetworkX
- **Geospatial & Engineering Software**: QGIS, AutoCAD, ETABS, SAP2000