JIANAN YUAN

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EDUCATION

Shenzhen University *2022.09 - 2025.06*
M.E. in Computer Science & Engineering GPA: 3.81/4.0 (**Top 3%**)
Research Interests: computer architecture, learned index, key-value store, blockchain
Supervisor: Prof. Yi Wang and Assoc. Prof. Chenlin Ma

Shenzhen University *2018.09 - 2022.06*
B.E. in Computer Science & Engineering GPA: 4.13/4.5 (**Top 2%**)

HONOURS AND AWARDS

10th ASC Student Supercomputer Challenge, *Second Prize* *2022*
COMAP's Mathematical Contest in Modeling (MCM), *First Prize* *2021*
14th China College Student Computer Design Contest, *Second Prize* *2021*
Outstanding Undergraduates of Shenzhen University *2022*
Brilliant Star of Shenzhen University *2021*
Guoliang Chen Academician Scholarship *2020*

SKILLS

Programming Languages C/C++/Java/Go/Python.
Database KV databases (e.g., LevelDB/RocksDB), MySQL.
System operating system; storage architectures (flash memory, blockchain, and computational storage).
Network application layer protocols, TCP/IP protocol stack.
Git Collaboration team management for GitHub projects.

INDUSTRY INTERNSHIP

Tencent (Shenzhen), Mobile Terminal R&D Engineer *2021.05 - 2021.09*

- Led the development of the Tencent Video module in QQ Browser to enhance user engagement. Participated in analyzing user behavior characteristics while using the product.
- Utilized the mobile cross-platform framework, **Hippy**, to develop three business functionalities. Front-end development involved using **React-Redux**, and communication between front-end and back-end utilized the **tRPC framework** with **ProtoBuf** protocol. Implemented **data reporting** for the online product. Constructed a **CI/CD pipeline** to deploy and release products.
- Contributed over **6,000** lines of code, ranking 1^{st} among interns in the team. Addressed testing defects in the code, resulting in **zero** online faults. Improved engineering and collaboration skills.

PROJECTS

Artificial Intelligence Integrated into KV Database, author *2023.05 - 2023.07*

- Optimized the performance of the **LSM-tree**-based **key-value** database by leveraging the efficient retrieval, low storage overhead, and lightweight data loading characteristics of **learned indexes**.
- Modified **LevelDB**, transforming SSTables into **decoupled KV tables** for the convenience of training and inference of learned indexes. Introduced a **hybrid-model learned index** to replace the index block in SSTable, improving query performance while reducing storage overhead.
- Achieved a **46%** throughput increase, **20%** reduction in p99 tail latency, and a **50%** decrease in storage occupation compared to state-of-the-art solutions across multiple workloads and different traces.

SZU on Mobile, director *2022.04 - 2022.06*

- Led the development of the project, which provides **campus information notifications** and **course scheduling services** at Shenzhen University (SZU). Managed project progress, coordinated team efforts, and led front-end and back-end development of the information notification module.
- Developed a multi-threaded **crawler** for text extraction and conducted **data cleaning**. Used **MySQL** and **JSON** databases for data storage, **Redis** for caching, and implemented data interfaces using **SpringBoot**. Front-end involved using **JavaScript** for page development. Managed project with **Git**, and utilized **SMTP** protocol for alerting on runtime exceptions.
- Accumulated experience in web applications development, and deployment skills on Linux servers. Received the **second prize** in the South China Region in the WeChat Developer Competition.

PATENTS

[1] **J. Yuan**, J. Yang, C. Ma, Y. Wang: A Blockchain Based Data Management Method, Device, and Electronic Equipment, ZL202211284663.1

PUBLICATIONS

[1] **J. Yuan**, H. Liu, S. Wu et al., "Work-in-Progress: Lark: A Learned Secondary Index Toward LSM-tree for Resource Constrained Embedded Storage Systems", International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS), 2022, pp. 11-12.
[2] Coming soon...
[3] Coming soon...
[4] Coming soon...