

Syed Muhammad Abbas

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Professional Summary

Polyglot-minded Software Engineer and NUST Computer Science senior with strong experience in backend systems, AI-driven products, and DevOps tooling. Proven ability to design, build, and operate end-to-end systems; from model training to secure deployment.

Technical Skills

Languages: Python, C++, TypeScript, SQL, Bash, Java, C#

Backend & AI/ML: FastAPI, PyTorch, YOLO, OpenCV, Hugging Face, LangChain

DevOps & Cloud: Docker, Container Security, Linux, AWS SageMaker, CI/CD

Frontend & Tools: Next.js, React, Tailwind CSS, Git, Postman, WebAuthn, Sandboxing

Professional Experience

Software Engineer Intern, Horizon Tech Services – Islamabad, PK

June 2024 – Aug 2024

- Engineered REST APIs using FastAPI for a collision detection system, achieving sub-100ms latency.
- Optimized AI inference pipelines using MediaPipe and TFLite for real-time gesture recognition on Android edge devices.
- Integrated real-time data processing streams to ensure seamless communication between backend and mobile clients.

JST Research Scholar (Pre University Program), Japan Science & Technology Agency – Tokyo, JP

- July 2019
- Selected as one of the top national scholars for robotics and physics research at Tokyo Institute of Technology.
 - Evaluated international engineering standards in research-to-production workshops with leading Japanese scientists.
 - Gained hands-on experience in advanced particle physics instrumentation and experimental robotics frameworks.

Projects

SecureVision (FYP) – Real-Time AI Surveillance

github.com/sm-abbas19/SecureVision

- Architecting an end-to-end pipeline using YOLOv11 and BOT SORT for real-time threat detection.
- Developing a custom fusion layer integrating SLMs for context verification, reducing false positives by 40% through QA and Data Validation.
- Optimizing inference using multi-threading and Docker to achieve 25+ FPS on consumer-grade hardware.
- Providing technical mentorship to 2 team members on Computer Vision workflows and documenting technical workflows.

PCA-Praxis – Secure Natural Language to Shell Agent

github.com/sm-abbas19/PCA-Praxis

- Orchestrated an autonomous AI agent using Phi-3 to translate natural language intent into Linux shell commands.
- Implemented an ephemeral Docker sandbox environment for command execution, ensuring strict security isolation and system reliability.

Education

NUST (SEecs), Pakistan – BS in Computer Science (CGPA: 3.33/4.00)

2022 – Present

Coursework: Machine Learning, Deep Learning, LLMs, Distributed Computing, OS, Web Engineering

Languages and Certifications

- Languages:** English (Fluent), Urdu (Native), German (Elementary)
- Meta:** Back-End Developer Professional Certificate
- DeepLearning.AI:** Deep Learning and Machine Learning Specializations
- AWS/DeepLearning.AI:** Generative AI with Large Language Models