

SALMAN AHMED KHAN

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EDUCATION

Bachelor of Software Engineering, FAST NUCES

Jul 2019 - Jun 2023

CGPA: 3.75 / 4.0

Achievements: [Silver Medalist](#) (Magna Cum Laude), 2x Gold (Spring '22, '23) and 2x Bronze Medalist (Fall '20, '21), [Rector's List of Honors](#), Dean's List of Honors [Fall ('20, '21, '22), Spring ('21, '22)]

Runner-Up [CodeWars 2023](#), Qualifier [CodersCup 2019](#), Participated [CodersCup 2022](#), Astera's [Star Intern](#)

SKILLS

Languages

C#, JavaScript, TypeScript, Java, Python, C/C++

Libraries/Framework

.NET, Django, Bootstrap, Vue JS, React JS, Node JS, Express JS, Jest JS, Playwright

Databases

MySQL, MS SQL Server, MongoDB

Tools

AWS, Azure DevOps, Git, Visual Studio, PyCharm, Docker

EXPERIENCE

Software Engineer, Machine Learning Infrastructure

Jan 2024 - Present [Contract - Remote]

Retrocausal

Karachi, Pakistan

- Integrated Facebook's SAM2 object segmentation model into Assembly Copilot using **ONNX Runtime** to load embeddings on the frontend, enabling hover-based mask and bounding box generation with segment propagation to enhance annotation speed and accuracy.
- Built a *Validation Server* Proof of Concept with OverlayFS and Docker on internal servers. Later, automated the deployment of 4+ parallel instances on **RunPod** using a custom Bash script, enabling scalable validation workflows.
- Developed a *Line Traceability* dashboard in Assembly Copilot to visualize assembly line telemetry data, enabling supervisors to monitor KPIs and manage workflow issues in real time.
- Created a *Revert Object* feature in the annotation tool using AWS Lambda to restore objects from backup files, improving reliability and recovery from user errors.
- Led development of an *Object Annotation Tool* using Vue.js, Konva.js, and Python, used daily by a team of 5+ object detection engineers to annotate thousands of frames with YOLO-based AI-assisted labeling.
- Packaged and deployed a desktop diagnostic application called *Assembly Copilot Diagnostic* using Vue.js, Electron, and FastAPI with features such as barcode scanning, asynchronous backend diagnostics, WebRTC-based video streaming, report generation, and seamless camera integration.
- Integrated a self-hosted **Supabase** instance with Docker on AWS EC2 to track *OPC (OLE for Process Control)* connection statuses in real time, improving system observability and operational monitoring.
- Built OPC connection and tag management features using Django REST Framework, Vue.js, and AWS SNS/SQS to enable scalable real-time communication within Assembly Copilot.
- Automated system health checks using Playwright, TypeScript, and the Slack API by creating scheduled Python scripts for continuous monitoring and internal alerts.
- Streamlined internal workflows by developing automation scripts with pywinauto and boto3, reducing manual effort for S3 file uploads and downloads.

Software Engineer-I

Oct 2023 - Jan 2024

Astera Software

Karachi, Pakistan

- Designed and implemented a full-stack chatbot for Astera's flagship product, Centerprise, to handle real-time documentation-related queries. Developed using C# .NET Core and WinForms, and integrated with GitBook Lens APIs to provide an intuitive and efficient user experience.

- Presented a Proof of Concept to executive leadership, including the CEO, CTO, and managers, demonstrating the integration of the *Astera Data Governance* Web Application into the Centerprise product. Implemented **Microsoft WebView2** to seamlessly host the web application within the WinForm environment.
- Added support for multi-file attachments within the Send Mail ETL Workflow object to meet customer requirements and streamline data delivery processes.

Associate Software Engineer

Astera Software

Jul 2023 - Sep 2023

Karachi, Pakistan

- Designed and implemented an *ETL job management module* for automated scheduling and expiration handling, improving data pipeline orchestration and compliance.
- Researched and implemented **Access Management** in Astera's Centerprise using Azure Active Directory, OAuth 2.0, and Multi-Factor Authentication to strengthen security and enhance the user authentication experience. Applied best practices including the Factory design pattern, asynchronous programming, and SOLID principles in C# .NET.
- Took the initiative to create **UML diagrams** for my feature, aiding current and future developers in comprehending the system, resulting in recognition and appreciation from both the Software Development team and the CTO.

Teaching Assistant

National University of Computer and Emerging Sciences

Sep 2021 - Dec 2021

Karachi, Pakistan

- Assisted in teaching and grading for **50+** students in the CS-2007 Human Computer Interaction course, collaborating with the instructor to assess projects and resolve student queries.

PROJECTS

Streamlined Person Re-Identification (FYP) Developed a Person Re-Identification Web App, with video uploading, query image cropping, marked stamp video retrieval, graph generation and report generation features to provide visual representations and detailed analysis of identification results, achieving **85%** video processing time reduction. Collaborated in Agile Practices and re-engineered the system at the **Video Surveillance Lab (VSL-NCBC)** under Dr. Atif Tahir's supervision, Director of FAST NUCES Karachi. Developed the system using React JS, Node JS, Express JS, MySQL, Sequelize, Flask, Hybrid Vision Transformer for re-identification process and Postman for API Testing. ([Link](#))

Prayer Posture Classification Analysis Detected & Classified Islamic Prayer posture including Qiam, Ruku & Sujud. Models trained with 457 Training Dataset and Tested with 196 Test Dataset. The Experiment shows that the accuracy obtained by 457 trained images and giving 196 test images to CNN is 90.8%, AlexNet 82.6% and GoogleNet 90.3% with 50 iterations. Presented the project with poster at AI-ENABLED TECHEX '22 FAST NUCES. Implemented with Python, Tensorflow, Keras, Scikit-learn. ([Link](#))

CERTIFICATION COURSES

[Neural Networks and Deep Learning](#) - DeepLearning.AI

[The Bits and Bytes of Computer Networking](#) - Coursera

[HTML, CSS and Javascript for Web Developers](#) - Coursera

LANGUAGE

IELTS Academic - Band 7.5 (C1)