Arnab Dey

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Executive Summary

- Motivated and skilled Computer Science student with expertise in cyber security, database management, web development, and machine learning.
- Bachelor's thesis on **"Adversarial Machine Learning for Cyber Security: Defense and Detection Mechanisms"**, aligning with current research in secure AI.
- Strong problem-solving and analytical skills with proven track record of projects and competitions.

Education

Bangladesh University of Engineering and Technology — Dhaka, Bangladesh
Bachelor of Science Degree *at* ***Computer Science and Engineering*** *(CGPA- 3.50/4.00)* — *2022 - Present*

Cantonment Public School and College — Rangpur, Bangladesh
Higher Secondary School Certificate *department of* ***Science*** *(GPA- 5.00/5.00)* — *2018 - 2020*

Cantonment Public School and College — Rangpur, Bangladesh
Secondary School Certificate *department of* ***Science*** *(GPA- 5.00/5.00)* — *2016 - 2018*

Research Interests

- **Cyber Security:** Focus on adversarial machine learning, intrusion detection, and defense mechanisms against backdoor and side-channel attacks.
- **Machine Learning:** Deep learning, interpretability **(XAI with SHAP/LIME)**, and applications in healthcare, biometric authentication, and intelligent systems.
- **Generative AI (G):** Large Language Models, prompt engineering, and secure deployment of generative models for real-world tasks.
- **NLP:** Efficient and verifiable machine unlearning methods, data privacy preservation, model sanitization, and mitigation of harmful or sensitive information in trained models.

Publications

Arnab Dey, et al.
"Seg2Reg-Net: An Explainable AI Analysis of Predictive Limitations in Cattle Weight Estimation" — *NSysS 2025*
- Proposed Seg2Reg-Net, an end-to-end Attention U-Net + regression framework for cattle weight estimation.
- Incorporated explainable AI (LIME, SHAP) to expose predictive limitations and spurious correlations.

Arnab Dey, et al. — Under Review
"Seeing the Invisible: Grad-CAM-Driven Detection of Sparse and Imperceptible Backdoor Attacks" — *QPAIN 2026*
- Proposed an explainability-driven backdoor detection framework using Grad-CAM–based model behavior comparison.
- Extracted statistical, spatial, similarity, and gradient features from attention differences to detect SIBA attacks.

Experience

BUET Robotics Club — January 2022 - Present
Bangladesh University of Engineering and Technology — *Dhaka, Bangladesh*
- An active member. Parcipate in many competitions organised by the club. Join weekly seminar regularly.

Honors and Awards

Dean's List Scholarship January 2022 - November 2023
Bangladesh University of Engineering and Technology *Dhaka, Bangladesh*
- For extraordinary academic performance.

Higher Secondary School Certificate (HSC) Board Scholarship 2020 - Present
Dinajpur Education Board *Dinajpur, Bangladesh*
- For extraordinary academic performance in HSC examination.

Secondary School Certificate (SSC) Board Scholarship 2018 - 2020
Dinajpur Education Board *Dinajpur, Bangladesh*
- For extraordinary academic performance in HSC examination.
- Secured **2nd** merit position in the **Dinajpur Education Board**

Skills

Languages: Python, Java, C, C++, SQL, Assembly
Frameworks: DJango, JavaFX, Bootstrap, Spring Boot, Next.js, OpenGL, React(Library), Node.js
Developer Tools: Git, Visual Studio, Visual Studio Code, PyCharm, Code::Blocks, Intellij
Scripting: LaTeX, HTML, CSS
Simulation Tools: Proteus, Logisim
Operating System: Windows(10, 11), Linux
Databases: Oracle, MSSQL, MySQL
Communication: Adept at effective communication, active presentation, and collaborative teamwork
Management: Efficient time and task management, adept meeting tight deadlines effectively
Problem solving: Solve problems in LeetCode, Codeforces, LightOj, GeekforGeeks

Projects

Arrow Shooter | *C, C++, OpenGL* February 2022
- Arrow Shooter" is a captivating arcade game developed using C, C++, OpenGL.
- Players engage as skilled archers defending their fortress against waves of enemies.

Movie Database | *Java, JavaFX, CSS* November 2022
- Movie Database" is a Java-based application utilizing JavaFX for intuitive movie collection management.
- Offering seamless organization and search functionalities, it showcases expertise in Java programming and user interface design.

Kothin Train | *Python, Django, Bootstrap, HTML, CSS, SQL, Oracle database, Reset API* February 2023
- Kothin Train" is a Python-based web ticketing platform developed with Django, Bootstrap, CSS and oracle database.
- It facilitates seamless train ticket bookings with intuitive search and booking functionalities.

C Compiler | *Flex, Bison, C, C++* February 2024
- Developed a Simple C Compiler utilizing C++, Flex, and Bison, showcasing proficiency in language processing and compiler design.

TeXla | *Arduino, Atmeg32, Bluetooth Module* February 2024
- TeXla is a captivating gyroscope controlled car.

Movie Recommender System | *Python* July 2024
- Implemented pipelines for data cleaning, tokenization, stemming, and feature extraction, using CountVectorizer and cosine similarity for accurate recommendations.

Dormie | *Spring Boot, PostgreSQL, Docker, React, REST API* September 2025
- Designed and developed an advanced hall management system for students and hall authorities.
- Implemented modules for student applications, room allocation, fee tracking, complaint management, and lost-and-found handling.
- Integrated secure online payment system with SSLCommerz API and deployed using Docker Compose.

Relative Coursework

Relative Academic Courses

Bangladesh University of Engineering and Tecnology *Dhaka, Bangladesh*

- Structured Programming Language
- Object Oriented Programming
- Discrete Mathematics
- Data Structures and Algorithms
- Theory of Computation
- Compiler
- Database
- Computer Architecture
- Digital Logic Design
- Microcontrollers and Microprocessors
- Data Communication
- Software Engineering

Certifications

Machine Learning Specialization (Stanford University) - Coursera
April 2024 - December 2024
AI+ Prompt Engineer Level 1™ (AI CERTs)
Grant Date: July 2025

Extracurricular Activities

Bangladesh Mathematics Olympiad 2012 - 2020
An Active Participant

General Knowledge and Quizzing 2012 - 2020
An Active Participant

- Won many prizes in many quizzing competitions.
- **Runner Up** in Divisional Quiz Competition in **2017**.

Languages

Bangla
Native Proficiency

English
Professional Proficiency