XAVIER KOO

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EDUCATION

SINGAPORE MANAGEMENT UNIVERSITY (SMU)

Aug 2021 - May 2025

Bachelor of Science (Information Systems)

- Penultimate Undergraduate with Double Major in Information Systems (Digitalisation & Cloud Solutions) and Computer Science (Artificial Intelligence).
- Coursework: Data Management (SQL), Web Application Development (HTML, CSS, Bootstrap, Vue.js), Computational Thinking (Python), Object-Oriented Programming (Java), Enterprise Solution Development (Docker, AMQP, Systems Design)

EXPERIENCE

ASTERISK TECHNOLOGIES

Aug 2023 - Present

Software Engineer

Flutter VMS rewrite

ASTERISK TECHNOLOGIES

Feb 2023 - Aug 2023

Software Engineer & Machine Learning Intern

- Architected from scratch an enterprise facilities management system (FMS), enabling a major client to oversee facility bookings and streamline admin for 1200+ employees, reducing task time by 50% with error-free bookings vs. previous process with Outlook.
- Engineered automated facility access by integrating tablets as interactive booking displays with **Human Interface Devices**, seamlessly linked to the FMS and door relays verifying **QR Codes/TOTP** for user access, achieving a 95% reduction in manual access requests and 4% increase in employee productivity by eliminating manual security interventions.
- Devised the FMS leveraging a unified database architecture for brand switching, centralized management, and user experience.
 Design choice reduces 95% of development work previously required for each new brand iteration for every new client deployment.
- Spearheaded front-end development with React, Bootstrap, and SASS, building 12 reusable components and 13 dynamic web
 pages. Pioneered a one-click data export feature to CSV format, enhancing user data accessibility. Wrote comprehensive unit,
 integration, and end-to-end tests with Jest, react-testing-library, and Cypress.
- Constructed backend with Express + Node by building 49 RESTful APIs including email integration with the SendGrid API, and MongoDB for data storage. Users are authenticated with JSON Web Tokens and QR Codes/TOTP was generated securely leveraging a Network Time Protocol for precise time synchronization. Wrote unit and integration tests with Jest.
- Employed **Electron.js** to package the **React** based interactive booking display app for seamless tablet installation. Utilized **PM2** for a resilient, automatic local server with 99% uptime, ensuring continuous facility security and operations with no interruptions.
- Enforced code styling and quality via **ESLint.** Developed basic **CI/CD** pipeline for automated build, test and deployment. Authored a wiki for documentation of entire system. Manage new updates and fixes on live system via GitHub releases.
- Computer Vision: Created a license plate recognition & detection tool by deploying YOLOv4 within the Darknet framework before switching to YOLOv7. Integrated PaddleOCR for Optical Character Recognition. Trained model with Region Based Convolutional Neural Networks, on sourced data annotated with LabelImg. Model achieved a mean Average Precision of 90%+.

PROJECTS

LEAPAHEADX - CLIENT PROJECT: FORM MANAGEMENT SYSTEM (FMS)

https://github.com/xavierkoo/leapaheadx

- Collaborated with 4 developers to build an FMS for a client company to digitalize form management processes.
- Utilized Vue.js/Vite, Bootstrap and SASS for front-end and Java Spring Boot & MySQL for backend, built upon OOP
 principles for scalability & maintainability. Docker was used to containerize application for ease of deployment.
- Designed **UML**, **ERD** & **Use Case Diagrams** for a thorough understanding of project scope and requirements.

GREENVENTURE - MICROSERVICES-BASED ARCHITECTURE

https://github.com/xavierkoo/greenventure-main

- Collaborated with a team of 5 developers to construct a web app incentivizing and rewarding users to recycle.
- Devised and implemented a scalable microservices-based architecture with React, Express.js, Node.js, MongoDB, and Docker.
- Configured a messaging system using AMQP based LavinMQ message broker with nodemailer to send emails to users.

SUPPORT LOCAL - FULL-STACK WEB APPLICATION

https://github.com/xavierkoo/support-local-frontend

- Developed a full-stack web application to serve as an eCommerce platform for local businesses, employing Bootstrap, SASS,
 Vue.js, Node.js, Express.js, MongoDB. Application is deployed on Netlify & Heroku.
- Constructed web application backend independently by designing 21 RESTful APIs, performed integration tests using Jest, formulated data storage and conducted static code analysis using ESLint.

LANGUAGES & TECHNOLOGIES

- Languages: HTML | CSS | SASS | JavaScript | Python | Java
- Frameworks/Libraries: React.js | Vue.js | Bootstrap | Express.js | Node.js | Electron.js | Spring Boot | Jest | Cypress
- Databases/Tools: MySQL | MongoDB | Docker | Git | ESLint | AMQP | Vite | Heroku | Netlify | Pm2 | OpenCV | YOLO PaddleOCR | CSPDarknet53 | LabelImg