**Khawaja Azfar Asif**

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**EDUCATION**

**Lahore Garrison University February 2020 –** **March 2024** Bachelor of Science |Software Engineering

Core Courses**:** Software requirements, Software Construction & Development, Software Project Management, Artificial Intelligence, Machine Learning, Deep Learning, Linear Algebra, Statistics.

**PROFESSIONAL EXPERIENCES**

**Dubizzle Labs**  **September 2024 – September 2025**

**Associate Machine Learning Engineer** Lahore, Pakistan

* Architected a scalable ML pipeline for real-time real estate data analysis, leveraging **GPT-4, FastAPI, Docker, and PostgreSQL** to produce structured JSON outputs and dynamically generated prompts.
* **Reduced compute costs by 30%** by developing a **TypeScript load balancer with RabbitMQ** for queue management.
* Designed **a modular, maintainable** architecture for containerized **ML workflows.**

**InvoZone February 2024– May 2024**

**Machine Learning intern** Lahore, Pakistan

* Fine-tuned **transformer-based NLP models** (BERT, RoBERTa) using PyTorch/TensorFlow to enhance inference accuracy.
* Developed **API-integrated ML pipelines** to enhance inference accuracy and accelerate AI prototyping.

**DevSinc July 2023 – September 2023**

**Software Engineering Intern** Lahore, Pakistan

* Developed and deployed responsive web pages using **HTML**, **CSS**, and **Bootstrap**.
* **Backend development** by implementing **Django essentials** (MVT, ORM), building **RESTful APIs** using **Django REST Framework**.
* Applied core Django concepts to real-world projects by building interactive **management system** and deployed it.

**Lahore Garrison University (AI Labs) August 2022 – February 2023**

**Research Assistant** Lahore, Pakistan

* Work on **deep learning** framework for **SMS phishing detection** and Weapon detection using YOLOv7.
* Achieving **98.57% accuracy** on the **UCI spam dataset** and **98.29%** on the **British dataset** for SMS phishing detection.
* **Outperforming** traditional machine learning models.

**PROJECTS**

[**AirWatch (AQI prediction using NASA TEMPO dataset)**](https://www.airwatch.health/)

* Next.js web application with a responsive and modern UI using **Ant Design** for frontend.
* Integrated **Mapbox** for interactive air quality visualization and data mapping.
* Implemented API-driven dynamic rendering and deployed the platform on **Vercel** for high performance.
* For **model prediction** using a **Spatial Multi-Output Regression** approach to fuse satellite (**NASA TEMPO**) and ground-based (**AirNow, OpenAQ**) data, improving predictive accuracy across a broad geographic area.
* Implemented a performant prediction API with **FastAPI** and deployed the backend service on **Render**.

[**Dental Enumeration and Diagnosis on Panoramic X-Rays**](https://yolov8-teeth-segmentation.onrender.com/)

* **Built an end-to-end object detection system** for dental enumeration and disease diagnosis on panoramic X-rays.
* **Achieved 96% accuracy of teeth detection and 65% of teeth diseases detection** using **YOLOv8 deep learning** for model training. **Leveraged Pandas, NumPy, Matplotlib, Seaborn, and Scikit-learn** for data handling and analysis.
* Utilized **FastAPI** to construct an optimized prediction API, which was then successfully deployed as a backend service on **Render**.

**[Pneumonia X-Ray Classifier](https://pneumonia-x-ray-classifier.streamlit.app/)**

* Developed **deep learning** system for the **classification** of pneumonia from chest X-ray images.
* Leveraged **Convolutional Neural Networks** built with TensorFlow for robust model training, achieving **95% diagnostic accuracy**.
* Deployed the interactive diagnostic application on **Streamlit Cloud**.

**[E-commerce RAG System for Internal Communications](https://github.com/khawajaazfar/RAG-For-E-commerce_Store-using-Pgvectorscale)**

* Developed a RAG solution using **Pgvectorscale**, Python and utilizing OpenAI's **text-embedding-3-small model** for embeddings.
* Utilized **Docker** for environment setup and managed database interactions with a **PostgreSQL** GUI client for seamless development and deployment.

