Xavier Koo

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WORK EXPERIENCE

PSA SINGAPORE   May 2024 – Present
Software Engineer Intern   *Singapore*
- Developed software product features with **Angular** and **Java Spring Boot** in an **Agile**, **Test-Driven Development** environment.
- Designed an automated testing framework using **JUnit, Mockito** and **Cypress** from scratch, employing design patterns for reusable test data objects, increasing test coverage and reducing time to deployment.
- Rewrote an automatic scheduler API with **Spring Boot** by reducing redundant database calls and pre-processing the data, improving page load times from 100 seconds to 3.3 seconds.

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**, building 12 components and 13 mobile-responsive web pages and constructed the backend with **Express, Node.js** and **MongoDB**, creating 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 basic **CI/CD** pipeline and employed **Electron.js** and **PM2** for resilient, continuous facility operations.
- 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 | 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