Muhammad Jabbar

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Portfolio

Professional Experience

01/2025 – Present
Magdeburg, Germany

Otto von Guericke University Magdeburg, *Student Research Assistant (HiWi)*

- Performed large-scale literature data **acquisition** from ACM, ScienceDirect, IEEE, and PubMed, including automated extraction of publication metadata using custom **Python** scripts.
- Built Python-based data **preprocessing** and **filtering** pipelines to clean datasets, remove duplicates, filter incomplete or irrelevant records, and consolidate multi-source research data into structured **CSV** files.
- Designed and implemented **image** and **video** preprocessing pipelines, including frame extraction at fixed intervals, image normalization, and dataset preparation for computer vision and facial analysis tasks.
- Developed and evaluated face recognition pipelines using image-based and mesh-based approaches, leveraging MediaPipe, facial landmarks, and image embeddings to perform identity matching on anonymized/de-identified facial data.

11/2023 – 03/2025
Magdeburg, Germany

Goldschmidt Smart Rail Solutions, *Working Student – Software Developer*

- Acquisition, preprocessing, and visualization of **ultrasonic sensor data** from multiple sensor sources using **MATLAB**, converting raw numerical data into meaningful graphical and image-based representations.
- Development of **data-driven image datasets** from sensor measurements for quality classification, emphasizing robust signal processing and reproducible training pipelines in embedded-oriented environments.
- Training, fine-tuning, and evaluation of **CNN-based classifiers** (AlexNet, ResNet50, ResNet101) using sensor-generated image data for automated fault and condition classification

05/2022 – 08/2023
Islamabad, Pakistan

Devomech Solutions Gmbh, *Embedded Software Engineer*

- Designed and implemented image-processing pipelines using OpenCV in **Python**, including the wireless transmission of processed image data via Bluetooth from a desktop application to an ESP32-S3.
- Developed embedded **C++** software on the **ESP32-S3** for efficient data reception, processing, and device control, with a strong focus on resource-constrained, real-time embedded systems.
- Integrated and managed multiple sensors and camera modules on **Raspberry Pi 4**, including temperature, humidity, heart-rate sensors, and HQ cameras, utilizing standard communication protocols such as **SPI, I²C, and UART**

03/2022 – 06/2022
Kamra, Pakistan

Pakistan Aeronautical Complex Kamra, *Internship*

- Diagnosis, repair, and maintenance of aircraft inverter systems through identification and replacement of faulty electronic components such as ICs, diodes, and capacitors, ensuring hardware reliability and compliance with safety standards.
- Operation and calibration of manual and automated testing equipment, and collaboration with cross-functional engineering teams for fault analysis, system performance improvement, and downtime reduction.

Education

10/2023
Magdeburg, Germany

M.Sc. Electrical Engineering and Information Technology,
Otto von Guericke University Magdeburg - OVGU

10/2017 – 01/2022
Quetta, Pakistan

B.Sc. Electrical Engineering and Information Technology,
Balochistan University of Information Technology Engineering and Management Sciences

Skills

Programming Languages and Controllers
Python, C & C++, MATLAB Simulink, Arduino Board, Esp32S3, Raspberry Pi

Data Engineering
ETL, API Integration, Web Scraping, REST APIs (OpenWeatherMap, e-commerce platforms)

Frameworks/Libraries
PyTorch, ,MATLAB Toolboxes (Image Processing, Deep Learning) ,Pandas, NumPy, OpenCV, simplepyble, imgbedding, Matplotlib Requests Selenium pyqt5 Qt designer
OpenAi Embeddings, Huggingface Embeddings

Communication protocols
GPIO, SPI, I2C, UART

Tools/platforms
Git, Docker, Linux, VS Code, PyCharm

Languages

English (C1) — Fluent

German (B2 in Progress) — Conversational