Kawsar Mahmud Tanveer Khan



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PROFESSIONAL SUMMARY

Electrical and Electronic Engineering graduate with hands-on experience in PLC automation, ESP32-based embedded systems, and real-time monitoring solutions. Skilled in fault detection and industrial control systems with practical project experience in smart safety systems and UPS design, demonstrating strong commitment and problem-solving ability.

TECHNICAL SKILLS

- Control & Automation: PLC, Mechatronics, Industrial Automation, HMI.
- Embedded & Programming: C++, ESP32, Arduino, Python.
- Simulation & Design Tools: MATLAB/Simulink, Cadence Virtuoso.
- Power & Control: Power Electronics, UPS, MPPT.
- Software & Programming: Flask, PyCharm, Jupyter Notebook.

CAPSTONE PROJECT

Smart Helmet with Sensor-Based Crash Detection & Emergency Alert System

Technologies: ESP32, MPU6050 (Accelerometer & Gyroscope), GPS, GSM, Embedded Systems

- Designed and implemented a smart helmet system to detect accidents by monitoring acceleration and angular velocity thresholds.
- Developed ESP32-based sensor fusion algorithm integrating accelerometer and gyroscope data.
- Integrated GPS and GSM modules to automatically send emergency location alerts, enhancing rider safety.
- Reduced false alarms through threshold tuning and implemented user-controlled cancellation mechanism.
- Conducted rigorous testing under real riding conditions and sudden impact scenarios to validate system reliability.

ACADEMIC PROJECTS

Online Uninterruptible Power Supply (UPS) System

- Designed a double- conversion AC-DC-AC UPS ensuring uninterrupted power with minimal switching delay.
- Integrated a high- efficiency rectifier and PFC stage achieving 30% improved power conversion.

4-Bit CMOS Full Adder Using 14nm Technology

- Designed and verified CMOS full adder using Cadence Virtuoso.
- Performed complete schematic-to-layout flow.
- Achieved DRC and LVS clean layout verification.
- Optimized layout for area and routing efficiency.
- Verified functional correctness of XOR, AND, OR logic blocks.

Maximum Power Point Tracking (MPPT) Solar Charge Controller

- Designed a solar charge controller utilizing MPPT algorithms for maximum photovoltaic energy extraction.
- Applied control systems principles to optimize energy yield for renewable integration.

Machine Learning–Based Book Recommendation System

- Developed a personalized ML- inspired recommendation system using content- based filtering.
- Implemented preprocessing, vectorization, and similarity algorithms using Jupyter Notebook.
- Built and deployed the web app with Flask & PyCharm, hosted on Render.
- Live Demo

INDUSTRIAL TRAINING

Bangladesh Industrial Technical Assistance Center (BITAC), Tool & Technology Institute (TTI)
Mechatronics & PLC Training | 88 Hours | Jan 2025 – Feb 2025

- Gained hands-on experience in PLC programming, industrial control systems, and mechatronics.
- Implemented motor starter circuits including DOL, Star-Delta, and Forward/Reverse.
- Developed PLC applications using timers, counters, and traffic light control logic.
- Worked with pneumatic and electro-pneumatic systems and sequential control.
- Configured Variable Frequency Drives (VFDs) for motor speed control with open/closed-loop feedback.
- Designed HMI-based monitoring and control systems for industrial automation.

EDUCATION

Daffodil International University, Dhaka
BSc in Electrical and Electronic Engineering (EEE) | CGPA: Not yet published
2022-2026

BAF Shaheen College Dhaka
Higher Secondary Certificate (HSC), Science Group | GPA: 4.17/5.00
2017-2019

Dulai High School
Secondary School Certificate (SSC), Science Group | GPA: 5.00/5.00
2015-2017