Ume Ammara
Electrical Engineering

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Arifwala, Punjab, Pakistan

Executive Summary

Electrical Engineering student in the 8th semester with a strong interest in embedded systems and modern computing technologies. Motivated to enhance practical knowledge, gain hands-on experience and develop industry-relevant engineering skills through structured training and real-world projects.

Education

Namal University, Mianwali — Mianwali, Punjab, Pakistan
Bachelors in Electrical Engineering **(CGPA 3.27/4.00)** — Oct 2022 – Present

Professional Experience

National Radio & Telecommunication Corporation — Haripur, KPK, Pakistan
Engineer Intern — July 2024 – Aug 2024

- Programming of Arduino, STM32
- Communication Protocols I2C, SPI, UART
- Software and Hardware Learning of MCU

National Radio & Telecommunication Corporation — Haripur, KPK, Pakistan
Engineer Intern — July 2025 – Aug 2025

- Integration of Serial Device into Modern Ethernet
- Tracking of location information using M10N GPS Module
- Reading orientation information using 3D digital compass
- Measurement of temperature using DF robot sensor

Namal University, Mianwali — Mianwali, Punjab, Pakistan
Teacher Assistant — Oct 2024 – Feb 2025

- Assisted in projects
- Assisted in technical courses

Namal University, Mianwali — Mianwali, Punjab, Pakistan
Namal Tech Expo Robotics — May 2024 – Apr 2025 – May 2026

- Made and Participated in Sumo War Robot
- Made and Participated in Balloon Bursting Robot
- Made and Participated in Line Following Robot

Bahria University, Islamabad — Islamabad, Islamabad, Pakistan
AI InnoFest — May 2025

- Participated in Sumo War Robot Competition
- Participated in Line Following Robot Competition

Hitech University, Taxila — Taxila, Punjab, Pakistan
RoboFesta — Dec 2025

- Participated in Car Race Robot Competition
- Participated in Sumo War Robot Competition

Academic Experience

Indigenous Robots

- Designed a Sumo War Robot using Arduino Microcontroller
- Designed a Balloon Busting Robot using Arduino Microcontroller
- Designed a Line Following Robot using LEGO EV3
- Designed a Line Following Robot using Zumo Kit

Smart Parking System

- Designed a Smart Parking System with vehicles counting using logic gates & sequential circuits Automatic Fire Alarm System

Automatic Fire Alarm System

- Designed a Smart Fire Alarm System utilizing Microcontroller for real-time monitoring & alerting

Tic Tac Toe Game

- Developed in C++ to demonstrate computational problem-solving skills and logical reasoning

Single Cycle Processor

- Designed a Single Cycle RISC-V processor in Verilog, verifying the data path by executing C programs compiled via the GCC toolchain.

Life Style and Health Assessment

- Built an ML classification model to predict self-reported health status from lifestyle, diet, sleep, screen time and activity data
- Compared Logistic Regression, Random Forest and Gradient Boosting models to evaluate performance and identify the most effective classifier

Achievements

Namal Tech Expo (Robotics) Namal University Mianwali

- Sumo War Robot Competition 2nd Position (2024)
- Balloon Bursting Winner (2025)
- Balloon Bursting Winner (2026)

AI InnoFest Bahria University Islamabad

- Sumo War Robot Competition Winner

Technical Skills

- ***Hardware:*** Arduino, STM32, Power Electronics, Embedded Systems, DSP, ESP32
- ***Soft Skills:*** STM32CubeIDE, Modelsim, Arduino, Proteus, C/C++, MATLAB, Python, Verilog
- ***Courses:*** Embedded Systems, Computer Architecture, Machine Learning, Internet of Things, Wireless Communication, Database Engineering, Digital Logic Design, Power Electronics, Digital Signal Processing, Control Systems, Computer Communication Networks, Data Structure & Algorithms

Final Year Design Project

Design of Yokeless Axial Flux Motor & it's Control using Open-Source Processor

Industry Collaboration: Khurshid Fans & NECOP
Tools: Ansys Motor-CAD, MATLAB/Simulink, MounRiver Studio, Embedded C, CH32V307 RISC-V MCU

- Designed and simulated a 24V coreless Yokeless Axial Flux Motor (YAFM) for compact, high-efficiency direct-drive applications, reducing stator iron losses and cogging torque through a dual-rotor, single-stator architecture.
- Developed a Field-Oriented Control (FOC) architecture using PI control, Clarke/Park transformations and SVPWM for precise speed, torque, direction and position regulation.
- Validated the motor and control system through FEA and MATLAB/Simulink model-based simulations, achieving over 90% simulated efficiency at rated operating conditions.
- Worked on embedded implementation of the FOC algorithm on a CH32V307 RISC-V microcontroller, targeting real-time motor control using timer-based SVPWM and sensor feedback.