Tapon Paul

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Professional Summary

Results-driven Machine Learning Engineer and Data Scientist with 2+ years of hands-on experience building AI/ML models, applying advanced feature selection techniques, and delivering explainable AI solutions. Published researcher in healthcare AI and precision agriculture deep learning. Skilled in end-to-end ML pipelines, model optimization, and data-driven decision-making. Passionate about leveraging AI to solve real-world problems in healthcare, embedded systems, and large-scale data environments.

Technical Skills

Languages: Python, PHP, MySQL, SQL, C/C++
ML/DL Frameworks: TensorFlow, PyTorch, Scikit-learn, Keras
Data Science & Analytics: Pandas, NumPy, Matplotlib, Seaborn, SciPy
Feature Engineering: ANOVA, LASSO, Chi-square, Recursive Feature Elimination (RFE), PCA
Explainable AI (XAI): SHAP, LIME
Imbalanced Data: SMOTE, SMOTE-ENN
Ensemble Methods: Gradient Boosting, XGBoost, Random Forest
Embedded & Low-Power AI: ARM-based processors, Raspberry Pi, PowerTOP, Intel VTune
Tools & Platforms: Git, GitHub, Jupyter Notebook, Google Colab, VS Code, Linux
Databases: MySQL, SQLite

Education

Daffodil International University (DIU) Dhaka, Bangladesh
Bachelor of Science in Computer Science and Engineering (BSc in CSE) *Jan 2022 – Dec 2025*

- Relevant Coursework: Machine Learning, Deep Learning, Data Structures & Algorithms, Database Systems, Artificial Intelligence, Computer Vision, Statistics for Data Science
- Active member of the Competitive Programming Community (CPC) – Development Wing and Research Volume-05

Research & Publications

MoringaLeafNet: Multi-Class Leaf Disease Detection | *Deep Learning, Computer Vision* 2025

- Developed and published a multi-class leaf disease dataset (MoringaLeafNet) for precision agriculture applications using deep learning classification models.
- Designed the data collection pipeline, annotation strategy, and benchmarked state-of-the-art CNN architectures (ResNet, VGG, EfficientNet) achieving high classification accuracy.
- Research contributes to smart farming solutions and food security via AI-driven plant disease diagnosis.

Risk Prediction: Diabetes, Hypertension & Heart Disease | *Healthcare AI, ML* 2025

- Designed a robust predictive system using SMOTE-ENN class balancing combined with PCA dimensionality reduction and Gradient Boosting classifiers to predict three chronic diseases.
- Addressed real-world class imbalance issues in medical datasets; achieved significant improvement in recall and F1-score for minority (at-risk) patient classes.
- Demonstrated model transparency using SHAP values to identify top contributing clinical features, enabling clinician trust and interpretability.

DIU-DoR Poster Presentation | *Academic Research Conference* 2025

- Selected to present research findings at the Daffodil International University Division of Research (DoR) Poster Presentation – a competitive, peer-reviewed academic event.

Experience

Daffodil AI Club Dhaka, Bangladesh
Assistant General Secretary *Dec 2025 – Present*

- Led coordination and logistics for AI-focused events and contests, managing cross-functional teams to ensure smooth execution and participant engagement.
- Mentored junior members on AI/ML concepts and contest problem-solving strategies.
- Strengthened leadership, communication, and event management capabilities within the AI community.

DIU Computer & Programming Club (CPC) – Development Wing Dhaka, Bangladesh
Executive Member *Jan 2024 – Jan 2025*

- Organized and executed multiple competitive programming contests including Take Off, Unlock the Algorithm, Googling, and Prompt Battle for 200+ student participants per semester.
- Contributed to Research Volume-05 as a team researcher, collaborating on AI-driven research projects and technical documentation.
- Developed problem-setting and analytical skills through active participation in competitive programming and team-based research initiatives.

Key Projects

Power-Efficient AI Inference on Embedded Systems | *Python, Raspberry Pi, ARM, Intel VTune* 2024–2025

- Optimized ML model inference for deployment on ARM-based processors and Raspberry Pi, reducing power consumption using PowerTOP and Intel VTune profiling tools.
- Implemented quantization and pruning techniques to deliver lightweight, production-ready AI models for edge computing environments.

Explainable ML Pipeline for Clinical Decision Support | *Scikit-learn, SHAP, LIME, XGBoost* 2024

- Built an end-to-end ML pipeline for clinical risk stratification with full model explainability using SHAP and LIME, enabling interpretable predictions for medical professionals.
- Applied RFE, ANOVA, and LASSO for feature selection across high-dimensional healthcare datasets, reducing model complexity by 40% while maintaining predictive performance.

Web Application Development | *PHP, MySQL, HTML/CSS* 2023

- Designed and deployed full-stack web applications using PHP and MySQL with normalized database schemas, user authentication, and responsive UI.

Certifications

Foundations: Data, Data, Everywhere – Google / Coursera
Python for Data Science, AI & Development – IBM / Coursera
Python Project for Data Engineering – IBM / Coursera

Achievements & Activities

Published Researcher: Two peer-reviewed publications in ML/AI fields (Healthcare AI and Precision Agriculture)
Academic Presenter: Selected for DIU-DoR Research Poster Presentation 2025
Leadership: Assistant General Secretary, Daffodil AI Club; Executive Member, CPC DIU
Community: Mentored 100+ students in AI, ML, and competitive programming concepts
Portfolio: tapon5086.github.io – Showcasing research, projects, and technical work