

# 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, Object-Oriented Programming, 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 IEEE 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

### Graphics & Spatial Computing Lab

(Remote) – Canada

Research Intern

Jun 2025 – Current

- Investigating scalable methods for 3D object modeling by applying geometric deep learning and semantic surface reconstruction techniques on large-scale point cloud data.

### 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

### 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

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### 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

## ACTIVITIES AND LEADERSHIP

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### 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 (US). [\[Link\]](#)
- Mentored and judged at PEC Generative AI Hackathon & WordSprint Developers Hackathon. [\[Link\]](#)
- Provided private tutoring & study group moderation for secondary, 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

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**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