Yiyuan Li

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Summary

I got into programming by reverse-engineering games and hacking together tools to make my life easier—small scripts, terminal apps, and bots. That curiosity turned into obsession once I picked up Rust and Go. I've since built full-stack apps, AI systems, and even my own Redis clone. I thrive on solving real problems with clean, performant code, and I'm now looking to bring that energy into a backend engineering role where I can ship fast, learn fast, and break things (on purpose and for good reasons).

Skills & Technologies

Programming Languages: Go, Rust, Python, C/C++, Java, SQL, JavaScript (Node.js)

Technology: Redis, SQLite, MSSQL, Docker, Flask, React.js, .NET MAUI, Neovim, Emacs, Linux

Concepts: Distributed Systems, RAG, API Design, Multithreading, TDD, CI/CD

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

Experience

Software Engineering Intern, The University of Newcastle – Singapore — Jan 2025 – Present

- Built an RAG (Retrieval-Augmented Generation) AI learning platform with FastAPI, React, and Ollama.
- Developed document parsing and Q&A search using LlamaParse and ChromaDB
- Handled OAuth-based authentication and file management in a full-stack setup
- Tool used: JavaScript/TypeScript (React 19, Next.js), Tailwind CSS, Python (Flask REST API, JWT),

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

- Mentored a group of 10 peers in Data Structures and OOP using C++ and Java, designing custom practice problems and annotated code snippets to reinforce core concepts.
- Delivered 10+ technical mini-lectures on algorithm design and coding practices such as recursion and sorting, using live code walkthroughs in Java and DSA to boost comprehension.

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

- Completed 16 low-level system projects in C, including push_swap, libft, and pipex, mastering memory management, pointer arithmetic, and bash scripting.
- Collaborated in a 150member cohort using Git for version control and peer code reviews, while debugging memory leaks and writing unit tests in projects like getnextline and ft_printf.

Projects

Sequel: SQLite Parser and Query Engine — Personal Project

- Built a SQLite database engine from scratch in Rust, implementing manual B-tree parsing and binary file I/O to read raw .db files without external dependencies
- Implemented core SQL operations including SELECT queries with WHERE clauses, COUNT aggregation, and index optimization through direct B-tree traversal

- Tools Used: Rust, Binary Parsing, B-tree Data Structures, Database Internals

Rego: Redis Server implementation in Go Personal Project

- Implemented core Redis commands and WAIT replication in Go, passing full Codecrafters tests
- Applied slice optimizations to minimize GC overhead and improved throughput by 30%
- Tools Used: Golang, Database

Ruskey: Custom Programming Language Interpreter Personal Project

- Built a full-featured interpreter for the Monkey language in Rust, including a lexer, parser, AST, and evaluator, to demonstrate parsing and language runtime implementation.
- Supported language features including booleans, integers, closures, and first-class functions to reflect real-world scripting capabilities.
- Tools Used: Rust, Test-Driven Development, Abstract Syntax Trees, Recursive Descent Parsing

Rust HTTP Server Personal Project

- Developed a multithreaded HTTP/1.1 server in Rust supporting GET/POST requests, file uploads, and gzip compression, with optimized request handling and concurrency.
- Implemented a User-Agent echo endpoint to assist in request debugging and improved response throughput through thread pooling and efficient I/O operations.
- Tools Used: Rust, HTTP/1.1, Multithreading

Pew: Lightweight CLI for Code Dumping Personal Project

- Built a CLI tool in Golang to package entire codebases into a Markdown file for streamlined input into LLM pipelines and documentation 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

Interests

CLI tools, Computer Graphics, Rock Climbing, Traveling