

# MUHAMMAD MAIRAJ

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## EDUCATION

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### Universiti Malaya (UM), BCompSci (Software Engineering)

Oct 2023 – Mar 2027

*CGPA: 3.95/4.00 (Dean's Award)*

*Kuala Lumpur, Malaysia*

**Relevant Coursework:** Data Structures & Algorithms, Software Architecture & Design, Database Management, Network Communications, Machine Learning, Internet of Things, Component Based Software Engineering.

## TECHNICAL SKILLS

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**Languages:** Python, Java (Spring Boot, Android), JavaScript/TypeScript, HTML/CSS, SQL, C

**Frameworks:** FastAPI, Django, Node.js, React, Next.js, React Native, Android Studio, Supabase, Streamlit

**Databases & Infra:** PostgreSQL, Redis, MongoDB, SQLite, Docker, GitHub Actions, Nginx, Linux/Unix

**Concepts:** LLM/RAG, OCR, REST APIs, WebSockets, System Architecture & Design, Agile/Scrum

## WORK EXPERIENCE

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### Sapu @ Universiti Malaya — Full-Stack Engineer

Mar 2025 – Present

*University-based ride-hailing platform (10K+ users) | [sapu-my.com](https://sapu-my.com)*

*Kuala Lumpur, Malaysia*

- Scaled platform from **100 to 500+ concurrent trips** and **1.5K+ daily orders** by implementing **PgBouncer** connection pooling, optimizing PostgreSQL queries, introducing **Celery** async processing, and validating gains with **Locust** stress testing; deployed with **Docker** monitored via **Prometheus** and **Grafana**.
- Led multi-campus expansion across a 3-developer team, establishing CI with **149 tests over 42 endpoints**, executing a **phased 3-stage roll-out**, and **delivering 1 week ahead of schedule** — enabling expansion into 2 universities within 2 weeks.

## PROJECTS

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### VisaSystem — Final Year Project

Jan 2026 – Present

*Universiti Malaya*

*Kuala Lumpur, Malaysia*

- Built an **AI-powered RAG chatbot** (FastAPI + LLM) to autonomously resolve Level 1 visa inquiries, and implemented **OCR-based passport data extraction** to automate document intake, eliminating manual data entry for visa staff.
- Architected a full-stack visa management platform with **multi-actor RBAC** across 8 roles spanning 4 departments, event-driven **ARQ** background job workflows (async Redis queue), and a PostgreSQL-backed REST API serving a React frontend; validated through UAT and a unit/integration test suite.

### DevTracker

Feb 2026 – Present

*Personal Project*

- Built a productivity tool that eliminates manual logbook writing by syncing **Toggl** time logs with **GitHub** commit/PR activity, then generating structured daily and weekly summaries via **LLM** (Gemini API).
- Engineered a full-stack platform with a **FastAPI** async backend, **React + TypeScript** frontend, PostgreSQL, and **Docker**; architected the LLM layer as a swappable interface for drop-in model switching.

### KH Shawarma Restaurant Order Management System

Aug 2024 – Sep 2024

*KH Shawarma @ UM | [khshawarma.org](https://khshawarma.org)*

*Kuala Lumpur, Malaysia*

- Eliminated manual order handling, supported **~1,000 daily orders** by delivering a real-time POS and customer web app **within 2 months**, engineering backend services, **WebSocket** infrastructure, and frontend integrations.

## ACHIEVEMENTS

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- **5th Place** – CodeNecton National 2024 (Dec), National Competitive Programming Competition (167 teams)
- **2nd in Malaysia** – IEEEExtreme 18.0 (Oct 2024), 24-Hour Extreme Competitive Programming Competition
- **1st Place** – Programming League National 2024 (May), Solved 4 from 8 problems, more than all 20 finalist teams

## ADDITIONAL

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- **Certifications:** Harvard's CS50x (*C: memory management, pointers, hash tables/tries; Python/Flask, SQL, JS*), MITx Introduction to Computer Science, Cisco Introduction to Networks (CCNA)
- **OS:** Fedora Linux (daily driver, 2 years); proficient in terminal, shell scripting, and system administration
- **Languages:** English (IELTS 8.0), Arabic (Intermediate), Urdu (Native), Malay (Learning)