MD Rakib Hassan Dipu

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Professional Summary

Motivated IoT and Robotics Engineering student passionate about AI, automation, and embedded systems. Skilled in hardware-software integration, PCB design, and intelligent system development. Experienced with IoT, machine learning, NLP, and robotics projects. Eager to expand technical expertise and collaborate on real-world engineering challenges.

Education

- **University of Frontier Technology, Bangladesh** Level 3, Term 1 (Ongoing)
  B.Sc. in IoT and Robotics Engineering
- **MC College, Sylhet**
  Higher Secondary Certificate (Science) — GPA: 5.00
- **Sylhet Government Pilot High School**
  Secondary School Certificate (Science) — GPA: 5.00

Technical Skills

- **Programming:** Python, C++, ROS, SQL, PHP
- **Machine Learning & Data Science:** Scikit-learn, TensorFlow, PyTorch, Pandas, NumPy, Matplotlib, Seaborn
- **Embedded Systems & IoT:** Microcontrollers, sensors, ESP32, embedded system integration
- **PCB Design & Hardware Tools:** EasyEDA, Altium Designer, AutoCAD
- **Networking:** Cisco-based smart city simulations
- **Databases:** MySQL
- **Tools:** Git, GitHub, Jupyter Notebook, VS Code
- **Soft Skills:** Leadership, teamwork, problem-solving, adaptability, communication

Projects

- **IoT-Based Adaptive Environment for Autism** — *Python, ML, ESP32-CAM, IoT Sensors*
- Developed adaptive system integrating ML and IoT sensors for real-time monitoring of user behavior.
- Collected, structured, and analyzed data to evaluate system performance.
- **Panic Attack Detection (ML)** — *Python, Machine Learning*
- Built ML model using self-collected dataset to detect panic attack patterns.
- Performed data preprocessing, statistical analysis, and model evaluation.
- **AI-Powered YouTube Video Summarizer** — *Python, NLP, ML*
- Developed a system to automatically summarize YouTube videos using NLP and machine learning techniques.
- Collected video transcripts, processed textual data, and generated concise summaries for end users.
- **AI-Powered Buyer Help Chatbot** — *Python, NLP, Flask, AI*
- Built an AI chatbot to assist e-commerce users in finding products and answering queries.
- Integrated machine learning models for intent recognition, enhancing user experience and accuracy.
- **AI-Powered Data Analytics Platform for Business Intelligence** — *Python, ML, Pandas, Data Visualization*
- Created a platform for analyzing business data and providing actionable insights using AI/ML.
- Implemented data cleaning, statistical analysis, visualization dashboards, and predictive analytics.

- **Large-Scale Home Automation System** — *IoT, Python*
- Designed and implemented a scalable smart home system with automated controls and monitoring.
- **Emergency Support System for Women and Children** — *IoT, Sensors*
- Built IoT-driven rapid response solution including data logging and alert mechanisms.
- **Smart City Networking Setup** — *Cisco Networking Simulation*
- Designed and simulated a networking infrastructure for smart city management with performance monitoring.
- **IoT-Based PCB Design for Smart Device Integration** — *EasyEDA, Altium Designer*
- Designed PCB layouts for IoT devices integrating sensors and microcontrollers.
- Tested prototypes for power efficiency, signal integrity, and connectivity.
- **Inventory Management System** — *SQL*
- Designed a database-driven system to track and manage product inventory.
- **Travel Management System** — *C++*
- Developed a C++ application to manage travel bookings, schedules, and records.
- **Smart System for Autism Support** — *IoT*
- Created assistive IoT tools for accessibility and behavioral support for autistic users.
- **Autism Care IoT Prototype** — *ESP32, IoT Hardware*
- Developed a functional hardware prototype using ESP32 for real-time autism care support.
- **Lightweight IoT-Driven Panic Attack Detection and Caregiver Alert System for Autism Spectrum Disorder** — *IEEE Project*
- Research-based IoT and ML integration leading to a first-author IEEE conference publication (RAAICON 2025).

Publications

- **MD Rakib Hassan Dipu**, "*Lightweight IoT-Driven Panic Attack Detection and Caregiver Alert System for Autism Spectrum Disorder*," *2025 IEEE 4th International Conference on Robotics, Automation, Artificial Intelligence, and Internet-of-Things (RAAICON)*, Military Institute of Science and Technology (MIST), Dhaka, Bangladesh, Nov 27–28, 2025. ISBN: 979-8-3315-9281-3/25 ©2025 IEEE.

Awards & Achievements

- 1st Runner-Up – Hult Prize Campus Competition 2025
- 21st Century Employability Skilling Program – Intermediate (Wadhwani Foundation)

Leadership & Extracurricular Activities

- Deputy Organizing Secretary – UFTB Robotics Club
- Former Joint General Secretary – National Children's Task Force
- Former Senior Petrol Leader – Sylhet Government Pilot High School Scout Team
- Organizing Secretary – Badhan, University of Frontier Technology Unit

Current Focus

- **Working on:** Machine learning, IoT automation, and AI-based system design.
- **Currently learning:** Deep learning, cloud computing (Azure & AWS), and advanced PCB design for IoT.