

SHAO-KAI CHEN

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🔗 <https://github.com/justin0u0>

🔗 <https://blog.justin0u0.com>

EDUCATION

National Tsing Hua University

Bachelor's degree. Department of Computer Science.

September 2018 - June 2022

- Overall GPA: 3.91/4.3

Master's degree. Department of Computer Science.

September 2022 - Present

- Large-scale System Architecture Lab

WORK EXPERIENCE

Synology

September 2024 - Present

Product Developer (RDSS)

Dcard

July 2021 - June 2024

Backend Intern

- Adopted and implemented the Dinic algorithm for the Dcard matching system, ensuring maximum matching pairs and significantly improved the matching rate daily.
- Designed and implemented Twitter-like subscribed posts list, from cronjob based to CDC based solution, enabling users to receive subscription content updates faster, from 2 hours to a few second.
- Migrate services to new RabbitMQ clusters without downtime with a blue-green deployment approach. Introduced the RabbitMQ operator which allows developers to manage RabbitMQ resources using an Infrastructure as Code (IaC) approach.
- Proposed and introduced the Postgres exporter, a crucial addition to the observability system for both SREs and developers.
- Implemented dynamic size resolution on the image hosting system such that clients can specify the size they want without worrying about the actual size of the image. Also introduced edge-redirection and signed URL to increase the API performance and object storage security.
- Redesign and implement a low latency, high availability and flexible scope-based authorization system with a graceful, zero downtime migration from the legacy authorization system.

9Dynamics (startup company)

August 2019 - June 2021

Backend Engineer

- Built map-based social media with Go and NodeJS in microservices architecture.

NTHU Distributed System Course TA

January 2022 - June 2022

- Implement the Raft consensus algorithm for teaching purpose.

🔗 <https://github.com/justin0u0/raft>

- Design a real world like distributed system written in Go with microservices and monorepo architecture. It uses gRPC for inter-service communication, PostgreSQL and MongoDB for persistent storage, Redis for caching, MinIO for object storage, Kafka for asynchronous communication, OpenTelemetry for observability and Kubernetes for deployment.

🔗 <https://github.com/NTHU-LSALAB/NTHU-Distributed-System>

NTHU Operating System Course TA

2021 - 2023

- 3 years operation system course TA.
- Design Pthreads producer-consumer assignments for over 130 students.
- Answers questions about NachOS (an educational purpose OS) assignments including system call, memory management, CPU scheduling and file system design.

NTHU Introduction of Programming Course TA

January 2019 - June 2020

- 2 years introduction of programming course TA.
- Design programming assignments and tests for over 120 students.

PROJECTS

Parallel K-Means and Parallel Superpixels

🔗 <https://github.com/justin0u0/Parallel-KMeans>

🔗 <https://github.com/justin0u0/Parallel-SuperPixel>

- The parallel-programming course final project.
- Implement multi-thread, multi-process and GPU version of K-Means and Superpixels algorithm.

Hermes Routing Strategy Improvement

🔗 <https://github.com/justin0u0/NTHU-Database-Final-Project>

- Improve the routing strategy of Hermes Distributed Database to achieve higher throughput of transactions.
- Responsible for all improvement design and development in this project.
- Got **best implementation** and **best presentation** award in the NTHU Introduction to Database System course.

InfoLife

🔗 <https://infolife.justin0u0.com>

🔗 <https://github.com/justin0u0/info-life-server> / <https://github.com/justin0u0/info-life-platform>

- A posting and Q/A platform that supports Markdown and syntax highlight.
- Deploy on AWS EC2 (but closed now).
- Responsible for all backend development, deployment and 1/4 frontend development in this project.
- Got **third prize** in the NTHU Software Studio course.

AWARDS

- 2020 ICPC World Finals Invitational Contest **Rank 22**.
- 2019 ICPC Asia Pacific Taipei-Hsinchu Regional Contest **4th-Place**.
- 2019 ICPC Asia Kuala Lumpur Regional Contest **7th Place**.
- 2018 ICPC Asia Singapore Regional Contest **6th Place**.

TECHNICAL SKILLS

Programming Languages:

Go, C, C++, JavaScript, SQL, Python

Software & Tools:

Cloud Platforms: GCP, AWS

Database Systems: PostgreSQL, Redis, MongoDB, ElasticSearch

Message Queue Systems: RabbitMQ

Container Orchestration: Docker, Kubernetes

EXTRACURRICULAR

Design Data-Intensive Application Study Group

July 2021 - February 2022

- Read and studied the book "Design Data-Intensive Application".
- Self learning topics about distributed system including replication, partition, distributed transaction and consensus.

The Internals of PostgreSQL Study Group

February 2022 - May 2022

- Studied the internals of PostgreSQL, including memory architecture, query processing, concurrency control and WAL.

LeetCode Study Group - Leader

February 2021 - June 2021

- Leading a 16 students LeetCode study group.
- Select 6 problems every 2 weeks by topics and explain the idea, thinking process and implementation of those problems.

🔗 <https://justin0u0.notion.site/LeetCode-57d3fc3c39714bf7b37429a590a85824>

Meichu Hackathon Development Team - Leader

March 2020 - October 2020

- Leading a 8 students team to develop the main website and registration website for Meichu Hackathon.
- Use NuxtJS for frontend development and Moleculer (NodeJS microservices framework) for backend development.
- Host the website on Firebase and deploy the server on AWS EC2 using docker.

🔗 <https://2020.meichuhackathon.org/>