Xavier Koo

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WORK EXPERIENCE

PSA SINGAPORE
Software Engineer Intern
Singapore

- Engineered software features with Angular, Spring Boot, SQL and Concourse, employing Agile and Test-Driven Development.
- Architected an automated testing framework from scratch using JUnit, Mockito and Cypress, leveraging OOP principles and design
 patterns for reusable test data objects. Boosted test coverage and reduced deployment time from 3 days to 1 day.
- Revamped an inefficient API with **Spring Boot** by optimizing database interactions and pre-processing the data. This improvement reduced page load times from 100 seconds to 3.3 seconds, significantly enhancing user experience.

ASTERISK TECHNOLOGIES

Aug. 2023 - Jan. 2024

Software Engineer

Singapore

- Revamped a major private hospital's visitor management system that oversees over 15,000 visitors using Flutter, Riverpod and SQLite.
- Implemented enhancements to the hospital's facilities management system using React and Express + Node, generating extra revenue.

ASTERISK TECHNOLOGIES

Feb. 2023 – Aug. 2023

Software Engineer & Machine Learning Intern

Singapore

- Architected single-handedly an organization-wide facilities management system (FMS), enabling a major private hospital client to oversee thousands of bookings, and streamlining admin for 1200+ employees with 0% booking error rate.
- Engineered automated facility access by integrating tablets as interactive facility displays, seamlessly linked to the FMS and facility door relays, allowing automated user access via QR Code/TOTP, achieving a 100% reduction in manual facility access requests by users.
- Spearheaded front-end development with React, Bootstrap, and SASS, creating 12 components and 13 mobile-responsive pages; developed the backend with Express, Node.js, and MongoDB, delivering 50 RESTful APIs.
- Enforced code styling and quality via **ESLint**. Wrote unit, integration, end-to-end tests with **Jest**, **react-testing-library**, and **Cypress**.
- Devised a CI/CD pipeline and employed Electron.js and PM2 for resilient, continuous facility operations, ensuring 99.9% uptime.
- Developed a license plate detection and character recognition tool using YOLOv7 integrated with PaddleOCR. Trained the model using R-CNN on annotated data labelled with LabelImg, achieving a mean Average Precision of 90%+.

HACKATHONS & PROJECTS

[HACKATHON] PSA CODE SPRINT 2023 - CHAMPION

TEAM LEADER

https://github.com/xavierkoo/psa-codesprint-2023

• Led winning team ByTheSea against 100+ teams by developing an AI-powered next-gen HR platform to enhance PSA's HR strategy in 3 key areas: Talent, Experience & Engagement. Utilized **LangChain**, **ChromaDB**, **Streamlit**, **FastAPI**, **Vue.js**, and **OpenAI API**.

[CLIENT PROJECT] AUTHENTICATION SYSTEM - ASCENDA LOYALTY

DEVELOPER

https://github.com/xavierkoo/authentication-system

Engineered a highly scalable and secure authentication system for the client company with AWS (Cognito, S3, Lambda, CloudFront, Route 53, WAF, API Gateway), and React TypeScript.

[CLIENT PROJECT] FORM MANAGEMENT SYSTEM - QUANTUM LEAP INC.

DEVELOPER

https://github.com/xavierkoo/leapaheadx

Developed an FMS for the client company to digitalize form management processes with Vue.js/Vite, Bootstrap, SASS, Java Spring Boot, Docker & MySQL, adhering to OOP principles and employing UML, ERD & Use Case Diagrams.

EDUCATION

SINGAPORE MANAGEMENT UNIVERSITY

May 2025

Bachelor of Science (Information Systems), Majors (Information Systems & Computer Science - Artificial Intelligence)

- Relevant Coursework: Data Structures & Algorithms, Object Oriented Programming, IT Solution Architecture (AWS, Systems Design), Software Project Management (Agile/Scrum), Agent-Based Modelling & Simulation (Netlogo)
- Professional Certifications: Oracle Certified Foundations Associate Java, AWS Certified Solutions Architect Associate
- Teaching Assistant: CS301 IT Solution Architecture (AWS, Java), IS213 Enterprise Solution Development (Docker, Flask)

SKILLS

- Languages: HTML | CSS | SASS | JavaScript | TypeScript | Python | Java | Dart
- Frameworks/Libraries: React.js | Vue.js | Angular | Flutter | Bootstrap | Express.js | Node.js | Electron.js | Spring Boot | Jest |
 Cypress | JUnit | Riverpod | FastAPI | LangChain | StreamLit
- Databases/Tools: MySQL | MongoDB | SQLite | Docker | Amazon Web Services (AWS) | Git | ESLint | AMQP | Vite | Heroku | Netlify | Pm2 | OpenCV | YOLO | PaddleOCR | LabelImg | ChromaDB | Concourse