Hoang Trong Tan

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EDUCATION

National University of Singapore (NUS) Singapore

Bachelor of Engineering (Hons) Computer Engineering (GPA: 4.57 / 5) Aug 2020 - May 2024

- Notable courses: Competitive Programming, Parallel Computing, Programming Language Implementation, Distributed Systems, Big Data Systems, Software Engineering for Modern Application Platforms.
- Extracurricular Activities: NUS Bumblebee (Robotics Software Developer), VNCNUS (Secretary)

EXPERIENCE

ParallelChain Lab, Software Engineering Intern Singapore, Apr 2024 - Present

- Implemented and maintained the SDK for the public blockchain protocol of the company using Rust and WebAssembly.

Anduin Transactions, Full-stack Software Engineering Intern Vietnam, Jun 2023 - Aug 2023

- Managed development of a single-page web application for internal resources management, used by a team of 50 engineers, with Scala, FoundationDB and AWS.
- Implemented a lightweight embedded search engine utilizing Apache Lucene's indexing and tokenization features.
- Automated a data pipeline for large-scale production data migration, with effective fail-safe and recovery mechanisms. Achieved a 0% data-loss rate as monitored through Grafana over 2 weeks migration period.

TikTok, Backend Software Engineer Intern Singapore, Dec 2022 - Jun 2023

- Utilized Golang Generics to construct a standardized paradigm for new REST endpoints' development, removing 70% of boilerplate code in new services' codebase.
- Implemented an auto-testing script for test engineers to easily check regression issues on a data-intensive backend service, eliminating 95% of common regression bugs.

Polybee, Software Engineer Intern Singapore, May 2022 - Aug 2022

- Developed a new micro-drone navigation system using C++ based on VSLAM algorithm research papers and an Android mobile application for path planning. The system achieved a 90% success rate in test-flight operations.
- Initiated effort to create an in-house framework for drones navigation using ROS2 framework, migrating from TCP to UDP-based communication to remove single point of failure for the system.

NUS Department of Building, Research Assistant Singapore, May 2021 - Dec 2021

- Prototyped a smart ventilation system using MQTT protocol, C++, Arduino and Raspberry Pi, with 40% increase in control accuracy and 30% of energy consumption reduction compared to previous system.

NUS School of Computing, Teaching Assistant

- Led tutorial discussions and explained Computer Science and Software Engineering concepts involving C, Java and Swift in CS3217 (Software Engineering on Modern Application Platforms) and CS2040 (Data Structures and Algorithms).

PROJECTS

Cloud Jumpers (github.com/jushg/CloudJumpers)

- An online 1-4 players multiplayer platformer game for iPadOS built using Swift, Firebase and Django.
- Implemented an event-based central server system with a simple message queue, used extensively in the game engine to synchronize clients' information and deconflict players' actions.
- Designed the Game Engine API based on the Entity-Component-System (ECS) architecture, making it easily extensible for future development of new game modes and game features.
- Awarded **1st place** for NUS 20th STePs.

Goose - Golang Interpreter (github.com/jushg/goose)

- A compiler and a concurrent virtual machine interpreter for Golang sub-language, designed to operate within the confines of a single-threaded browser environment.
- Implemented important concurrency constructs in Golang such as goroutine, channel and waitgroup. Developed heap-based memory model with a stop-and-copy garbage collector using Cheney's algorithm.

Time-series Data Engine for Market Order (github.com/jushg/market_time_series_db)

- A proof-of-concept implementation of time-series database engine to support efficient large volumes insertion and query of market orders data, utilising various modern C++14 and C++17 features.
- Designed the system to store incoming data as log-based information, with persistent write to a disk partition after a predetermined time and size threshold.

SKILLS

- Programming Languages: C++, Golang, Scala, Typescript, Swift, C, Java, SQL, Python, Rust.
- Frontend Development: ReactJS, ScalaJS, Next.JS, Laminar.
- Backend Development: NodeJS, Spring Boot, Spark, Hadoop, Protocol Buffer, Kafka, gRPC, Redis.
- System and Hardware Development: Verilog (FPGA), Valgrind, Perf, Bash Scripting, CUDA, OpenMP, OpenMPI.
- Communication Languages: Vietnamese (Native), English (Native), Mandarin Chinese (Basic)