

Md. Maruf Mullah

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ACADEMIC CREDENTIALS

B.Sc. in Mechanical Engineering, Military Institute of Science and Technology (MIST) Apr 2021 – May 2025
CGPA: 3.23 / 4.00

RESEARCH INTERESTS

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- Computational Mechanics and Numerical Modelling
 - Data-Driven and Machine Learning Applications in Engineering
 - Advanced Engineering Materials and Material Characterization
 - Sustainable and Bio-Inspired Materials

BACHELOR'S THESIS

Densification of Natural Wood to Improve Structural Properties

Advisor: Major Md. Anisur Rahman, EME, Assistant Professor, ME Dept., MIST

- Investigated the effects of three distinct processing conditions—natural (untreated), seasoned, and chemically treated with subsequent densification—on the structural performance of natural wood.
- Studied three tropical wood species: *Swietenia macrophylla*, *Albizia procera*, and *Cordia subcordata*.
- Seasoned selected specimens under controlled conditions prior to testing, while chemically treated samples were pretreated using NaOH and Na₂SO₃ followed by thermo-mechanical hot-press densification.
- Conducted tensile, compression, three-point bending, impact, moisture absorption, and SEM analyses following ASTM standards.
- Performed a comparative evaluation across all three conditions; chemically treated and densified specimens exhibited the highest strength, while seasoned wood showed moderate improvements over natural samples.

PROJECTS

Surface Roughness Prediction in Machining

2025

- Implemented Linear Regression, Random Forest, Gradient Boosting, SVM, and Decision Tree models.
- Achieved best performance using Decision Tree ($R^2 = 0.85$).
- Analyzed the influence of cutting parameters on surface finish.
- [GitHub](#)

BD Freshwater Fish Detection

2024

- Developed a MobileNetV2-based deep learning model to classify 12 Bangladeshi freshwater fish species.
- Performed dataset preprocessing, augmentation, and model optimization.
- Deployed the trained model using Streamlit for real-time inference.
- [GitHub](#)

Dhaka Wind Speed and Direction Prediction

2024

- Built ANN and CatBoost models using historical meteorological data.
- Performed feature engineering and comparative model analysis.
- [GitHub](#)

Tailstock Die Tool Holder Design and Manufacturing

2022

- Designed a functional tailstock tool holder using SolidWorks.
- Manufactured the component through lathe machining and validated dimensional accuracy.
- [Google Drive](#)

PUBLICATIONS

Journal Article

- I. Alam et al., **Md. Maruf Mullah**. *Effect of Groove Shapes on Microstructural and Mechanical Behavior of Pipe Welds under Post-Weld Heat Treatment*. *Science and Technology of Welding and Joining* (Under Review).

Conference Papers and Book Chapters

- A. Tahsin, **Md. Maruf Mullah**, et al. *Impact Strength and Moisture Behaviour of Natural, Densified and Seasoned Wood*. ICMEAS 2025 (Accepted).
- Z. Imtiaz et al., **Md. Maruf Mullah**. *Meteorological Drought Prediction Using Forecasting Models*. ICWFM 2025 (Book Chapter – Accepted).

TECHNICAL SKILLS

Programming Languages: Python, C, C++, MATLAB, HTML

Machine Learning & Deep Learning: PyTorch, TensorFlow, Scikit-learn, NumPy

Data Analysis & Visualization: Microsoft Excel, Google Sheets, Pandas, Matplotlib, Seaborn

Simulation Tools: ANSYS, COMSOL Multiphysics

CAD / 3D Printing Tools: SolidWorks, FreeCAD, Anycubic Cobra

Document Preparation: L^AT_EX, Microsoft Word, Google Docs

PROFESSIONAL EXPERIENCE

Industrial Attachment, IFAD Autos Ltd. — Vehicle assembly, mechanical fitting, and workflow optimization.

MTO-Engineer Assessment, PRAN Group — Process evaluation, workflow mapping, and productivity analysis.

CO-CURRICULAR ACTIVITIES & AWARDS

Government Scholarships

Recipient of Government Scholarship in the **Primary Education Completion (PEC)** Examination 2012

Recipient of Government Scholarship in the **Junior School Certificate (JSC)** Examination 2015

Science Fair Champion — Upazila Level, Raipura 2017

Led a school team to first place by presenting an applied science project.

Bangladesh Boy Scouts — Scout Volunteer 2015–2016

Served as a scout volunteer at high school, supporting discipline management, event organization, and community service activities.

Volunteer, ICMEAS 2022

Assisted in conference logistics, participant coordination, and technical session management.

Volunteer, Job Fair 2022

Supported employer coordination, registration, and event operations.

Organizing Committee Member, Soccer Bot Competition — MIST 2024

Contributed to planning, team coordination, and competition execution under MIST Robotics initiatives.

Humanitarian Volunteer 2024

Engaged in flood relief operations and winter clothing distribution programs.

CERTIFICATIONS

- Machine Learning Specialization — Coursera
- Neural Networks and Deep Learning — Coursera
- Mathematics for Data Science — Simplilearn
- Python Programming Bootcamp — Decoders Academy
- MATLAB Onramp — MathWorks
- Git Training — Simplilearn
- Google Sheets — Simplilearn
- Project-Based Excel — Grameenphone Academy

REFERENCES

Major Md. Anisur Rahman, EME

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