

# Isaac Puah

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## EDUCATION

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### University of California, Berkeley

*B.S. in Electrical Engineering and Computer Sciences (EECS)*

Berkeley, CA

Aug 2025 – May 2027

## EXPERIENCE

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### Software Validation Engineer Intern

*Silicarise Technology*

Jul 2025 – Aug 2025

*Penang, Malaysia*

- Engineered 50+ automated test cases using GoogleTest framework, expanding validation suite by 2× and improving API coverage, identifying edge-case failures before deployment
- Architected multithreaded stress-testing framework in C++ with threads to validate concurrency behavior, uncovering 8 race conditions and deadlock scenarios in K80 embedded software under production-scale load
- Developed QEMU-based Docker containerization for K80 RISC-V emulation, reducing environment setup time by 60% and enabling automated CI/CD validation across GitHub Actions and GitLab CI pipelines

### Electrical Engineering Team Member

*Cal Sol Solar Racing Team, UC Berkeley*

Sep 2024 – Present

*Berkeley, CA*

- Design PCB layouts for steering control system using KiCad, ensuring signal integrity and proper power distribution for safety-critical automotive components in solar-powered racing vehicle
- Develop embedded firmware in C/C++ for steering board microcontroller, implementing real-time motor control algorithms and sensor data processing for precise vehicle handling

### Computer Science Teaching Assistant

*De Anza College*

Apr 2024 – Jun 2025

*Cupertino, CA*

- Facilitated instruction for 150+ students across 3 quarters in C++ and x86 Assembly, improving lab completion rates through debugging workshops and data structure visualization tools
- Mentored students on software engineering practices including Git version control, code reviews, and memory debugging

## PROJECTS

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### Full-Stack E-Commerce Platform | *Java, Spring Boot, MySQL, Thymeleaf, Spring Security*

- Architected secure e-commerce web application using Spring Boot MVC architecture, supporting 100+ concurrent users with MySQL database
- Implemented complete user authentication system with Spring Security integration, including password validation with real-time client-side feedback
- Designed RESTful API endpoints for product CRUD operations, shopping cart management, and user account updates with server-side validation and proper HTTP status codes
- Built responsive UI with Thymeleaf templating engine and custom CSS, featuring dynamic product catalog, cart functionality, and admin dashboard for inventory management with image upload support

### SkySpotter: Autonomous Parking Drone | *Python, YOLOv8, Raspberry Pi, Pixhawk, MAVLink (Infineon-Sponsored)*

- Engineered autonomous flying drone using Raspberry Pi integrated with Pixhawk 2.4.8 flight controller via MAVLink protocol, achieving real-time GPS-based parking detection with custom-trained YOLOv8n model
- Integrated Infineon PSoc 6 AI board for emergency siren detection using pre-trained audio classification model, enabling autonomous visual alerts when emergency vehicles detected nearby
- Optimized edge ML inference by reducing model size and filtering irrelevant classes, enabling real-time detection on constrained hardware; implemented UDP/TCP networking for GPS coordinate transmission to remote devices

## TECHNICAL SKILLS

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**Languages:** C++, Python, Java, C, SQL, JavaScript, x86 Assembly, Bash

**Technologies & Tools:** Spring Boot, Spring Security, Flask, REST APIs, Git, Docker, MySQL, Linux/Unix, CI/CD (GitHub Actions, GitLab CI), QEMU, VS Code, IntelliJ IDEA, GoogleTest, Maven, Jira