Qiyang He

qiyanghe1998@outlook.com · qiyanghe1998 · homepage

Education

Purdue University, West Lafayette, IN — Jan. 2021 – Present
Ph.D. student in Computer Science *GPA: 4.0 / 4.0*

Southern University of Science and Technology (SUSTech), Shenzhen — Sep. 2016 – Jul. 2020
B.Eng in Computer Science and Engineering *GPA: 3.86 / 4.00*

University of California, Irvine (UCI), Irvine, CA — Jul. 2019 – Sep. 2019
Visiting Student in Information and Computer Sciences (ICS)

Project

Efficient Incrementalization of SQL Queries with Nested Aggregates — Apr. 2021 – Now
Mentor: **Prof. Tiark Rompf** Purdue University
Build novel tree-based index structures to improve the incrementalization efficiency of nested-aggregate queries by up to 1000x over the **DBToaster**. A paper has been accepted by SIGMOD 2022 (**Scala**, **SQL**, **Pandas**)

Implementing a distributed key-value store system based on dslabs — Jan. 2021 – May. 2021
Lecturer: **Prof. Yongle Zhang** Purdue CS 505
Implement exactly-once **RPC** protocol, **Primary-Backup** protocol, **Multi-Paxos** (leader election and consensus), and **Sharding** operations and transactions by two-phase commit protocol based on dslabs (**Java**)

Benchmark for auto-scheduler of machine learning compiler — Jul. 2020 – Dec. 2020
Mentor: **Fengwei Yu** SenseTime
Do benchmark for auto-schedulers of neural network, including **Ansor**, **autotvm**, **Pytorch** and **FlexTensor** (**PyTorch**, **C**, **Python**, **TVM**)

Improving Maximum Inner Product Search by GPU — Nov. 2019 – Jun. 2020
Mentor: **Bo Tang** & **Xiao Yan** SUSTech
Implement product quantization (PQ) and residual quantization (RQ) for similarity search of high-dimension vectors on CPU and GPU, which is comparable with **Faiss** in testing (**C++**, **Python**, **CUDA**)

Improving data ingestion performance in Apache AsterixDB — Jul. 2019 – Sep. 2019
Mentor: **Prof. Michael J. Carey** UC Irvine
Decouple the data intaking and data parsing in the data feed of AsterixDB. Make the data parsing parallel and get about 2x over the current AsterixDB (**Java**)

Publication

Reachability types: tracking aliasing and separation in higher-order functional programs
Yuyan Bao, Guannan Wei, Oliver Bračevac, Yuxuan Jiang, Qiyang He, Tiark Rompf Proceedings of the ACM on Programming Languages, Volume 5 (OOPSLA 2021).

Honors and Awards

1 Gold, 1 Silver and 2 Bronze Medals in ACM-ICPC Asia Regional Contest — 2017 – 2018
Bronze Medal, National Olympiad in Informatics, China — Jul. 2015

Technical Skills

Programming Languages: C, C++, Java, Python, Scala, SQL, Bash
Systems and Libraries: PyTorch, Pandas, Git, Faiss, Latex, TVM