Chen Ding

Wuhan, China | P: +86 15927088151 | cding@hust.edu.cn

EDUCATION

Huazhong University of Science and Technology Wuhan, China
Joint Master and PhD Program in Computer System Architecture Sep. 2019 - Present
Cumulative Average Grade: 89.28/100
Relevant Courses: Distributed Systems; Storage Systems; Computer System Architecture

Huazhong University of Science and Technology Wuhan, China
B.Eng. in Computer Science and Technology Sep. 2015 – Jul. 2019
Cumulative GPA: 3.95/4
Rank: **3**/280
Relevant Courses: Operating Systems; Database Systems; Data Structure; Computer Organization and Architecture; Computer Network; Machine Learning

EXPERIENCE

Wuhan National Laboratory for Optoelectronics Wuhan, China
Research Assistant (Advisor: Prof. Jiguang Wan) Mar. 2020 – Present
- Designed and implemented an efficient LSM-based key-value store for systems with DRAM-NVM-SSD storage;
- Designed and implemented an efficient key-value store with hybrid tree index structure based on non-volatile memory;
- Designed and implemented a key-value store for modern Optane SSD;
- Designed and implemented an ML-based automatic knob tuning framework for distributed database (TiDB);

PingCAP Beijing, China
TiKV Intern Sep. 2019 – Feb. 2020
- Designed and implemented an ML-based autoscaler for TiKV (A distributed key-value storage engine);
- Predicted workload peaks with real-world data collected via machine learning algorithms to achieve high precision and recall;
- Added a scheduler in placement driver to schedule hot data to newly expanded nodes in advance before the predicted peak arrive;

Huawei Hangzhou, China
HPC Intern Oct. 2018 – May. 2019
- Designed and implemented a zero-copy userspace filesystem for HPC applications;
- Optimized the FUSE framework to reduce data copies between the kernel and user buffers;

SELECTED PUBLICATIONS

Journal Articles

[1] Chen Ding, Ting Yao, Hong Jiang, Qiu Cui, Liu Tang, Yiwen Zhang, Jiguang Wan and Zhihu Tan. "TriangleKV: Reducing Write Stalls and Write Amplification in LSM-tree Based KV Stores with Triangle Container in NVM." *IEEE Transactions on Parallel and Distributed Systems.* (Accepted, June, 2022)

[2] Chen Ding, Jiguang Wan, and Rui Yan. "HybridKV: An Efficient Key-Value Store with HybridTree Index Structure Based on Non-Volatile Memory." *Journal of Physics: Conference Series.* Vol. 2025. No. 1. IOP Publishing, 2021.

Patents

[1] Qiu Cui, Liu Tang, Feiyang Song, Chen Ding, Jiguang Wan. A kind of key-value store. Chinese patent CN111857582A, Filed July, 2020. Granted Oct, 2020.

SKILLS

Programming Languages
- Familiar (≥ 4 years of experience): C, C++, Python, Bash
- Intermediate (1 ~ 3 years): Go, Sql, Java
- Basic (≤ 1 year): Rust

Technologies

- **Databases:** MySQL (3 years), TiDB (3 years)
- **Key-Value Stores:** RocksDB (3 years), LevelDB (3 years)
- **File and Storage:** FUSE (1 year), SPDK(1 year)
- **Operating Systems:** Linux (6 years), Linux kernel development (1 year)
- **Tools:** VSCode (5 years), Git (4 years), Vim (4 years), GDB (2 years), Makefile (1 years), CMake (1 year), Perf (1 year)

Human Languages

- Chinese (Native), English (Proficient, CET-6 553)

PROJECTS

- **TriangleKV**: An efficient LSM-based key-value store for systems with DRAM-NVM-SSD storage
- **HybridKV:** An efficient key-value store with hybrid tree index structure based on non-volatile memory
- **OptaneKV**: A key-value store for Optane SSD
- **TiTune**: An automatic knob tuning framework for distributed databases
- **Autoscaler**: An ML-based autoscaler for distributed key-value stores
- **Z-FUSE**: A zero-copy userspace filesystem for HPC applications

AWARDS

- Outstanding Graduates (2019)
- National Encouragement scholarship (2016, 2017)
- Outstanding Freshman Scholarship (2015)