Hongbin Zhong

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EDUCATION

Georgia Institute of Technology Aug 2024 - Jun 2029
Ph.D in Computer Science Atlanta

Northeastern University 985 Sep 2020 - Jul 2024
Bachelor in Computer Science China

PUBLICATION

[SIGMOD 2024] PECJ: Stream Window Join on Disorder Data Streams with Proactive Error Compensation.
Xianzhi Zeng*, Shuhao Zhang(Corresponding author), **Hongbin Zhong**, Hao Zhang, Mian Lu, zhao zheng, Yuqiang Chen

[code] **[paper]**

RESEARCH EXPERIENCE

Columbia University Jul 2023 - Nov 2023
Research Assistant New York City, NY
Adviser: ***Eugene Wu***

- *FADE Project - Query Explanation (Answering "Why" Made Fast)*
  - explore and implement how interventions evaluation can be adopted to work with sparse arrays without compromising performance
  - Optimized the generation of Interventions, significantly reducing disk I/O and allowing most of the required data for the evaluation phase to be directly accessed within the CPP file.
  - Apply SIMD and MultiThreading to the Evaluation loops of Sparse Matrix data structure.
  - Finished numerous benchmarks and completed a significant number of experiments.

Rutgers University Jul 2023 - Sep 2023
Research Assistant New Jersey
Adviser: ***Dong Deng***

- *Find similar data text segment between some documents*
  - Implement Baseline: <DataPortraits> **[code]**
  - Implement Baseline(Python to C++): <SlimPajama> **[code]**
  - Assisting In Some Running Experiments: Such as running slimpajama and get results.
  - Optimizing Parallelization: Optimize parallelization for group function.

Nanyang Technology University/4paradigm Company Jan 2023 - Jul 2023
Research Assistant Singapore
Adviser: ***Mian Lu*** &***Shuhao Zhang***

- *High-Accuracy Low-Latency Stream Window Join with Out-of-Order Data Arrival, Stream Processing System* **[code]**
  - Implement Baseline: ICDE 2016<MutipleWay Sliding Window Stream Join> **[code]**
  - Finding And Organizing Datasets: using scripts to process the datasets for subsequent experiments
  - Help implement Bayesian variational inference (transformer + Mathematical method)
  - Optimizing Intra-Window Join: Optimizing Intra-Window Join using adapative filters.
  - Assisting In Running Experiments Scripts: Besides, modifying scripts to enhance the visual

representation of experimental data.

WORK EXPERIENCE

InfiniFlow Mar 2024 - Apr 2024

Vector Databases Engineer

- InfinityDB:
  - Improving the mechanism for recording the oldest visible timestamp to avoid unnecessary access to txn_map.
  - Optimizing the cleanup process to allow bulk deletion of files and records, potentially saving significant file IO operations. Additionally, bulk deletion from the buffer manager can reduce lock conflicts.

4paradigm Feb 2024 - Apr 2024

Software Enginner remote

- AI Assistant Server Development:
  - Significantly improved user access speed by refining browser cache systems.
  - Advanced the AI interaction algorithms, reducing system overhead.
  - Enhanced user interface responsiveness for seamless operation on various devices.
- Credit Community Server Development:
  - Enriched community features with new backend logic implementations.
  - Deployed timed tasks for dynamic community data updates, leveraging asynchronous programming.
  - Integrated a more intuitive data analysis dashboard to track community engagement metrics.
  - Optimized database interactions to handle increased user traffic efficiently.

Meituan(Top-tier internet company in China) Apr 2022 - Sep 2022

Software engineer Beijing

- Meituan's App Short Video project**(I built the majority of the foundation for the entire app)**
  - Developed log->kafka->hive to remotely report user video watching behavior to Kafka and synchronize data to Hive tables for recommendation algorithm training.
  - Improved user experience in poor network environments or for first-time visitors by pulling various data source videos using Crane scheduled task to refresh the data periodically.
  - Through distributed caching Cellar, requiring migration of data from Hive data warehouse to a distributed cache Key-Value database due to significant user base growth.

PROJECTS

Xv6 operating system kernel

Xv6 is a unix-like operating system developed by MIT based on Unix v6. After reading the source code and implementation principle of Riscv version XV6, the following functions have been optimized and expanded

TCP protocol

The complete TCP protocol is implemented, and the performance is tuned to TCP close to that of Linux kernel, including memory-based ByteStream, stream reassembly. This is also the CS144 experiment of UCB [code]

Bustub

Bustub is an open source disk-based relational database of CMU Database Group. It has completed the functions and expansion of the following core components on the basic framework of bustub.[code]

INTEREST/TALENT

- Machine Learning Systems(Model Inference, Model Compression, Distributed Training)
- Data-Intensive Systems(Data Analytical Systems, Database Systems)

OTHER

- **Programming language Or Api:** C/C++, CUDA, MPI, OpenMP, Java, Rust, Python
- **Languages**: English(TOEFL 104), Chinese(Native)