

Md. Maruf Mullah

Email: md.marufmullah50@gmail.com LinkedIn: [marufmullah50](#) GitHub: [marufmullah50](#) Portfolio: [marufmullah50.github.io](#)

ACADEMIC CREDENTIALS

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

Apr 2021 – May 2025

RESEARCH INTERESTS

- Advanced and Smart Manufacturing Systems
- Computational Mechanics and Numerical Modelling
- Data-Driven and Machine Learning Applications in Engineering
- Advanced Engineering Materials and Material Characterization

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

Casting Defect Classification

2026

- Developed deep learning models to classify casting products as defective or non-defective using real industrial images.
- Evaluated CNN, MobileNetV3, Vision Transformer (ViT), and YOLO-based classifiers.
- Achieved best performance using a YOLO classifier with 99.9% accuracy.
- [GitHub](#)

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](#)

Dhaka Wind Speed and Direction Prediction

2024

- Built ANN, RNN, LSTM 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

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).

MANUSCRIPTS IN PREPARATION

- I. Alam et al., **Md. Maruf Mullah**. *Effect of Groove Shapes on Microstructural and Mechanical Behavior of Pipe Welds under Post-Weld Heat Treatment*. Manuscript under revision for journal resubmission.

TECHNICAL SKILLS

Programming Languages: Python, C, C++, MATLAB, HTML
Machine Learning & Deep Learning: PyTorch, TensorFlow, Scikit-learn, YOLO, 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

Management Trainee Officer (Engineer) — 7 day Assessment (Full-Time) <i>PRAN-RFL Group, Kaliganj Agro-Processing Ltd.</i> Kaliganj, Gazipur, Bangladesh (On-site)	Jul 2025
<ul style="list-style-type: none">• Participated in structured assessment for MTO (Engineer) role in manufacturing operations.• Observed production workflow, plant layout, and process sequencing.• Assisted engineers in monitoring machine operation and basic troubleshooting.• Prepared short technical and operational reports as part of evaluation tasks.• Demonstrated analytical and professional communication skills.	
Mechanical Engineering Intern (Full-Time) <i>IFAD Autos PLC</i> Dhamrai Upazila, Dhaka, Bangladesh (On-site)	Feb 2024 – Mar 2024
<ul style="list-style-type: none">• Worked in vehicle assembly and mechanical fitting sections.• Assisted in chassis assembly, component installation, and torque verification.• Observed quality control procedures and assembly line balancing.• Supported workflow optimization by identifying minor process delays.• Gained hands-on exposure to automotive manufacturing systems.	

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 Assistant Professor, ME Dept., MIST Email: anisur@me.mist.ac.bd	Dr. Md. Sayem Hossain Bhuiyan Associate Professor, ME Dept., MIST Email: sayem@me.mist.ac.bd
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