

LY MY HOA (HALEY) TRAN

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Third year Computer Science and Data Science student at the **University of Sydney**, and [Coding Fest 2026](#) finalist selected to showcase [FloodGuard](#), a reliability-aware flood decision-support prototype. Strong foundations in backend engineering, data structures and algorithms, operating systems, concurrency, and client-server systems. Built robust software in C, Java, Python, and JavaScript across Linux/Unix and full-stack environments, including FIFO-based IPC systems, versioned state management, JWT-secured APIs, and performance-conscious schedulers. Experienced in debugging complex codebases, writing maintainable code, and delivering high quality projects in both individual and team settings. Communicating clearly, able of learning new tools quickly and taking ownership.

SKILLS

- **Languages:** C, Java, Python, C++, JavaScript, SQL, R, HTML/CSS
- **Backend & Systems:** Node.js, Express, REST APIs, JWT authentication, Linux/Unix, concurrency, synchronisation, memory management, IPC, FIFOs, system calls
- **Software Engineering:** Data structures & algorithms, object-oriented design, testing, validation, debugging, performance analysis, CI/CD, Agile/Scrum
- **Tools & Frameworks:** POSIX threads, MongoDB, Socket.io, Git/GitHub, Docker, Make, GCC, Gradle, Jira, React(Vite)

PROJECTS

Concurrent Multi-Client State Synchronisation Editor (C, Linux) | [GitHub Link](#)

Tech: C, Linux/Unix, POSIX Threads, Mutexes, Signals/FIFOs, Concurrency, Role-Based Access Control, Make, GCC

- Supported multiple clients through signal-based handshakes and dedicated FIFO channels for isolated bidirectional IPC.
- Designed a versioned shared-state model with Optimistic Concurrency Control to reject stale writes and prevent lost updates under concurrent access.
- Implemented pthread-based session handling, mutex-protected mutation logic, and role-based access control to improve thread safety, correctness, and multi-user security.
- Validated reliability through concurrency stress testing and AddressSanitizer checks, demonstrating strong systems programming and debugging skills.

FloodGuard: Flood Awareness & Decision-Support | [GitHub Link](#) | [Demo Web Link](#)

Tech: React/Vite, Node.js, Python, REST APIs, Recharts, JSONL, rule-based risk logic, ML, automated testing

- Built a Node/React flood-awareness prototype covering 3 local areas, integrating rainfall, river, weather, and community-report signals into an explainable decision-support dashboard.
- Engineered reliability-aware ingestion and API logic with source freshness checks, fallback states, degraded-mode handling, provenance, and audit output for transparent risk interpretation.
- Developed rule-based concern scoring, notification logic, historical snapshots, feature exports, 90+ automated backend/contract tests, and a Python shadow-mode ML pipeline for future model calibration.

Real-time Communication Platform (MERN Stack) | [Github Link](#) | [Website Link](#)

Tech: JavaScript, React (Vite), Node.js, Express, MongoDB, JWT, REST APIs, Socket.IO

- Built a full-stack communication platform with JWT-authenticated sessions, protected routes, and persistent conversation/message models using React, Node.js/Express, and MongoDB.
- Developed secure REST APIs for authentication, session restore, user lookup, chat history retrieval, and message storage.
- Implemented Socket.IO-based real-time messaging with online presence, typing indicators, unread counts, and instant updates across active sessions, improving responsiveness and reducing polling-based refreshes.
- Refactored real-time socket state into a reusable context/provider, improving maintainability and making new live features easier to scale.

Virtual Scroll Access System (Java) | University Teamwork Project, Mark: 100 | [GitHub link](#)

Tech: Java, Gradle, JUnit, JSON, Jenkins, Docker, JaCoCo, Git/GitHub, Agile/Scrum

- Led a team of 4 as Scrum Master, coordinating sprint planning, branch-based development, code reviews, and weekly client demos for a production-style Java application.
- Built a CI/CD pipeline with Jenkins, Docker, Gradle, JUnit, and JaCoCo, supporting automated builds, testing, integration checks, and 75%+ code coverage.
- Delivered core workflows for upload/download, search, preview, page-table functions, validation, and record organisation in maintainable service-layer logic, improving testability and extensibility, achieving 100% feature completion.

EDUCATION | ACTIVITIES & LEADERSHIP

Education: The university of Sydney (Bachelor of Science - Computer Science and Data Science)

Relevant coursework: High Distinction - SOFT2412: Agile Software Development; DATA3888: Data Science Capstone. Distinction: COMP3520 - Operating Systems; COMP2123 - DSA; SOFT2201: Software Design and more.

Multi-university competition - Coding Fest 2026 Finalist

Peer Mentor: Mentored a group of 10 students, providing academic and administrative guidance while supporting their transition to university life. Shared weekly updates and participated in social activities to build a sense of community.

Computing Society: Participated in machine learning and AI workshops to deepen technical and teamwork skills.