

Yiyuan Li

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Summary

Motivated IT undergraduate from The University of Newcastle with hands-on experience in backend development, system design, and algorithm optimization. Skilled in building scalable solutions using Rust, Python, Golang, and C, with a focus on performance and efficiency. Proven through projects like an AI-powered learning assistant, a multithreaded HTTP server, and a lightweight CLI tool in Go. Eager to contribute technical expertise to innovative backend teams.

Education

The University of Newcastle, Bachelor in Information Technology Jan 2024 – Sep 2025

- **High Distinction:** Object-Oriented Programming
- **Distinction:** Data Structures & Algorithms, Advanced Database

PSB Academy, Singapore, Diploma in InfoComm Technology Jan 2023 – Nov 2023

Skills & Technologies

Technical Skills

Programming Languages: Golang, TypeScript, Rust, C++/C, Python, Java, SQL, Kotlin, SQL, JavaScript, C#

Database & Storage: SQLite, MSSQL, MongoDB, Vector Databases (ChromaDB)

Frameworks: Raylib, React.js, Node.js, MAUI

Operating Systems: Unix, Linux(Debian, Arch, Ubuntu), Windows, MacOS

Architecture & Performance System Design, Distributed Systems, API Structuring; Performance Optimization, Debugging, Unit Testing

Tools: Git, Docker, Linux (Debian, Ubuntu), GDB, Neovim, Makefiles, Jira

AI & ML Retrieval-Augmented Generation (RAG), LLM Workflows, Document Processing (PDF, TXT), Machine Learning, LLM Fine Tuning

Concepts: Distributed Systems, Algorithm Optimization, Data Structures (Trees, Graphs, Hash Tables),

Soft Skills

Team Collaboration, Problem solving, Mentorship, Adaptability, Communication, Leadership, Critical thinking, Time management.

Experience

Peer Assisted Study Sessions (PASS) Leader, The University of Newcastle – Feb 2024 – Present
Singapore

- Mentored peers in Data Structures, OOP, and Web Technologies, designing practice problems and code snippets to reinforce concepts.
- Delivered technical mini-lectures, improving students' understanding of complex algorithms and coding practices.

Cadet, Pisciner, Singapore University of Technology and Design (SUTD), École 42 Sep 2024 – March 2024
Programme – Singapore

- Mastered C programming, Linux, and Shell scripting through 16 projects (12 individual, 4 group) in 26 days.
- Enhanced collaboration and version control skills using Git in a team of 150.

Projects

Pew: Lightweight CLI for Code Dumping

Personal Project

- Built a Golang CLI tool to consolidate source code or directories into a single Markdown file for LLM workflows.
- Implemented file parsing, Gitignore-style pattern matching, and syntax-highlighted output with tree-style directory visualization.
- Tools Used: Golang, CLI Development, File I/O

Hiraku: AI-Powered Smart Learning Companion

The University of Newcastle

- Led backend development of an AI assistant using Python, Flask, and SQLite, integrating Retrieval-Augmented Generation (RAG) for document processing (PDF, TXT, etc.).
- Built a secure REST API with JWT authentication and optimized vector storage using ChromaDB.
- Tool Used: JavaScript/TypeScript (React 19, Next.js), Tailwind CSS, Python (Flask REST API, JWT), Database (SQLite)

Rust HTTP Server

Personal Project

- Developed a multithreaded HTTP/1.1 server in Rust supporting GET/POST, file uploads, and gzip compression.
- Added a User-Agent echo endpoint for debugging and optimized response efficiency.
- Tools Used: Rust, HTTP/1.1, Multithreading

Ray Tracer in Rust

Personal Project

- A high-performance ray tracer was developed from scratch in Rust. It features robust 3D vector mathematics, comprehensive operator overloading, and thorough unit testing. An efficient camera system was designed, incorporating viewport calculations and ray generation capabilities. Rust's type system was utilized to ensure strong compile-time guarantees and memory safety
- Tools Used: Rust, Linear Algebra, Computer Graphics, PPM Image Format

Ylib: C Standard Library Rewrite

École 42

- Ylib is a modern rewrite of the C Standard Library that aims to enhance performance and maintainability while adhering to the ANSI C standard. It includes core C library components such as string manipulation, memory management, I/O operations, and math functions.
- Tools Used: C, Makefile, GCC, GDB

Push Swap: Stack Sorting Algorithm

École 42

- Optimized integer stack sorting with minimal operations using C, achieving $\mathcal{O}(d(n + k))$ efficiency
- Tools Used: C, Makefile, GCC, GDB