Hoang Trong Tan

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EDUCATION

National University of Singapore (NUS) Singapore

Bachelor of Engineering (Hons) Computer Engineering (GPA: 4.59 / 5) Aug 2020 - May 2024

- Notable courses: Competitive Programming, Parallel Computing, Optimisation Algorithms, Big Data Systems.
- Extracurricular Activities: NUS Bumblebee (Robotics Software Developer), VNCNUS (Committee Secretary)

EXPERIENCE

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

- Managed the full-stack development of a single-page web application for internal resources management, expected to be used by a team of 50 engineers, using Scala, FoundationDB and AWS. Implemented a lightweight embedded search engine using Apache Lucene's indexing and tokenisation features. Designed a fine-grained permission system utilising SpiceDB.
- 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 the 2 weeks migration period.

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

- Utilized Golang Generics to implement 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 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 the effort to create an in-house framework for drones navigation using ROS2 framework, migrating from TCP to UDP-based communication to remove the 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, Arduino and Raspberry Pi, with 40% increase in control accuracy and 30% of energy comsumption reduction compared to previous system.

National University of Singapore (NUS), Teaching Assistant Singapore

CS3217 (Software Engineering on Modern Application Platforms) Spring Semester - 2023

CP2106 (Independent Software Development Project) Summer - 2022

CS2040 (Data Structures and Algorithms) Fall Semester - 2022, Fall Semester - 2023

CS1010 (Programming Methodology) Spring Semester - 2022, Fall Semester - 2023

- Led tutorial discussions and explained Computer Science and Software Engineering concepts in classes involving C, Java and Swift to over 100 NUS students .

PROJECTS

Cloud Jumpers (View Project: 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.

Peggle Clone

- A clone of the Peggle game, developed using Swift and Realm. Built the 2D Physics Engine and Game Engine from scratch, which can handle collision detection and resolution between any two odd-shaped polygons.

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

- A proof-of-concept implementation of time-series data engine to support efficient insert and query with large volumes of market orders data, utilising modern C++14 and C++17 features.

ROS Wrapper for RRT algorithm(View Project: github.com/jushg/rrt_planner_ros)

- Created a ROS-Library Wrapper for the Rapidly-exploring Random Tree algorithm to plan collision-free paths in a 2D environment.

SKILLS

- Languages: Go, C++, Scala, Typescript, Swift, C, Java, SQL, Python, JavaScript.
- Libraries and Frameworks: ReactJS, ScalaJS, Next.JS, Laminar, NodeJS, Spring Boot, Flink, Spark, Hadoop, Protocol Buffer, Kafka, AWS EC2, gRPC, Redis, Kubernetes.
- System and Hardware Development: Verilog (FPGA), Valgrind, Perf, Bash Scripting, CUDA, OpenMP, OpenMPI.