

# Kamol Debnath Dip

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## Education

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**Master of Science in Civil Engineering** (Transportation) [April 2021- Ongoing] 4.00/4.00  
Bangladesh University of Engineering & Technology (BUET), Dhaka

**Bachelor of Science in Civil Engineering** [February 2016- February 2021] 3.89/4.00  
Bangladesh University of Engineering & Technology (BUET), Dhaka (6<sup>th</sup> in a class of 214)

## Research Interest

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- Large data analysis
- Machine Learning & Artificial Intelligence in Transport Modeling.
- Demand Modeling
- Travel Behavior Analysis
- Traffic Impact Assessment
- Safe, Efficient & Sustainable Mobility

## Research Experience

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### Master's Thesis (ongoing)

**Supervisor:** Dr. Annesha Enam (CE, BUET)

**Topic:** Modeling Urban Mobility in Chattogram: A Comparative Analysis of Traditional and Machine Learning Approaches

- Designed a household travel information survey which will be filled by surveyors visiting houses and collecting information through a [website](#) tailored to this survey.
- Traditional trip generation and mode choice models will be developed and compared with state-of-the-art machine learning models in different aspects like easiness of formulation, interpretation, reliability, and accuracy.

### Independent Collaboration (2021-24)

**Topic:** Investigation of Road Accident Scenario in Chattogram City. (2023-24)

**Contribution:**

- Analyzed accident data from 2015 to 2019 of Chattogram City and found significant accident statistics, demographic insights, severity index, fatality risk, and reliability of accident data source.
- Utilized statistical methods such as T-test, ANOVA, and trend analysis to capture insight.
- Identified the underreporting problem which caused the high severity index for the city.
- Contributed to methods, results, discussion, and conclusion of the paper.

**Topic:** A Comparative Study Between Polypropylene Modified Bitumen and Waste Crumb Rubber Modified Bitumen (2022)

**Contribution:**

- Generated Marshall Mix design curves and compared polypropylene-modified bitumen performance with crumb rubber-modified bitumen from the results of tests done on modified binder concrete before.
- Wrote results and discussion part of the paper.

**Topic: The Evidence of Critical Issues in Transportation Infrastructures of Bangladesh to Introduce Connected and Autonomous Vehicles. (2021)**

**Contribution:**

- Conceptualized the study initially which other authors fine-tuned.
- Identified infrastructural shortcomings in introducing Connected and Autonomous Vehicles in Bangladesh through extensive literature analysis and evidence collected from different road infrastructures in Dhaka.

**Undergraduate Thesis (2020-21)**

**Supervisor:** Dr. M. Neaz Murshed (CE, BUET)

**Topic:** Understanding Mode Choice Decisions and Developing a Choice Preference Model for AC and Non-AC bus Services on Dhaka-Cumilla Route.

- Designed and ran an online survey for data collection among the passengers on this route.
- Developed a discrete choice model to investigate factors influencing decisions between AC and Non-AC bus services in Dhaka-Cumilla N1 Highway.
- Identified significant factors influencing mode choices, particularly emphasizing safety and comfort for AC bus users, providing actionable recommendations for improving public transport services.

## Publications

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### Conference Papers

1. **Dip, K. D.**, Sakib, N., Tasnim, N., & Murshed, M. N. "Key Factors Affecting Mode Choice Decisions Between Ac and Non-Ac Bus Services in Dhaka-Cumilla Route." In *7th International Conference on Civil Engineering for Sustainable Development (ICCESD 2024), Bangladesh* (p. 0400).
2. Nilu, S. N., **K. D. Dip**, and M. H. Masum. "Investigation of Road Accident Scenario in Chattogram City." *7th International Conference on Civil Engineering for Sustainable Development (ICCESD 2024)*. Atlantis Press, 2024.
3. Jamil, M. S., **Dip, K. D.**, Hoque, M. S., "A Comparative Study Between Polypropylene Modified Bitumen and Waste Crumb Rubber Modified Bitumen", 6th International Conference on Advances in Civil Engineering (ICACE 2022)
4. Huq, A., **Dip, K. D.**, Mohammad, N. B., & Sakib, N. (2021, May). "The Evidence of Critical Issues in Transportation Infrastructures of Bangladesh to Introduce Connected and Autonomous Vehicles." In *Proceedings of the 6th International Conference on Civil, Structural and Transportation Engineering (ICCSTE'21)*. doi (Vol. 10). Held in Niagara Falls, Canada, May 17-19, 2021

## Professional Experience

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**Lecturer**, Chittagong University of Engineering & Technology (CUET)  
Chattogram, Bangladesh

[July 2022- Present]

**Course Conducted:** Surveying, Practical Surveying, Programming Sessional, Engineering, Planning & Architectural Appreciation, Open Channel Flow Sessional

**Bureau of Research Testing and Consultation:** Conducted tests on materials such as fine and coarse aggregate, cement, and strength of materials such as compressive strength of concrete cylinders, cubes, bricks, etc. of different construction projects.

