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EDUCATION

BRAC University – School of Engineering **Merul Badda, Dhaka**

Bachelor of Science in Electrical and Electronic Engineering; Robotics And Intelligent System Major *Class of 2025*

- Cumulative GPA: 3.29/4.0
- Relevant Coursework: Artificial Intelligence, Neural Networks, Machine Learning, Digital Image Processing, Control Systems, Semiconductor Device Physics, Power Systems, Communication Engineering, Digital System and Signal Processing, Engineering Project Management, Embedded System Design, PCB Design and Fabrication, Modelling and Simulation, Service Design and Modeling.

Work Experience

Palki Motors Limited (Electrical Apprentice) **August 2025-November 2025**

- Led EV battery design support, focusing on advanced BMS calibration, optimization, and troubleshooting (including cell balancing and QA development).
- Established CAN network communication and performed parameter optimization for motor controllers and chargers.
- Developed and troubleshot embedded firmware (ESP32) for Odometer systems and implemented BLE connectivity solutions for remote BMS monitoring
- Designed load-calculated vehicle wiring harnesses and provided specialized technical support for charging systems.
- Executed comprehensive vehicle diagnostics, fault troubleshooting, and physical vehicle testing (acceleration, braking, center of gravity).
- Optimized system efficiency through detailed mileage estimation and AC/HVAC system load calculation studies.
- Contributed to R&D initiatives focused on improving system reliability, utilizing skills in technical documentation, research, and component sourcing.

Projects

Advanced Image-Based Fire Localization & Extinguishing Network:

Project Lead

- Developed a custom ML model based on YOLOv8s, combining CNN and image segmentation for accurate fire detection.
- Implemented an IoT-enabled embedded system on Raspberry Pi to automate fire mitigation using servo-controlled suppression.
- Enabled real-time alerting and response through integrated communication protocols.
- Designed and deployed custom scripts for seamless system integration and deployment triggers.

Agricultural Rover

Lead designer

- Engineered the onboard computer (OBC) for an agricultural rover, enabling autonomous navigation and pesticide spraying.
- Implemented real-time system log communication between the rover and base station for remote monitoring.
- Designed and programmed embedded systems to ensure seamless and reliable rover operations.
- Created custom multi-layer PCBs using EasyEDA, Proteus, and Altium Designer for an agricultural rover.

Optimizing Design Efficiency for BRAC University New Campus

- Developed an alternative design approach for four adjacent classrooms to enhance layout and efficiency.
- Used AutoCAD for redesigning classroom space and infrastructure.
- Reworked electrical system layout and conduit layer design.
- Justified all proposed changes with engineering reasoning.

Electronic Voting Machine (EVM) Using AtMega32

- Developed a secure and user-friendly electronic voting machine using an Atmega32 microcontroller.
- Implemented full automated counting using individual buttons, four buttons reset and three for voting
- Real-time LCD showing total votes, individual counts, and the winner
- Implemented voting logic and user interface via microcontroller.

ADDITIONAL INFORMATION

Skills: Programming (Python, MATLAB, C/C++), embedded systems (Raspberry Pi, Arduino), machine learning & AI (YOLO, U-Net, NCNN optimization, deep learning, computer vision, model optimization), digital image processing, system integration, signal processing, web app integration, hardware interfacing (L293D, servos, sensors), model deployment on edge devices, dataset preparation & evaluation (mIoU, Dice, pixel accuracy), research and analysis, problem-solving, and technical presentations.

Interests: Artificial Intelligence, Machine Learning, Deep Learning, Computer Vision, Embedded Systems, Edge AI Deployment, Digital Image Processing, Signal Processing, Sustainable Technology, Hybrid and Electric Vehicles, Research and Innovation, Science Fiction, and Personal Development.

Achievements: First Runners Up at Final Year Design Project showcase for Pyrosentry: Advanced Image-Based Fire Localization & Extinguishing Network.