

Muhammad Asim Khan

📍 Rawalpindi, PAK ✉ masimwork43 📞 +92 334 7892207 📁 Portfolio in LinkedIn 📄 GitHub </> LeetCode

Education

- Inter** **F.G. Sir Syed College**, Pre Engineering May 2019 – April 2021
- **Coursework:** Maths, Physics and Chemistry
 - Grade: A+
- BS** **National University of Sciences and Technology**, Electrical Engineering Nov 2021 – June 2025
- **Relevant Coursework:** Control Systems, Industrial Automation, Microprocessors, Machine Learning, Computer Vision, Embedded Systems.
 - GPA: 3.56 / 4.00

Experience

Foretheta *Recommendation* Bellevue, WA (Remote)
Traindex, PatentScan — AI-driven patent analysis platform

Data Science Engineer I July 2025 – Present

- Built a production chatbot using OpenAI APIs to query and edit automatically generated technical reports, including file upload and semantic search.
- Extended and maintained a Python backend by adding new API routes and improving frontend-backend integration.
- Designed and managed a CI/CD pipeline with GitHub Actions to deploy development and production branches to AWS EC2.
- Integrated image-based analysis into reports and improved system reliability via pytest-based testing and merge protection.
- Worked with AWS S3 and EC2 for large dataset updates, data merging, and operational workflows.

Data Science Intern Feb 2025 – June 2025

- Refactored and modularized a large Python codebase for automated technical report generation.
- Integrated document retrieval pipelines using FAISS, LangChain, and OpenAI APIs.
- Expanded analysis to include research papers alongside patent documents.
- Performed prompt engineering and system tuning to improve output quality and consistency.

Freelancer.com Oct 2024 – May 2025 Remote
Freelancer — Robotics, Embedded Systems & Machine Learning 📄

- Delivered robotics projects involving ROS1/ROS2, sensor integration, Python/C++ node development, RViz visualization, and Autoware configuration *Recommendation*
- Assisted with deployment of YOLO-based computer vision models on NVIDIA Jetson Xavier.
- Developed applied ML and signal-processing solutions, including LSTM-based time-series forecasting.
- Designed embedded and control systems, including a PIC18-based washing machine controller and a MATLAB-based CO₂ estimation model using vehicle dynamics.

Unmanned Vehicle Research Lab June 2024 – Sep 2024 Rawalpindi, PAK (Hybrid)
Research Intern

- Prepared for autonomous vehicle research through structured self-study in robotics software, machine learning, and reinforcement learning.

- Built strong algorithmic foundations through extensive Python problem-solving (700+ problems).
- Gained hands-on experience with ROS 2, including node-based system design and inter-process communication.
- Studied ML and RL concepts and reviewed research literature on autonomous vehicle perception, planning, and control.

Projects

Autonomous Driving Planning using Reinforcement Learning (FYP)



Python, ROS 2, CARLA, DQN, NVIDIA Xavier, ESP32, YOLO, Linux (Ubuntu)

- **Software:** Trained a DQN-based driving agent in CARLA using multi-sensor inputs (camera, LiDAR, IMU) to learn autonomous planning behavior.
- **Hardware:** Deployed a constrained pipeline where Jetson Xavier ran perception (YOLO + lane detection) and ESP32 executed decision and vehicle control.

Biomimetic Fish Robot



ROS 2, Gazebo, C++, Python, Linux (Ubuntu)

- Built a ROS 2 + Gazebo simulation with control interfaces and kinematics to model biomimetic swimming behavior.

TinyYOLO Object Detector from Scratch



Python, PyTorch, OpenCV, Linux (Ubuntu)

- Implemented a TinyYOLO-style detector end-to-end (data pipeline, training loop, inference) to understand real-time perception workflows.

Custom 8-bit RISC Microcontroller Design



Verilog, Quartus, ModelSim, Digital Design

- Designed and verified an 8-bit RISC microcontroller with a custom ISA, ALU, registers, and GPIO using Verilog.

DC Motor Position Control System

MATLAB, Arduino, PID Control

- Implemented a closed-loop DC motor position controller using PID control with real-time visualization through a MATLAB GUI.

Regulated DC Power Supply Design

Power Electronics, Analog Circuits, Proteus

- Designed and tested a regulated DC power supply with voltage regulation and protection for embedded systems.

Battery Management System (BMS)

Embedded Systems, Battery Modeling, Proteus, Arduino

- Designed a battery management system focusing on cell monitoring, protection, and safe battery operation.

Achievements

IELTS Academic (Band 8.0): Demonstrated English proficiency across listening, reading, writing, and speaking



High Achiever (4 Times): Awarded for securing academic excellence during BS in Electrical Engineering.

Certifications

Python 100 Days of Code: By Angela Yu (Udemy)



Data Structures & Algorithms: By Scott Barrett (Udemy)



Machine Learning & Data Science Masterclass: By Jose Portilla, Pierian Training (Udemy)



ROS2 For Beginners: By Edouard Renard (Udemy)

