Talha Hussain Khan

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EDUCATION

Sir Syed University of Engineering & Technology **Karachi, Pakistan**

B.S. in Computer Engineering *Aug 2020 – Nov 2024*

- **GPA:** 3.57/4.00
- **Related Coursework:** Data Structures & Algorithms, Signals & Systems, Computer Organization & Architecture, Database Management System, Artificial Intelligence, Probability & Statistics, Parallel & Distributed Computing, Microprocessors & Microcontrollers

HONORS AND ACHIEVEMENTS

- **2nd Position:** Earned 2nd place in the Hello GPT-4o AI Challenge by LabLab.ai, competing against 168 teams. [Link]
- **Awarded 2nd position** for my poster presentation at the 40th All Pakistan IEEEP Students' Seminar 2025. [Link]
- **FYP Nominated:** Selected by the university to present at ITCN Asia Expo and advanced to the 2nd stage in FICS. [Link]
- **Merit Scholarship Recipient:** Awarded for outstanding academic performance during bachelor's degree, ranking in the **top 5%** of the batch.
- **AIESEC Selection:** First student from the university to be selected for AIESEC, a global youth organization that provides leadership development and cross-cultural internships, enhancing global impact and personal growth**.**

RESEARCH EXPERIENCE

3D Mapping of Buildings for Inspection | *Research Project in collaboration with RoadGauge Ltd* | **Final Year Project** [Link] [Preprint] *Nov 2023 – Sept 2024*

- Spearheaded development of cost-effective alternative to LIDAR-based building inspection: designed end-to-end 3D mapping system integrating IMU sensors, Android SDK, and Structure from Motion (SfM) algorithms, reducing equipment costs by ~80% while maintaining millimeter-level accuracy
- Led backend architecture, data collection framework, Arduino-based hardware automation for consistent video capture, and computer vision pipeline for 3D model generation from image sequences
- Technologies: Arduino, Android SDK, OpenCV, SfM, Computer Vision, IMU Sensors, Python, Firebase

EXPERIENCE

RISE **(Remote) - Pakistan**

Program Manager – Coding School *Jun 2025 – Current*

- Taught and led end-to-end operations of coding camps by managing infrastructure, instructors and support staff, delivering high quality curriculum to learners, and driving improvement in learner engagement through exhibitions and feedback driven updates.

RoadGauge Ltd **(Remote) - England, UK**

Software Development Engineer (Backend) *Jan 2023 – Mar 2024*

- Upgrade and maintain the app by adding new features, functionalities into one single code base using Java.
- Focused on backend development, specifically in building a custom report generation system. Utilized Handlebars for report templating and successfully built a custom report generation system that reduced the time between report request and report delivery by 90%.
- Contributed to our team's efforts in integrating the Stripe payment gateway and deploying APIs on the Google Cloud Platform using Node.js and Python.
- Deployed APIs on the Google Cloud Platform, contributing to improved system functionality.
- Performed data labeling and annotation for computer vision datasets using CVAT, enhancing model accuracy.

INTERNATIONAL HACKATHONS & COMPETITIONS

AI in Education: Lang Anki Cards on Steroids [GitHub]**|**Hello GPT-4o AI Challenge

- Developed an advanced version of Anki flashcards for educational purposes using GPT-4o.
- Focused on enhancing language learning through AI-driven flashcards.
- Utilized AI for generating and optimizing educational content.
- Awarded **2nd place** in the challenge for innovative use of AI in education.

In-Car AI Agents [GitHub]**|**Edge Runners 3.2 Hackathon

- Developed an offline AI system for cars using LLaMA 3.2, enabling voice commands for functions like air conditioning and music playback without internet.

- Deployed edge-based AI with pre-trained voice recognition for real-time responses, enhancing driver experience in low-connectivity areas.
- Planned enhancements include offline navigation and lane detection for increased safety and autonomy.

Data Science for Bioengineering Program by UC Irvine: Gained hands-on experience in applying data-driven methods to solve biological and biomedical challenges using real-world datasets.

Coding/Problem Solving Events: Harvard CS50x Puzzle Day'25 (9/9 puzzles), MIT Informatics Tournament Winter'25 (75/500+ teams), CALICO Fall'24- UC Berkeley (248/865 teams), Meta Hacker Cup'24

PROJECTS

Ride-Sharing App | *AWS Cloud Project* [Link]

- Deployed full-stack ride-sharing application using AWS services including Amplify, Cognito, Lambda, and DynamoDB.
- Implemented serverless backend with API Gateway and Lambda functions for real-time ride matching.
- Developed secure user authentication system using AWS Cognito and IAM roles.
- Technologies: AWS Suite (CodeCommit, Amplify, Lambda), API Gateway, DynamoDB

Soccer Player Manager | *Software Engineering Course Project* [Link]

- Developed a web application for managing soccer players, allowing users to add, update, and view player profiles.
- Implemented the backend using PHP and MySQL, with a frontend built using HTML, CSS, and JavaScript.
- Designed and integrated a user-friendly interface for smooth navigation and player management.
- Technologies: PHP, JavaScript, HTML, CSS, MySQL

Snake Game - MIPS Assembly | *Low-Level Programming Project*

- Engineered Snake game in MIPS assembly language, implementing complete graphics rendering, collision detection, and real-time keyboard input system.
- Technologies: MIPS Assembly, Bitmap Display, Keyboard Input/Output

IoT Street Infrastructure | *Hardware Projects*

- Engineered a smart street lighting prototype integrating motion and ambient light sensors, reducing energy consumption through automated brightness control.
- Developed custom metal detection system using electromagnetic induction and analog circuit design.
- Technologies: Microcontrollers, Sensors, Electromagnetic Induction, Circuit Design

TEACHING AND VOLUNTEER EXPERIENCE

Volunteer Teaching *Jan 2021 – Current*

- Conducted computer programming and data structures and algorithms sessions for 50+ underprivileged students, strengthening their programming skills, collaborating with volunteer organizations like Iqra Fund (USA). [Link]
- Mentored and judged at PEC Generative AI Hackathon & WordSprint Developers Hackathon. [Link]
- Provided private tutoring & study group moderation for secondary, Cambridge O-Level, and A-Level students in Math, Physics, and CS.
- Delivered a Meta Hacker Cup webinar at ACM SSUET. [Link]

Robin Hood Army | *Volunteer* *Oct 2022 – Current*

- Led weekly food/ration & winter drives for underserved communities; received "Consistent Volunteer Award."

The Citizens Foundation | *Volunteer* *Feb 2024 – Current*

- Advocated for education & fundraising for underprivileged children in Pakistan via TCF's Baghbaan program.

SKILLS

Programming: Python, JavaScript, SQL, Node.js, MATLAB, C, Java, Verilog (basic)
Tools: Git, Postman, Android Studio, AWS, GCP, Firebase, Open MP & MPI, CVAT, CloudCompare, 3dsMax, PuTTY, AutoCAD(basic), MARS MIPS simulator, PSpice, Multisim, Electronic Workbench