**Additional Contribution:**

- Independently developed Excel programs for calculating annual exam remunerations for course teachers and involved parties. Created an Excel program to distribute and store course assignments for the Civil Engineering department, tracking individual course loads.

- Designed and maintained a comprehensive Excel-based tracking system for ICACE 2024 conference, facilitating data synchronization, paper tracking, CMT management, and reviewer coordination. Developed Python scripts for syncing data between Excel and the CMT platform.
- Wrote JavaScript code to synchronize data from CSV files to the teacher portal for course mark input.
- Authored lab manuals for practical surveying and safety manuals for the hydraulics lab.
- Coordinating batch 2021 of the Civil Engineering Bachelor Program.

**Lecturer**, Stamford University Bangladesh  
Dhaka, Bangladesh

**[July 2021-July 2022]**

**Course Conducted:** Programming Sessional, Steel Structure and Design Sessional, Transportation Engineering III: Traffic Engineering Design and Management, Transportation Engineering II: Traffic Engineering Design and Management Sessional.

**Additional Contribution:**

- Accelerated student registration process by implementing VBA code in Excel, resulting in three days of manual work to just 5 minutes of data processing.

**Research Assistant (Part-time)**, Project: Wet Weather maintenance  
technique of roads in Bangladesh

**[April 2022- May 2022]**

**P.I:** Prof. Dr. Md. Shamsul Hoque (CE, BUET)

Project of Roads and Highway Department, Bangladesh

**Contribution:**

- Analyzed the data found from different types of tests on polymer-modified asphalt concrete and completed the Marshall mix design for optimal binder content.
- Generated necessary graphs for Marshall mix design.
- Completed one project update report and co-authored a conference paper on the findings.

**Internship (Online)**, United Nations Internship Program at ESCAP  
Transport Division reporting to Ishtiaque Ahmed, Bangkok, Thailand

**[May 2021- November 2021]**

**Contribution:**

- Designed infographics illustrating the status of UN conventions on road safety in the Asia-Pacific region.
- Conducted literature searches on the transport sector and institutional issues.
- Extracted data from reports and created graphical charts for presentations.
- Reformatted reports and addressed reviewers' feedback.

## Standardize Tests

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<b>GRE</b> Score (October 2021)	Total 320	Quantitative 166	Verbal 154	Analytical Writing 3	
<b>TOEFL iBT</b> Score (September 2024)	Total 105	Reading 29	Listening 29	Speaking 22	Writing 25

## Technical Skills

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Engineering Tools : AutoCAD, ETABS, SAP2000, VISSIM  
Office Tools : MS Word, MS Excel (proficient), MS PowerPoint  
Programming Language : C++, MATLAB, Python (used recently)

## **Coursera Course Completed**

1. Understanding and **Visualizing Data with Python**, University of Michigan and offered through Coursera, 100% Passing Grades, 2020
2. **Introduction to Deep Learning**, National Research University Higher School of Economics and offered through Coursera, 98% Passing Grades, 2020
3. **Excel Skills for Business: Intermediate I**, Macquarie University and offered through Coursera, 89% Passing Grades, 2020
4. **Excel Skills for Business: Intermediate II**, Macquarie University and offered through Coursera, 88% Passing Grades, 2020
5. **Principal Component Analysis with NumPy**, Rhyme and offered through Coursera, 88% Passing Grades, 100% Passing Grades, 2020

## **Achievements**

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- “Deans Award” for excellent academic performance in two regular terms of 3rd year in academic session of 2017-18 from Dean of the Faculty of Civil Engineering with an average GPA of 3.92 out of 4.00.
- “Deans Award” for excellent academic performance in two regular terms of 2nd year in academic session of 2017-18 from Dean of the Faculty of Civil Engineering with an average GPA of 3.80 out of 4.00.
- “Deans Award” for excellent academic performance in two regular terms of 1st year in academic session of 2017 18 from Dean of the Faculty of Civil Engineering with an average GPA of 3.93 out of 4.00.
- “Talent pool scholarship” at 10<sup>th</sup> position in Higher Secondary School Certificate exam 2015 in Cumilla Board (Among the 100088 appeared examinees in this board).
- 1<sup>st</sup> position in the Divisional round of 5<sup>th</sup> Bangladesh Physics Olympiad 2015 (BdPHO).
- 19<sup>th</sup> position in the Divisional round of 4<sup>th</sup> Bangladesh Physics Olympiad 2013 (BdPHO).