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

- 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 Na_2SO_3 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: LaTeX, 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.

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

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