Muhammad Burhan Ahmed

Computer Engineer

burhan.ahmed60090@gmail.com · +92·304·7067364 · https://github.com/Burhan-Ahmed

About

As a passionate Tech enthusiast and a developer, I constantly stay at the forefront of industry trends, cutting-edge tools and technologies. My expertise enable me to contribute effectively to innovative projects. I thrive on tackling challenging tasks and collaborating on impactful solutions.

Education

Air University, Islamabad **2021 – 2025**
Bachelor of Computer Engineering CGPA: 3.77/4.0

Sadiq Public School, Bahawalpur **2017 – 2019**
Intermediate (Pre-Engineering) *Percentage:* 70.1%

Technical Skills

Programming Languages	**Python**, R, JavaScript, **TypeScript**, C/C++, **SQL**, Matlab
Frameworks & Libraries	TensorFlow, PyTorch,**YOLO**, Scikit-learn, OpenCV, NumPy, Pandas, React.js, FastAPI
Tools & Technologies	Postman, Jupyter Notebook, VS Code, Docker, MLflow, Git, GitHub, Roboflow
Domains	Machine Learning, **Deep Learning**, **Computer Vision**, Web Development

Experience

Ocular Imaging Research and Reading Center (OIRRC) *Junior Data Scientist* **November 2025 – Present**

- Contribute to data-driven workflows for medical diagnostic imaging, supporting model development and validation for radiology use cases.
- Assist in preprocessing and analyzing of imaging datasets including X-ray and CT scans to improve clinical decisions.
- Build and test machine learning pipelines focused on image segmentation and feature extraction.
- Collaborate with radiologists and senior researchers to translate clinical requirements into measurable ML tasks.

Air University, Islamabad *Lab Engineer* **August 2025 – Present**

- Contribute to data-driven workflows for medical diagnostic imaging, supporting model development and validation for radiology use cases.

Jantrah Tech *AI Intern* **July 2025 – September 2025**

- Developed a **Dental Chatbot** using Flask with SQLite storage, integrated a Pakistani dataset, and tested endpoints with Postman to enable features like appointment booking and patient query handling.
- Gained hands-on experience with **Cloudinary**, **Git** for version control, and **Postman** for API testing.

Botmer International *Computer Vision Intern* **April 2025 – June 2025**

- Designed and developed an intelligent vision-based pipeline solution supporting **safety-critical applications** through visual scene understanding.
- Contributed to real-time monitoring systems in industrial environments using **custom-trained detection models**.
- Utilized tools like Ultralytics, Roboflow, TensorBoard, and **OpenCV** for model training and evaluation.

Publication

SWiM3: Solid Waste Classification Dataset

- Published in: **5th International Conference on Digital Futures and Transformative Technologies (ICoDT2)**
- Developed a solid waste dataset containing 6,429 images and 25,234 annotated instances across 3 categories.

Projects

Smart Waste Classification using YOLO12 (Final Year Project)

- Built **pick-and-place robot** for intelligent **waste classification** using **computer vision** and **embedded systems**.
- Trained the **Object detection model** on a custom dataset of **6,500+ manually annotated images** instead of using built datasets, with **Plastic, Paper, and Metal** categories.
- Deployed the optimized model using **ONNX Runtime** on a **Raspberry Pi 4**.
- Implemented horizontal **X-axis motion** using a **NEMA 17 stepper motor** with **GT2 belt and pulley system**, controlled via **Arduino & CNC shield** and **A4988 driver**.

- A **robotic arm** was built for **YZ-axis motion** using **metal gear servos** for object pickup and placement.
- Integrated an **ESP32** with **ultrasonic sensors** to monitor **bin fill levels** where objects where placed.
- **Technologies and Tools:** Python, ONNX, OpenVINO, **Raspberry Pi**, **Arduino**, **ESP32**

Skin Disease Prediction Application

- Developed a web application using **TypeScript** with Vite, integrated with Express and FastAPI, allowing users to upload an image of their skin to detect potential diseases.
- Trained deep learning models using multiple frameworks to choose from (YOLO, EfficientNetB0, EfficientNetB3).
- Deployed the model using **FastAPI** with Uvicorn for live server reloading and seamless backend integration.
- Tools such as Postman, Cypress and Jest were used for the reliability of application.
- **Technologies:** TypeScript, Express, FastAPI, YOLO, Uvicorn, Cypress, Jest, Postman

Radiomic Feature Fusion for Lung Disease Classification

- Implemented a complete **feature engineering** pipeline for Lung Disease Classification.
- Performed radiomic feature extraction using **HOG** descriptors, **Gabor filter** and **wavelet-GLCM** texture features.
- Applied **Mutual Information (MI)** and **Chi-Square** to select the most discriminative features.
- Performed systematic model tracking with **MLFlow** and optimized **SVM**, **Logistic Regression** and **Naïve Bayes** using **HalvingGridSearchCV**.
- **SHAP** was used to interpret feature contributions and model decisions.
- **Technologies:** Python, NumPy, scikit-learn, MLFlow, SHAP, OpenCV

Ongoing Projects and Research

Certifications

Deep Learning Specialization **DeepLearning.AI**

- Covered neural networks, deep learning, CNNs, sequence models, and optimization methods.

Computer Vision for Engineering and Science Specialization **MathWorks**

- Focused on computer vision techniques, feature extraction and engineering applications.

Engineering Project Management Specialization **Coursera**

- Learned project initiation, planning, execution, risk assessment, and agile methodologies.

Languages

- **English** — Fluent
- **Urdu** — Native
- **French** — Conversational

Honors and Awards

- Merit Scholarship Recipient
- Awarded Prime Minister's Youth Laptop
- Achieved Highest SGPA during Spring 2023

Hobbies and Interests

- Hackathons & Coding Competitions
- Book or Novel Reading
- Open Source Contributions