JINGZHI ZHANG

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EDUCATION

Carnegie Mellon University Pittsburgh, PA, USA
Master of Science in Information Networking Expected 05/2023
Curriculum: Distributed Systems, Cloud Computing, User Interface Design, Storage Systems
Honors: INI Director's Fellowship ($10,200)

Wuhan University Wuhan, Hubei, PRC
Bachelor of Science in Computer Science, GPA: 3.82/4.00 (Top 10%) 06/2021
Coursework: Operating Systems, Cloud Computing, Computer Networking, Data Mining, Web Development

TECHNICAL SKILLS

Programming	Go, Python, C/C++, Java, Shell; MySQL; Git, Make, Docker, Kubernetes, DevOps
Frameworks & Tools	gRPC, ProtoBuf, kingshard, RabbitMQ, etcd, Redis; JavaFx; Design Pattern, OOP; Linux Kernel, Linux Networking Stack, TCP/IP; Deep Reinforcement Learning, Tensorflow

PROFESSIONAL EXPERIENCE

Tencent - Game Artificial Intelligence Platform, Software Development Engineer Intern Shenzhen | 04/2021 - 07/2021

- Leveraged **gRPC for Go** to create **ProtoBuf**-defined **RESTful APIs** and **distributed middlewares** as microservices like **kingshard**, **RabbitMQ**, and **etcd** for **high-performance MySQL CRUD**, **cloud-ready message queuing**, and **strongly consistent configuration center**, respectively, which served **100+ users**.
- Handcrafted lightweight data **sorting** (like the usage of **min binary heap**), multithreaded **scheduling (goroutine)**, and **Redis LRU caches** to **reduce the execution time** and **memory footprints** considering **TB-level data**.
- To eliminate the laborious re-declarations of essentially the same, synchronized data in proto3, Go, and SQL, built a wheel for a team of **8** to **generate *.proto and *.go by the SQL schema**.
- Performed the **DevOps** teamwork involving Git, **Docker**, **K8s**, and the internal **Cloud Computing infrastructure**.

National University of Singapore - Research Intern Remote | 07/2020 - 02/2021

- Built a novel, game-theoretic model of the uncharted competition between **TCP CUBIC** and **Google BBR**.
- Established **testbeds** in **Python sockets** and **Linux kernel** as well as **gnuplot visualization** tools to conduct trials.
- Published a paper — A. Mishra, **J. Zhang**, M. Sim, S. Ng, R. Joshi, and B. Leong, "Conjecture: Existence of Nash Equilibria in Modern Internet Congestion Control." In *5th Asia-Pacific Workshop on Networking*. 2021.

Wuhan University - Research Intern Wuhan | 10/2018 - 06/2020

- Designed **Deep Reinforcement Learning (DQN)** congestion control schemes via **Tensorflow** (**TF-Agents**) to achieve **25% higher throughput** than Google BBR with nearly the same delay and loss rate.
- Published a paper — Z. Xia, J. Wu, L. Wu, J. Yuan, **J. Zhang**, J.Li, and D.Wu, "RLCC: Practical Learning-based Congestion Control for the Internet." In *2021 International Joint Conference on Neural Networks*. 2021.

COURSE PROJECTS

RFC-compliant FTP Client ☕ Design Pattern, Socket Programming, Multithreading | 03/2020 - 05/2020

- Led the construction of a full-size **FTP** client with **JavaFx** GUI following **factory pattern**, **observer pattern**, and **thread pool pattern**, which facilitated effective **collaboration** and ensured reliable **connection management**.
- Implemented the designed system by **Maven**, **Java socket programming**, **OOP** abstractions, **multithreading** mechanisms (dealing with various **deadlocks**), complying with **RFC** 959 and 3659.

std::map Implementation C++ Advanced Data Structures, Unit Testing, Interface Design | 12/2018 - 01/2019

- Wrote a **Red-black tree** in the style of **C++ generic programming** to provide a sorted associative container that stores **key-value pairs** and supports **search**, **removal**, and **insertion** operations in $\mathcal{O}(\log n)$.
- Comprehensively **tested** the behaviors of the map interface and the operations of the underlying Red-black tree, aiming at the **correctness** and **time & space cost** comparable to the standard implementation.