Liang Wang

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Education

Huazhong University of Science and Technology September 2021 – June 2024 (Expected)
MSc in Computer System Architecture, GPA: 3.71/4.0, Rank: 6/27 Wuhan, China

Wuhan University September 2017 – June 2021
B. Eng in Software Engineering, GPA: 3.83/4.0, Rank: 16/258 Wuhan, China

Papers

Gecko: Resource-Efficient and Accurate Queries in Real-Time Video Streams at the Edge

- **Liang Wang**, Xiaoyang Qu, Jianzong Wang, Guokuan Li, Jiguang Wan, Nan Zhang, Song Guo, Jing Xiao
- To appear in Proceedings of the 43rd Annual IEEE International Conference on Computer Communications (INFOCOM), 2024.

Shoggoth: Towards Efficient Edge-Cloud Collaborative Real-Time Video Inference via Adaptive Online Learning

- **Liang Wang**, Kai Lu, Nan Zhang, Xiaoyang Qu, Jianzong Wang, Jiguang Wan, Guokuan Li, Jing Xiao
- Proceedings of the 60th ACM/IEEE Design Automation Conference (DAC), 2023.

EdgeMA: Model Adaptation System for Real-Time Video Analytics on Edge Devices

- **Liang Wang**, Nan Zhang, Xiaoyang Qu, Jianzong Wang, Jiguang Wan, Guokuan Li, Jing Xiao
- Proceedings of the 30th International Conference on Neural Information Processing (ICONIP), 2023.

Internship Experience

Ping An Technology (Shenzhen) Co., Ltd. February 2022 – August 2023
Algorithm Engineer Intern Shenzhen, China

- Worked on the **MetaEdge** project. MetaEdge is an edge AI platform with a suite of tools to build edge-based AI applications.
- Constructed the KubeEdge cluster. Developed the custom Mapper to parse and format messages to facilitate communication between IoT devices and the edge. Interfaced the MQTT Broker to TDengine via Kuiper to enable data persistence.
- Deployed Sedna on the KubeEdge cluster. Created containerized vision AI applications with the Sedna edge-cloud collaborative incremental learning framework to adapt models running on edge devices over time. Implemented the Unsupervised Hard Example Mining algorithm to automatically obtain challenging images for incremental learning.
- Developed video analytics applications using the DeepStream SDK and incorporated model merging, enabling the processing of multiple video streams in real-time when deployed on NVIDIA Jetson boards.

Huawei Cloud Computing Technologies Co., Ltd. November 2020 – April 2021
Cloud Infrastructure Software Engineer Intern Shenzhen, China

- Developed **SFS Turbo 2.0**. SFS Turbo 2.0 is a distributed file system that provides high-performance, scalable file storage.
- Implemented POSIX I/O interfaces of lookup and read, ensuring seamless workflow for these operations across multiple nodes.
- Achieved non-blocking Inode ID generation during concurrent file creation, with reference to the distributed ID generator Leaf.
- Improved the system throughput by 2-3x by utilizing memory pool and coroutine libraries and upgrading SPDK/DPDK.
- Generated unit test cases (gtest) and analyzed performance issues (vdbench, mdtest, FlameGraph) for the system.

PingCAP, Inc. July 2019 – August 2019
PingCAP Talent Plan Training Program Beijing, China

- Implemented **Index Advisor** for **TiDB**, an open-source distributed SQL database.
- Designed the index recommendation algorithm, inspired by DB2 Advisor, and enabled TiDB client-side interaction.
- Proved the effectiveness of Index Advisor by conducting TPC-DS tests, and demonstrated a 20x performance boost for some SQL queries after creating the recommended index.

Competencies

Programming Languages: Go, C/C++, Rust, Python
Research Interests: Distributed systems, Storage systems, Database systems, Edge computing

Miscellaneous

Individual Projects: **LanguorDB** (LSM-tree store engine), **MayflyCache** (Distributed cache), **HBtree** (Hybrid DRAM-NVM index)
Finished **MIT 6.824**, **Stanford CS144** and **CMU CSAPP** computer course labs
Submitted 20+ PRs to well-known open-source software (TiDB, Sedna, etc.)