Jayonto Dutta Plabon

plabon-dutta.github.io connectplabon@gmail.com jayonto-dutta-plabon Plabon-Dutta Rt2lAwsAAAAJ

Research interests: Large Language Models for Low-Resource Languages, Federated Learning, Explainable AI, and Privacy-Preserving Machine Learning.

Education

2024-2026 **M.Sc. in Computer Science and Engineering** CGPA: 4.00/4.00
University of Asia Pacific, Bangladesh
Thesis: *BanglaLex: A Bilingual Retrieval-Augmented Legal Assistant for Bangladesh Using Fine-Tuned Large Language Models*
- using a domain-specific RAG pipeline and a hallucination grounding mechanism to suppress factually unreliable outputs.

2020-2024 **B.Sc. in Computer Science and Engineering** CGPA: 3.87/4.00
University of Asia Pacific, Bangladesh
Thesis: *Explainable federated learning for privacy-preserving bangla sign language detection*
— conducted a systematic evaluation of five ML models (CNN, MobileNet, ResNet, VGG19, Inception) across three federated aggregation algorithms (FedAvg, FedProx, FedOpt) for privacy-preserving Bangla sign language detection eliminating reliance on centralized biometric data.

Employment

Jul'25-Present **Lecturer** Dhaka Bangladesh
Dept. of Computer Science and Engineering,University of Asia Pacific
Teaching undergraduate courses including Computer Fundamentals (50+ students) and Competitive Programming (60+ students); mentoring 8+ capstone projects on federated learning and NLP applications.

Jul'24-Jan'25 **Teaching Assistant** Dhaka Bangladesh
Dept. of Computer Science and Engineering, University of Asia Pacific
Served as TA for the OOP and DSA Lab; conducted weekly lab sessions for 60+ students, graded assignments, and provided one-on-one guidance during office hours.

Publication

Journal Articles

2024 J1 **Explainable federated learning for privacy-preserving bangla sign language detection**
BS Diba, **JD Plabon**, MDM Rahman, D Mistry, AK Saha, MF Mridha
Eng. Appl. Artif. Intell. **(Q1, Impact Factor: 8.0)** DOI: 10.1016/j.engappai.2024.108657 ; *Implementation:*

J2 **Federated Learning-Based Architecture for Personalized Next Emoji Prediction for Social Media Comments**
D Mistry, **JD Plabon**, BS Diba, MSH Mukta, MF Mridha
IEEE Access **(Q2, Impact Factor: 3.6)** DOI: 10.1109/ACCESS.2024.3448470 ; *Implementation:*

2025 J3 **From centralization to decentralization: Blockchain's role in transforming social media platforms (Review Article)**
BS Diba, **JD Plabon**, N Tasnim, M Hossain, D Mistry, S Sarker, MF Mridha, Y Okuyama, J Shin
IEEE Access **(Q2, Impact Factor: 3.6)** DOI: 10.1109/ACCESS.2025.3561663

J4 **Open problems and challenges in federated learning for IoT: A comprehensive review and strategic guide (Review Article)**
BS Diba, **JD Plabon**, TJ Mowla, N Nahar, D Mistry, S Sarker, MF Mridha, J Shin
Computers and Electrical Engineering **(Q1, Impact Factor: 4.9)** DOI: 10.1016/j.compeleceng.2025.110515

Conference Proceedings

2025 C1 **Personalized Pomodoro Productivity Tracking with Privacy-Preserving Machine Learning in Human-Computer Interaction**
D Mistry, BS Diba, **JD Plabon**, SU Ahmed, MF Mridha
International Conference on Human-Computer Interaction DOI: 10.1007/978-3-031-93965-5_29

Book Chapters

2025 Ch1 **Privacy-Preserving Kidney Stone Detection from X-Ray Image Using Federated Learning**
JD Plabon, MM Rahaman, MR Tonmoy, MG Kibriya, A Ishraq
Book: Federated Learning in Health Care Technology. **Publisher:** Springer Nature Singapore
DOI: 10.1007/978-981-96-8353-6_4

Ch2 **Transforming Healthcare Analytics: Federated Learning for Privacy-Preserving Liver Lesion Detection and Classification**
MS Islam, **JD Plabon**, N Nahar, N Tasnim, SMRA Masud, J Shin, MR Tonmoy
Book: Federated Learning in Health Care Technology. **Publisher:** Springer Nature Singapore
DOI: 10.1007/978-981-96-8353-6_3

Ch3 **Federated Learning Strategies for Confidential Leukemia Detection from Medical Images**
JD Plabon, M Hossain, MA Kabir, D Mistry, MA Hamid
Book: Federated Learning in Health Care Technology. **Publisher:** Springer Nature Singapore
DOI: 10.1007/978-981-96-8353-6_6

Skills

Programming	Python, C++, Java, SQL
Research Areas	Federated Learning, XAI, NLP, LLMs, Deep Learning
Machine Learning	PyTorch, TensorFlow, Hugging Face, Scikit-Learn
Tools	Git, LaTeX, Linux, Docker, VS Code, Jupyter
Web Technologies	Angular, Spring Boot, Django
Languages	Bengali (native), English (professional)

Selected Projects

Gesture Translator

- Developed a real-time ASL-to-English translation system using MediaPipe for hand landmark detection and a custom ML classifier; outputs recognized signs as both text and synthesized audio, enabling accessibility for non-signing users (Led to the Bangla Sign Language federated learning publication in J1.).

Presentation Controller

- Built a multimodal hands-free presentation control system combining real-time hand gesture recognition (MediaPipe, OpenCV) with voice command processing (Google Speech API); implements background subtraction and adaptive position prediction for robust performance under varied environments.

Awards and Achievements

- **Vice Chancellor's Honor Award** *(X 5: Fall 2023; Spring 2023; Fall 2022; Spring 2022; Spring 2021)*
  — An academic award for students who achieved CGPA 3.90+ in a semester.
- **Dean's Honor Award** *(Fall 2021)*
  — An academic award for students who achieved CGPA 3.75+ in a semester.
- **ICPC-Jamilur Reza Choudhury Scholarship Award** *(x3: Fall 2023; Spring 2023; Fall 2022)*
  — A prestigious scholarship awarded to top-performing contestants in competitive programming.

Competitive Programming

- **ICPC Asia Dhaka Regional Contestant**, 2021, 2023, and 2024
- Participated in **10+ National Programming Contests** including NCPC, IUPC (BUET, SUST, IUT, UITS), IUCPC, etc.
- Solved **2000+ problems** on online judges including Codeforces, CodeChef, AtCoder, LightOJ, UVA, SPOJ, and CSES
- **Specialist** on Codeforces and **3* Programmer** on CodeChef

Service

Co-Convenor, UAP Programming Contest Club (PCC) Jul 25 - Present
- Organize and coordinate programming contests, training sessions, workshops and mentor students preparing for ICPC and national-level programming competitions.

President, UAP Programming Contest Club (PCC) Dec 23 - Jul 24
- Led club operations, organized intra-university programming contests, and mentored members preparing for ICPC and national-level competitions.

President, Robotics Club, CSE Department Jan 24 - Jul 24
- Directed club activities including robotics workshops, and inter-university competitions.

Volunteer, 45th ICPC World Finals, Dhaka, Bangladesh Nov 22
- Assisted in operational activities at the most prestigious collegiate programming contest in the world, hosted in Bangladesh for the first time.