# Muhammad Salman Aziz

Electrical Engineer

Islamabad, Pakistan

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## Education

**University of Engineering and Technology** Peshawar, PK

*BSc Electrical Engineering, Communication.* *July 2024*

GPA: 3.70/4.0

Thesis: Blind Vision A computer vision based Assistive Technology for blind people

## Research Experience

**FAST NUCES University** Islamabad, PK

***Machine Learning Research Assistant*** *Feb 2025 – Present*

- Conducting research on OTFS modulation for high-mobility and underwater acoustic communication systems.
- Implemented end-to-end OTFS system, including Frame Generation delay-Doppler domain modulation, channel modeling, channel Estimation and Detection.
- Applied machine learning techniques for Channel estimation in OTFS, comparing performance against threshold-based estimators.
- Data generation and preprocessing for channel estimation using supervised learning.
- BER analysis across varying SNR.

## Internship Experience

**Center for Intelligent Systems and Network Research** Peshawar, PK

***Machine Learning Engineer*** *Oct 2023 – Feb 2024*

- Designed an object detection system using SSD and YOLO to identify meter readings, improving accuracy by 20% over traditional methods.
- Developed a pipeline for preprocessing and labeled 5000+ images, significantly enhancing training data quality.
- Led a team of two to achieve high-performance results on a critical dataset.

**Nayatel** Islamabad, PK

***Network Engineer Intern*** *Sep 2022 – Oct 2022*

- Troubleshot network connectivity issues, improving resolution times by 30% using tools like ping and traceroute.
- Built subnetting solutions and optimized DNS configurations to streamline internal network management Skills.

## Publications

**Blind Vision: A Computer Vision Based Assistive Technology for the Visually Impaired**

*Haseeb Tahir,* ***Muhammad Salman Aziz****, Jansher Khan*

*Presented at: Innovations in Computing Technologies and Information Sciences (ICTIS 2025), Peshawar*

**Paper ID:** 06 **| Pages:** 39–43

**Conference Proceedings:** Link to Proceedings (PDF)

## Achievements

- **Top 25% Talent Globally:** Recognized for exceptional skills and performance in global talent evaluation platforms.
- **Top 3% of Engineering Batch:** Ranked among the top 3% of students in the Electrical Engineering cohort based on academic performance.
- **Prime Minister Laptop Scheme:** Awarded to the top 4 students in the batch for academic excellence
- **Pakistan Navy Merit Scholarship:** Secured for outstanding academic achievements.
- **Punjab Group of Colleges Academic Scholarship:** For outstanding SSC results

## Leadership & Activities

- **Hackathon Participant:** Designed impactful solutions in AI Agents and MindsDB Hackathon by LabLab.ai.
- **DSA Enthusiast:** Solved 70+ leet code problems, focusing on algorithmic efficiency.
- **Project Leadership:** Directed the "Blind Vision" project for assistive technology development.
- **Event Organizer:** Managed logistics for a school-level award ceremony.
- **Professional Memberships:** Member of IEEE and IEEE Computer Society.

## Projects

**Opportunities Nexus Platform |** International Hackathon Nov 2024

- Created a platform to help students find universities, professors, and funding opportunities.
- Integrated AI-powered chatbot using Llama 3.1, delivering personalized guidance to 100+ users.
- Recognized by lablab.ai for innovative design and seamless user experience.

**Blind-Vision |** Final Year Project Jul 2024

- Developed an assistive technology for visually impaired individuals using Yolov8, OCR, and text-to-speech systems.
- Deployed on Raspberry Pi 5, enabling real-time object detection with a user-friendly interface
- Reduced processing latency by 15% through algorithm optimization

**Brain MRI Segmentation |** Bootcamp Final Project Apr 2024

- Implemented an MRI brain tumor segmentation pipeline using SAM and DeepLabV3 with a ResNet50 backbone.
- Preprocessed the LGG MRI dataset, trained models with MONAI and PyTorch, and evaluated performance.
- Achieved 99%+ accuracy, showcasing expertise in deep learning-based medical image segmentation.

**Crop Pest Disease Detection** Jan 2024

- Implemented **Transfer Learning** (VGG-19, ConvNextBase) for detecting pest diseases on crops.
- Analyzed model performance to refine detection accuracy and reduce false positives.

**Weather Classification** Jan 2024

- Developed a **custom CNN model** to classify four weather conditions.

**Traffic Sign Detection and Translation** Dec 2023

- Utilized YOLOv8 for real-time traffic sign detection and translation, achieving 90% accuracy across 10 categories.

## Skills

- **Programming:** Python | C++ | SQL
- **AI/ML Frameworks:** TensorFlow | PyTorch | Hugging Face | scikit-learn
- **NLP:** NER | Tokenization | Word Embeddings | Machine Translation | Prompt Engineering | NLTK.
- **Computer Vision:** Image classification | Object detection | Image segmentation | YOLO | OpenCV
- **LLMs:** GPT| Llama | Gemini
- **MLOps:** mlflow | CI/CD | dvc | Docker
- **Deployment:** Streamlit | Hugging Face Spaces | Raspberry Pi 5

## Trainings

**Essential Generative AI Training** | Pak Angels | link — Jul 2024 – Sep 2024
**Artificial Intelligence Bootcamp** | atom camp | link — Jun 2024 – Sep 2024
**Data Science Bootcamp** | atom camp | link — Jan 2024 – Apr 2024

## Courses

**Machine Learning Engineer** | Data camp | link — Sep 2024
**Google Soft Skills Program** | Google | link — Jul 2024
**Generative AI for Everyone**| DeepLearning.AI & Coursera | link — Feb 2024
**TensorFlow Developer Specialization** | DeepLearning.AI & Coursera | link — Sep 2023
**Introduction to Computer Vision and Image Processing** | IBM & Coursera | link — Sep 2023
**Deep Learning Specialization** | DeepLearning.AI & Coursera | link — Jun 2023
**Machine Learning Specialization** | Stanford & Coursera | link — Oct 2022
**Python Essential 1** | Cisco Networking Academy | link — Aug 2022