ABDULLAH AL MAMUN

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DATA SCIENTIST | MACHINE LEARNING ENGINEER | APPLIED ML & ANALYTICS

Data Scientist with an M.Sc. (Merit) in Computing for Data Science and hands-on experience building end-to-end machine learning pipelines in Python—from data cleaning and feature engineering to model training, validation, and reporting. Strong foundation in regression modeling, statistical evaluation, and insight-led visualization, with applied work across manufacturing analytics, climate trend modeling, and audio signal processing. Known for reproducible workflows, clear documentation, and translating complex results into practical, decision-ready outputs.

EDUCATION

M.Sc. Computing for Data Science (Merit)

Bangor University — United Kingdom • 09/2022 - 12/2023

- Key areas: Machine Learning, Predictive Analytics, Statistical Modelling, Data Analysis & Visualisation
- Relevant modules (selected): Machine Learning, Data Mining, Statistical Modelling, Data Visualisation, Research Methods, Python for Data Science (wording can be adjusted)

B.Sc. Computer Science & Engineering

Dhaka International University — Bangladesh • 04/2016 - 12/2019

- Core training: Programming, Algorithms, Software Development, Databases, Embedded Systems
- Final-year robotics project: DOF-17 humanoid robot control (Arduino Mega, C)

PROJECTS

MSc Dissertation — Predictive Modelling for 3D-Printed Metal Components (Yield Strength Prediction)

08/2023

- Developed a full predictive modelling workflow to estimate yield strength from additive manufacturing process parameters.
- Built and compared multiple regression approaches to assess performance and generalisability, selecting models based on objective evaluation.
- Applied systematic validation and error analysis to ensure results were reliable and not driven by noise or spurious patterns.
- Investigated key process drivers influencing yield strength (e.g., laser power, scan speed) to support process–property understanding.
- Implemented structured data preparation (handling missing values, consistent splitting, and standardised inputs) to ensure clean, repeatable experiments.
- Produced clear visual summaries and dissertation-ready reporting that communicated findings, comparisons, and limitations in an interpretable way.
- Delivered a reproducible, well-documented project workflow suitable for re-running experiments and extending the modelling approach.

Humanoid Robot Control Project (DOF-17 Robot)

12/2019

- Designed and programmed coordinated motion control routines and basic interaction logic.
- Integrated sensors and actuators to enable controlled, repeatable movement execution.
- Applied calibration and iterative testing to improve stability and repeatability in movement sequences.
- Strengthened understanding of real-world constraints (timing, stability, power, calibration).

Climate Data Analysis with Machine Learning

- Analysed long-term climate datasets to identify temperature and rainfall trends over time.

- Applied regression modelling and statistical validation to support evidence-led conclusions.
- Aggregated and compared yearly/seasonal patterns; produced interpretable time-series and comparative plots.
- Built repeatable analysis pipelines so results/figures can be regenerated from raw data.

Voice Similarity Detection System (MFCC + Cosine Similarity)

- Developed a Python-based system to measure and visualise speaker similarity for comparison tasks.
- Extracted MFCC features, computed similarity scores, and generated interpretable similarity visualisations.
- Implemented structured experiments for multiple sample pairs and documented findings for transparency.
- Explored practical use cases in verification-style scenarios and security-oriented comparisons.

Explainable ML (XAI) Exploration (SHAP + Model Interpretation)

- Explored SHAP-based feature attribution to explain model predictions and improve transparency.
- Produced interpretable plots and summaries to support model trust and stakeholder understanding.
- Documented assumptions, limitations, and appropriate use of explanations (avoid overclaiming causality).

Model Robustness & Evaluation Practice (Reusable Template)

- Developed a reusable evaluation template (data split discipline, cross-validation, metric reporting, sanity checks).
- Included common reliability checks (outlier sensitivity, feature leakage awareness, stability across folds).
- Emphasised repeatable results and clear reporting for portfolio-grade deliverables.

Data Visualisation & Reporting Pack (Publication-Quality Figures)

- Created structured visual outputs for projects (trend plots, comparison plots, error plots, heatmaps).
- Standardised figure layouts and captions to support professional reporting and academic-style presentation.
- Focused on interpretability: presenting results with context, limitations, and actionable takeaways.

PUBLICATIONS

Al Mamun, A. (First Author). Predicting Yield Strength of 3D-Printed Metal Components Using Machine Learning and Process Parameters. 02/2026

Springer Lecture Notes in Networks and Systems

Conference Paper, First Online: 20 February 2026, pp. 490–498.

DOI: 10.1007/978-3-032-15346-3_34

SKILLS

Programming & Tools: C (foundational), Git, Jupyter Notebook, LaTeX, Python, VS Code

Data Science & ML: Cross-Validation, Error Analysis, Feature Engineering, Model Selection, Regression, Reproducible Pipelines, Statistical Validation, Supervised Learning

Libraries/Frameworks: Librosa, Matplotlib, NumPy, Pandas, scikit-learn, Seaborn, SHAP, XGBoost

Data Analysis: Correlation Analysis, EDA, Hypothesis-led Analysis, Reporting, Trend Analysis

Applied/Embedded: Arduino Mega, Embedded Control (foundational), Sensor–Actuator Interfacing

WORKFLOW & ENGINEERING PRACTICES: Communication: concise summaries, visual explanation of results, limitations-first reporting, Experiment discipline: baseline first, incremental improvements, track metrics and assumptions, Reproducibility: consistent project structure, notebook hygiene, clear README notes, repeatable runs, Version control: Git-based iteration and documentation of changes