Tanmoy Goswami

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Linkedin | ORCiD | ResearchGate | Portfolio

ACADEMIC

B.Sc. Engineering in **Civil and Environmental Engineering**   January 2020 – October 2025
Shahjalal University of Science and Technology (SUST)   Sylhet, Bangladesh
CGPA – 3.28/4.00 (3.59/4.00 in Final Semester)

Higher Secondary School Certificate (H.S.C)   June 2017 – June 2019
Sylhet Government College   Sylhet, Bangladesh
GPA – 5.00/5.00

Secondary School Certificate (S.S.C)   January 2015 – February 2017
Nabin Chandra High School   Kulaura, Bangladesh
GPA – 5.00/5.00

- *Thesis Title:* Effect of Aggregate Size and Shape on the Mechanical Properties of Self-Compacting Concrete (SCC)
- *Supervisor:* Prof. Dr. Mushtaq Ahmed

RESEARCH INTERESTS

- Compound flooding
- Urban flood risk analysis
- Environmental protection & sustainability
- Machine learning and uncertainty analysis
- Sustainable concrete materials
- multi-objective optimization

RESEARCH EXPERIENCE

Project 1: Effect of Aggregate Size and Shape on the Mechanical Properties of Self-Compacting Concrete (SCC)
Timeline: March 2024 – June 2025

- **Key Focus:** Investigates the influence of coarse aggregate size (8mm–20mm) and shape (angular vs. rounded) on the compressive strength, tensile strength, and flexural behavior of SCC. Employs laboratory experiments and finite element modeling (FEM) using ABAQUS to analyze stress distribution and failure modes.
- **Application:** Provides insights into optimizing aggregate characteristics to improve SCC performance in structural applications. Supports data-driven mix design decisions for high-performance concrete with enhanced workability and durability, especially in complex formworks and congested reinforcement zones.
- **Tools/Skills:** OpenLCA, Ecoinvent v3.10 (Background database), Cost analysis, Environmental Modelling.
- **Supervisor:** Prof. Dr. Mushtaq Ahmed

Project 2: Understanding Compound Flooding Dynamics: A Study of the Surma River in Sylhet.

Timeline: November 2024 – Present

- **Key Focus:** Investigates the interplay of multiple flood drivers (rainfall, urban runoff, antecedent soil moisture, and evaporation) in contributing to compound flooding events. Applies Copula-based modeling to simulate joint dependencies and employs a Bayesian Belief Network (BBN) using GeNIe for probabilistic analysis, sensitivity assessment, and scenario evaluation.
- **Application:** Aids in understanding complex flood generation processes in urban river basins. Supports data-driven flood forecasting, emergency preparedness, and climate-resilient urban planning for Sylhet and similar flood-vulnerable regions.
- **Tools/Skills:** Bayesian Network, GeNIe, Machine Learning, Probabilistic Modelling.
- **Supervisor:** Prof. Dr. Ahmad Hasan Nury

PUBLICATIONS

- Pritom, N. D., and Goswami, T., "Predicting Vehicular SO2 Emissions using Artificial Neural Networks and Mamdani Fuzzy Logic: A Comparative Analysis." International Journal of Computer Applications (PhD Focus), Volume 186, no. 37 (2024). https://doi.org/10.5120/ijca2024923945

- Effect Of Size And Shape Of Coarse Aggregate On Self-Compaction Concrete (Tanmoy Goswami, Md. Sojibur Rahman Sojib, , Dr. Mushtaq Ahmed, Mohaiminul Haque) | Submitted to Proceedings of the 8th International Conference on Civil Engineering for Sustainable Development (ICCESD 2026), 5–7 February 2026, KUET, Khulna, Bangladesh (Under Review)

- Flood Level Prediction Using Artificial Neural Network and Random Forest with Multivariate Hydrometeorological Inputs: A Case Study of Sylhet, Bangladesh | (Tanmoy Goswami, Nixon Deb Pritom, Dr. Ahmed Hasan Nury, Md. Imam Hossain) | Submitted to Proceedings of the 8th International Conference on Civil Engineering for Sustainable Development (ICCESD 2026), 5–7 February 2026, KUET, Khulna, Bangladesh (Under Review)

- Forecasting the Severity of Traffic Accidents in Highway Using Random Forest, Bayesian Network and XGBoost | (Nixon Deb Pritom and Tanmoy Goswami) | KFUPM Journal of Undergraduate Research International (Under Review).

