Edward Qian

Software Engineer · Casual Academic · University of New South Wales

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Education

University of New South Wales (UNSW)   *Feb. 2021 - May 2025*

Bachelor of Science (Computer Science)

- Distinction Grade, 83 WAM
- Relevant Courses: Software Engineering Fundamentals (93), Database Systems (92), Extended Security Engineering (87), Object-Oriented Design & Programming (87), Data Structures and Algorithms (87), Extended Operating Systems (85)

Work Experience

University of New South Wales (UNSW)   *Sep. 2022 - Present*

Casual Academic

- Tutor and Lab Assistant for Software Engineering Fundamentals (COMP1531); explaining Git, JavaScript, HTTP servers, testing and static code analysis.
- Tutor for Database Systems (COMP3311); teaching data modelling, SQL, PLpgSQL, database programming with Python & Psycopg2, relational design, relational algebra and transaction processing.

Extracurricular

Structs.sh Algorithm Visualiser (UNSW CSESoc)   *Jan. 2022 - Dec. 2023*

Project Team Lead

- Led a team of 11 members alongside 2 co-leads to build a new iteration of the project: an application for visualising data structures in users' arbitrary C code.
- Designed the software architecture including an interface with the GDB debugger via a Python Socket.IO server and a force-directed graph visualiser using D3.js.

Training Program (UNSW CSESoc)   *May. 2022 - Dec. 2022*

Trainee Team Lead

- Trained a team of 3 trainees on full-stack software development with the MERN stack (MongoDB, Express, React, Node).
- Guided the team to build and showcase a website application for users to create profiles and share their interests.

Projects

Structs.sh Algorithm Visualiser   🌐*Website*

Website   🐙*GitHub*

- Revamped the User Interface of the website to be more accessible and intuitive using Figma, React and Radix UI.
- Improved and created new visualisations for Binary Search Trees and Sorting Algorithms using SVG.js to assist students learning data structures.

Online Debugger   🌐*Website*

Website   🐙*GitHub*

- Developed a website interface with GCC and GDB using React.js and Tailwind CSS.
- Created an Express server which runs GCC and GDB as sub-processes to execute user code and send frame information as the response. Deployed using a Docker Container.

Password Manager

Browser Extension   🐙*GitHub*

- Built a browser extension to store and retrieve sensitive passwords using React.js and Material UI.
- Implemented Python Flask API routes to connect with an SQLite3 database.
- Encrypted user vaults securely using a 256-bit AES key derived from the PBKDF2 key derivation function, allowing data to be communicated safely over an unencrypted connection.

Technical Skills

Languages	JavaScript/TypeScript, HTML, CSS, Python, Java, C, SQL, Bash, Haskell, Rust
Technologies	React.js, Tailwind CSS, Next.js, Node.js, Express.js, MongoDB, PostgreSQL, Psycopg2, Flask, Jest
Dev Tools	Unix/Linux, Git, Docker