**Human Emotion Detection**

* Developed and optimized deep learning models for a 3-class human emotion classification task, prioritizing speed and deployment efficiency.
* Implemented and compared **CNNs (LeNet, ResNet34)** and **Vision Transformers (ViT**).
* **Image augmentation** (rotation, flip, contrast) for high-performance training. And integrate **WandB** for comprehensive experiment tracking (metrics, confusion matrices).

**LEADERSHIP ACTIVITIES**

**Event Society of Software Engineering, Lahore Garrison University – *President* September 2023 – March 2024**

* [Organized university first Job Fair, Onboard 20+ companies and single-handed manages them throughout the event.](https://www.linkedin.com/posts/khawaja-azfar-asif_lgu-career-fair23-activity-7127658506261831680-WbTx?utm_source=share&utm_medium=member_desktop&rcm=ACoAADIzPzwBtcsdM6994qR3IlIxflq9Nz1By1o)
* [Arrange multiple Industrial visits for student so they can know about latest trends and technology of industry.](https://www.linkedin.com/posts/khawaja-azfar-asif_invozone-techtour-gratitude-activity-7160482245151989761-uU6V?utm_source=share&utm_medium=member_desktop&rcm=ACoAADIzPzwBtcsdM6994qR3IlIxflq9Nz1By1o)

**DevSinc – AmbassadorApril 2023 – February 2024**

* Leading Ambassador of DevSinc, representing the company at my university.
* Organized and conducted various events to promote Advance Technology on campus.
* Developed and nurtured relationships with students, faculty, and staff.

**TECHNICAL SKILLS**

**Languages:** Python, C++, ROR

**Technologies:** SQL, Git/ GitHub, Docker, AWS, GCP, HTML, CSS, Postgresql, GCP, RAG, YOLO, Streamlit,

**Libraries & Frameworks:** FastAPI, Django, Transformers, MLOps.

**AI models:** YOLOv5, YOLOv8, Detectron2

**INTERNATIONAL HACKATHONS**

**NASA Space Apps Challenge 2025 Oct 2024**

**Project:** Virtual Crop Advisor[🔗](https://drive.google.com/file/d/1xx44A5NeVHhxwPWpaqElh0J65SVD9kp5/view?usp=sharing)

**Role:** Lead Developer

**Technologies Used:** NASA APIs, AI/ML API and Gradio

**Description:** Developed a tool to provide smallholder farmers with real-time insights using NASA’s Earth observation data. Leveraged data to assist in informed decision-making about crop rotation, planting dates, and best crop varieties for sustainable agriculture.

**Qloo LLM Hackathon Aug 2025**

**Project:** Claim Tracker Bot [🔗](https://devpost.com/software/sss-z5kfhv?ref_content=contribution-prompt&ref_feature=engagement&ref_medium=email&utm_campaign=contribution-prompt&utm_content=contribution_reminder&utm_medium=email&utm_source=transactional#app-team)

**Role:** Backend Developer

**Technologies Used:** Groq API and Hugging face

**Description:** Automate insurance claim processing with AI and NLP. Build a chatbot to support real-time claim evaluation and feedback. Deliver valid/invalid claim decisions with detailed summaries Act as an educational resource referencing policy handbook.

**NASA Space Apps Challenge 2024 Oct 2024**

**Project:** Virtual Crop Advisor[🔗](https://drive.google.com/file/d/1xx44A5NeVHhxwPWpaqElh0J65SVD9kp5/view?usp=sharing)

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**CERTIFICATIONS**

* [Machine Learning A-Z: AI, Python & R(Udemy)](https://drive.google.com/file/d/1K_yrVvuL-d_v02deAhJ4_SkUHc6n0wnS/view?usp=sharing)[🔗](https://drive.google.com/file/d/13uygEtHn3RDZw9de0_G8nuGL_MDiV2Vr/view?usp=drive_link)
* [Open-source LLMs: Uncensored & secure AI locally with RAG](https://drive.google.com/file/d/1sBRz4wwFIJnEbQxlxaWrT4hNgQLOtWA0/view?usp=drive_link)[🔗](https://drive.google.com/file/d/1D1b7BYbVBwwb0xfTXXrinKg4AiYKkv-_/view?usp=drive_link)
* Ultimate AWS Certified Cloud Practitioner CLF-C02 2025 [🔗](https://drive.google.com/file/d/1jnNLSv5JKoHT6hkxS47ECon0j5IIAxhW/view?usp=sharing)