- Predicting Highway Accident Blackspot using GIS and Predictive Modelling | (Nixon Deb Pritom, Kuman Borshopriyo, and Tanmoy Goswami) | Transportation Safety Research, Lund University Journal, ([Under Review](#))

PROFESSIONAL EXPERIENCE

- **Research Assistant** — 07.2024 – Present
  Shahjalal University of Science and Technology Research Center

EXTRACURRICULAR ACITIVITIES

- **Piano Teacher** — 01.2025 – 07.2025
  Aaj School
  Shahjalal University of Science and Technology
- **Football Team Captain** — 03.2022 – 02.2025
  Departmental Team
  Department of CEE, SUST
- **Lead Singer** — 08.2024 – 11.2024
  Band Kornov
  Shahjalal University of Science and Technology
- **Mentor** — 09.2023 – 11.2023
  Annual Cultural Program
  Department of CEE, SUST
- **Transportation Secretary** — 02.2022 – 04.2023
  Association of Civil and Environmental Engineering
  Shahjalal University of Science and Technology

MEMBERSHIPS

- **Aaj Muktomancho** | General Member — 06.2020 – 05-2022
- **Sports Sust** | General Member — 04.2020 – 05.2022
- **Model United Nation (MUN) SUST** | Volunteer — 09.2022 – 06.2025
- **Graduate Development Network SUST** | General Member — 07.2022 – 12.2024
- **Association of Civil and Environmental Engineering** | General Member — 02.2021 – 04.2025

TECHNICAL SKILLS

- **Software:** MATLAB, ArcGIS, Google Earth Engine, SWMM, HEC-RAS, Abaqus, Ansys, InfraWorks, AutoCAD, SPSS, ETABS, GRASP, GeNIe Modeler, Uninet
- **Computational Modelling:** Artificial Neural Network (ANN), Bayesian Inference, Bayesian Neural Network (BNN), Convolutional Neural Network (CNN), Fuzzy Logic
- **Programming:** Python, MATLAB
- **Machine Learning Models:** Random Forest, XGBoost, Support Vector Machine, Artificial Neural Network
- **Database:** Google Earth Engine, (BMD), BWDB, USGS Earth Explorer, HydroSHEDS, Copernicus (DEM), NASA SRTM, ECMWF, APHRODITE.
- **Libraries & Frameworks:** TensorFlow, PyTorch, scikit-learn.
- **Hands-on experience:** Microsoft Word, Advance Excel, PowerPoint, and Adobe Illustrator

TEACHING EXPERIENCE

- **Online and In-person Teaching** | Science Teacher — Sylhet, Bangladesh | 08.2020 – Present
  Class eight to twelve, and university admission
- **Creative Coaching Center** | Science Teacher — Sylhet, Bangladesh | 08.2023 – 02.2024
  Class nine to twelve, and university admission

STANDARDIZE TEST SCORES

International English Language Testing System (IELTS) — **15ⁿᵗ November, 2025**

Overall	Reading	Listening	Speaking	Writing
7.5	8.5	8.5	7	6.5

REFEREES

- Dr. Mushtaq Ahmed
  Professor
  Shahjalal University of Science and Technology
  Email: mushtaq-cee@sust.edu
- Dr. Ahmad Hasan Nury
  Professor

Shahjalal University of Science and Technology
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- Mohaiminul Haque
  Assistant Professor
  Shahjalal University of Science and Technology
  Email: mohaiminul-cee@sust.edu