TASFIA NOOR CHOWDHURY

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EDUCATION

Bachelor of Science in Mechatronics & Industrial Engineering February 2019 – June 2024
Chittagong University of Engineering and Technology (CUET), Bangladesh

- CGPA: 3.63/4.00 | Senior Year GPA: 3.96/4.00 | Class Rank: 8th
- Dean's Award recipient, 5 consecutive semesters (GPA $\geq$ 3.75)
- Relevant coursework: Machine Learning, Neural Networks, Robotics System Design, System Dynamics & Control, Industrial Automation, Signal & System Analysis, Reliability & Quality Control, Operation Management

Higher Secondary School Certificate (HSC) April 2016 – June 2018
Barisal Government Women's College, Bangladesh

- GPA: 5.00/5.00 | Government Scholarship recipient

Secondary School Certificate (SSC) June 2016
Barisal Government Girls' High School, Bangladesh

- GPA: 5.00/5.00 | Government Scholarship recipient

RESEARCH INTERESTS

Machine learning and deep learning for environmental monitoring and disaster management; data-driven healthcare analytics; industrial automation and intelligent control systems; computer vision applications in engineering.

PUBLICATIONS

[1] T. N. Chowdhury, [Co-author 2], [Co-author 3], "AI-Driven Water Segmentation for Enhanced Flood Monitoring," *arXiv preprint*, 2025. doi:10.48550/arXiv.2501.08266

- Developed deep learning models for automated flood detection; achieved 90.57% accuracy by augmenting datasets with diverse flood imagery.

[2] T. N. Chowdhury, [Co-author 2], [Co-author 3], "A Hybrid Data-Driven Approach for Analyzing Inpatient Length of Stay," *arXiv preprint*, 2025. arXiv:2501.18535

- Analysed healthcare data to predict inpatient length of stay; proposed resource-optimisation strategies to reduce patient waiting times and improve facility efficiency.

Note: Replace [Co-author 2], [Co-author 3] *with full co-author names before submitting.*

RESEARCH EXPERIENCE

AI-Driven Water Segmentation for Flood Monitoring **2024 – 2025**

Independent Research Project, CUET

- Designed and trained deep learning architectures (semantic segmentation) on satellite and aerial imagery for real-time flood extent mapping.
- Curated and augmented environmental datasets with diverse flood scenarios, improving model generalisation.
- Demonstrated potential for integration into early-warning disaster management systems.

Hybrid Data-Driven Healthcare Analytics **2024 – 2025**

Independent Research Project, CUET

- Applied machine learning and statistical methods to hospital inpatient data to model length-of-stay distributions.
- Identified key clinical and operational predictors; recommended actionable resource-allocation strategies.

Smart Irrigation System **2023**

Capstone / Design Project, CUET | *Selected among Top 250 projects, Unibator BD*

- Designed an automated sprinkler system integrating real-time soil-moisture and weather data for water-efficient agriculture.
- Implemented sensor–microcontroller interfacing (Arduino) and data-driven decision logic.

Automated Box-Sorting System **2023**

Industrial Automation Project, CUET

- Programmed and simulated a PLC-based sorting mechanism using Factory I/O, Ladder Logic, and vision sensors.
- Optimised conveyor speed and sensor–actuator synchronisation for error-free processing.

Eye-Gaze Controlled Wheelchair **2022**

Design Competition Project, CUET

- Developed a prototype wheelchair controlled via eye-gaze tracking for mobility-impaired users.
- Awarded 2nd Runner-Up in the CUET Project Idea Competition (2022).

TEACHING EXPERIENCE

STEM Instructor & Academic Mentor January 2021 – May 2023
Freelance / Remote

- Delivered customised curricula in Physics, Mathematics, and Information Technology to secondary and higher-secondary students.
- Adapted teaching methodologies to individual learning paces; mentored students toward measurable academic improvements.
- Employed interactive, project-based learning strategies to strengthen conceptual understanding.

HONOURS AND AWARDS

- **Aspire Leaders Program Fellow** (Harvard Business School Initiative) 2025
- **Shoktikonna Leadership Cohort Graduate** (GIZ, EU, World Bank) 2024
- **Dean's Award**, CUET — 5 consecutive semesters (GPA $\geq$ 3.75) 2019 – 2024
- **Semi-Finalist**, HULT Prize @ CUET (Team: Bottle Green House) 2019
- **Regional Winner**, English Olympiad 2017
- **Regional Winner**, Physics Olympiad 2017
- **Government Scholarship**, HSC and SSC Examinations 2016, 2018

TECHNICAL AND RESEARCH SKILLS

Programming & Machine Learning: Python (Pandas, NumPy, Scikit-learn), TensorFlow, PyTorch, MATLAB, C, Data Visualisation (Matplotlib, Seaborn)

Industrial Automation & Robotics: Factory I/O, Siemens TIA Portal, PLC (Ladder Logic), Arduino, UR3 Robotics, Turtle Bot, 3D Printing

Engineering Design & Simulation: AutoCAD, SolidWorks, Proteus, TinkerCad

Research & Analytical Tools: LaTeX, SPSS, Power BI, MS Excel (Advanced), Git/GitHub

PROFESSIONAL TRAINING

Industrial Induction, Berger Paints Ltd, Chittagong Factory September 2023
Vertical manufacturing processes, industrial machinery operations, and quality control compliance.

EHS & ISO 45001:2018 Training, Marico Bangladesh 2023
Occupational Health and Safety standards, Hazard Identification and Risk Analysis (HIRA).

Industrial Visit, PepsiCo Bangladesh, Chittagong Factory 2023
Manufacturing line workflow analysis and process optimisation.

ADDITIONAL PROFESSIONAL EXPERIENCE

Communication & Design Lead (Remote) July 2023 – Present
ILM International School

- Developed communication strategies that increased course enrolment by 25%.
- Coordinated cross-functional teams (design, marketing, administration) to ensure brand consistency.

LANGUAGES

Bengali (native), English (professional proficiency)

REFERENCES

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