# ZULFAQAR HAFEZ

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## EDUCATION

**Singapore Institute of Technology (SIT)**                                    **Sept 2024 - Present**
*Bachelor of Science (Honours) in Applied Artificial Intelligence*
- Awarded $20,000 Sparks Community Innovation Fund at Community Hackathon 2025, hosted by People's Association and Open Government Products

**Republic Polytechnic (RP)**                                                **Apr 2019 - May 2022**
*Diploma in Business Information Systems*

## PROJECTS

**PanelPop Studio | AI-Powered Comic Creation Platform**                        **Jan 2026**
- Developed a full-stack application (**Next.js, FastAPI, Supabase**) enabling gesture-controlled drawing using MediaPipe hand tracking for touch-free art creation.
- Integrated **Google Gemini 2.5** Flash for sketch-to-art transformation and text-to-image generation across 24 customizable comic panel layouts.
- Implemented **Google Veo 2** for animated video generation from static comic panels, creating cinemagraph-style motion effects.
- Designed an accessible UI with dwell-time gesture activation and voice command integration using **Web Speech API**.

**Real-Time Multi-Label PPE Detection System** | *SIT (Academic Project)*       **Sep - Nov 2025**
- Engineered a real-time computer vision pipeline using **YOLOv8**, achieving **0.64 mAP50** for multi-label PPE detection. Implemented **MediaPipe** for geometric logic checks, reducing false positives by validating anatomical positioning.
- Executed a **Data-Centric AI strategy**, applying active learning techniques to distill a noisy 100k dataset into 6k high-value balanced images. Integrated **Grad-CAM** to visualize model activation maps and debug failure cases.

**FairWork Contract**                                                        **July - Aug 2025**
- Architected a document translation platform using **Next.js** and **OCR**, integrating the **SEA-LION LLM** via API to perform context-aware translation of legal contracts for migrant workers.
- Implemented **layout preservation algorithms** to maintain original document structure and utilized NLP to simplify complex legal jargon into plain language.

## EXPERIENCE

**Product Lead (Citizen Developer), People's Association**                       **Sept 2025 - Present**
- Manage *Churp*, a CIT-funded digital solution optimizing community garden plot allocation for transparency and efficiency.
- Lead agile sprints and cross-functional teams (developers, mentors) to drive the pilot launch in Tengah.
- Oversee UI/UX validation and stakeholder management to align technical deliverables with civic engagement goals.

**Order Management Specialist Intern, Infineon Technologies**                   **Mar 2021 - Aug 2021**
- Engineered a Python automation system (Selenium, BeautifulSoup) for market data collection, reducing manual research time by 80%.

## CO-CURRICULAR ACTIVITIES/COMMUNITY SERVICE

**President, SIT Magical Hearts**                                              **Jan 2025 - Jan 2026**
- Directed inclusive outreach programmes for elderly and special-needs groups; grew volunteer engagement by 50%.
- Managed executive operations, logistics, and partnerships with SIT advisors and NGOs.

## COMPETITIONS

**SIT HackRift 2025 – Finalist**                                              **Dec 2025**

- Attained Finalist status by developing *GuideMeSG*, an inclusive navigation app for Persons with Intellectual Disabilities (PWIDs).
- Integrated LTA DataMall APIs to solve real-world accessibility challenges, translating user research into a functional UI/UX prototype

**Hack for City 2025 – SMU Smart City Society (Finalist)**                      **Mar 2025**

- Developed a ResNet computer vision model for automated trash classification to optimize waste management.
- Delivered a full-stack prototype (Frontend + Model) within the hackathon timeframe, integrating real-time visual analytics.

## TECHNICAL SKILLS

- **AI/ML:** PyTorch, YOLOv8, ResNet, MediaPipe, OpenCV, scikit-learn, Gemini, Grad-CAM
- **Data**: pandas, NumPy, SQL, PostgreSQL, MongoDB, data visualization
- **Stack:** Python, SQL, JavaScript, Next.js, FastAPI, PostgreSQL, MongoDB, Git.