

MUHAMMAD KHUZAIFA

📍 Baghicha Dheri (Mardan)

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Education

Bachelor of Science in Electrical Engineering (CGPA: 3.47)

Pakistan Institute of Engineering and Applied Sciences (PIEAS)

Sep 2022 – Jun 2026

Islamabad, Pakistan

F.Sc. Pre-Engineering (Marks: 1009/1100)

Islamia College Peshawar

June 2020 – May 2022

Peshawar, Pakistan

Matriculation (Marks: 1039/1100)

The Khyber English Medium School

Passed: May 2020

Mardan, Pakistan

Experience

National Aerospace Science and Technology Park (NASTP)

Research & Development Intern

Jun 2025 – Sep 2025

Islamabad, Pakistan

- Studied EEG-based Brain-Computer Interface systems, focusing on signal acquisition, preprocessing, and basic machine-learning approaches using MATLAB and Python.

National Institute of Laser and Optronics (NILOP)

Intern (Electronics Lab)

Jul 2024 – Aug 2024

Islamabad, Pakistan

- Learned fundamentals of analog and digital electronics through exposure to audio, amplifier, and signal-conditioning circuits in a laboratory environment.

Projects

Intelligent UAV Swarm for Disaster Monitoring

- Developed a dual-MCU architecture using STM32F4 for flight dynamics and ESP32-S3 for edge-AI vision and swarm telemetry.
- Engineered a 4-layer PCB (53x46 mm) for compact integration, high-speed data fusion, and reduced electromagnetic interference.
- Implemented dedicated ESP-IDF firmware for reliable inter-processor communication and telemetry handling.

IoT Weather Station using ESP32

- Developed a low-power, cloud-connected sensing node using FreeRTOS for task scheduling and deep-sleep optimization.
- Integrated multiple environmental sensors to stream real-time weather telemetry to a central dashboard via WiFi.

Real-Time VGA Graphics Controller (Spartan-3E FPGA)

- Designed a Verilog-based VGA controller for 640x480 resolution with zero-latency graphics processing.
- Managed high-speed timing and synchronization logic, validated via RTL simulation and hardware testing.

Real-Time Audio Equalizer and Digital Effects System

- Implemented digital filtering (LPF/Notch) and a 10-band graphic equalizer with delay-based effects (echo, reverb) in MATLAB.

Technical Skills

Languages: C/C++, Python, MATLAB, Verilog HDL, LaTeX

Embedded & Hardware: ESP-IDF, STM32Cube, Altium Designer, Proteus, LTspice

Robotics & Simulation: SolidWorks (CAD), CoppeliaSim, Simulink, ModelSim, Xilinx ISE

Developer Tools: VS Code, Google Colab, STM32CubeMX

Leadership / Extracurricular

IEEE PIEAS Student Chapter

Sep 2022 – July 2025

- Coordinated 5+ technical workshops and seminars, promoting engineering concepts to 100+ peers.

PIEAS Orientation Week '23

Sep 2023 – Sep 2023

- Led mess security logistics and resource allocation for 240+ students during orientation week.

Educational Support & Mentorship

May 2016 – Oct 2025

- Led a multi-year drive providing 50+ books to 15+ students along with academic mentorship.