

Zhanghan Wang

University of Science and Technology of China – Hefei – China

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Education

University of Science and Technology of China

September 2018 – June 2022

Undergraduate

Major in Computer Science

○ **Performance:** Major: 4.09/4.3 or 94.0/100 , Overall: 4.01/4.3 or 92.7/100, Ranking: 1/200

○ **Core Courses:**

- Operating system principle and design - 97%
- Introduction to Computer System - 100%
- Programming I, II - both 100%
- Principles of Computer Organization - 91%
- Analog and Digital Circuits - 91%
- Data Structure - 90%
- Mathematical Logic - 98%
- Graph Theory - 92%
- Algebraic Structure - 93%
- Linear Algebra - 100%
- Probability and Statistics - 95%

Standard English Test

TOEFL: *Total*: 98/120, *Reading*: 27/30, *Listening*: 23/30, *Speaking*: 23/30, *Writing*: 25/30

Academic Experience

Distributed SQL Engine Optimization

February 2021 - Present

- **Advisor:** Prof. Cheng Li (China, USTC)
- **Introduction:** Trino is a high performance, distributed SQL query engine for big data. However, queries with left-deep-join pattern can still be significantly optimized. We are now focusing on optimizing this under the distributed scenario.

Reinforced Causal Explainer for Graph Neural Networks

December 2020 - February 2021

- **Advisor:** Dr. Xiang Wang (Singapore, NUS)
- **Introduction:** Addressing why graph neural networks (GNNs) give such predictions is significant for putting them to practical use. In this work, we take advantages of reinforcement learning to explain GNN predictions.
- **Contribution:**
 - Implementation of the main codes
 - Analysis and Visualization of results

Deep Left Join Query Optimization in OpenLooKeng

October 2020 - December 2020

- **Advisor:** Prof. Cheng Li (China, USTC)
- **Introduction:** Deep-left-join-like queries are very common in database queries. However, this pattern can't be recognized by OpenLooKeng's optimizers. We proposed a greedy algorithm to figure out the best join order based on the sizes of input tables etc. We also try to reuse the intermediate result to accelerate queries. In the end, we achieved a 1.36 times optimization and won the first prize of the optimization contest.
- **Contribution:**
 - Benchmark testing and results visualization
 - Implementation of left-deep-join optimizer

Graph DataBase File System

March-July 2019

- **Advisor:** Kai Xing (China, USTC)
- **Introduction:** The most usual file systems are based on directory structures, which sometimes might be inconvenient. Based on Neo4j, a graph database, we proposed a novel Graph DataBase File System (GDBFS) to connect files according to their relevancy degree, in which we take the inner features of files, like keywords of texts, into account. We also provide a delicate web UI for better user experience.
- **Contribution:**
 - The FUSE(Filesystem in Userspace) implementation of GDBFS
 - Framework of the web UI based on Django

Scholarship and Awards

Scholarship

- 2018-2019 National Scholarship October 2019
- 2019-2020 National Scholarship October 2020

Awards

- The First Prize of OpenLooKeng(a distributed SQL query engine) Optimizatoion Contest, in CCF Computing Intelligence Contest (BDCl) January 2021
- The Third Prize of International Parallel Computing Challenge (IPCC) December 2020
- MCM/ICM Mathematical Modeling Contest, Meritorious Winner(6%) Spring 2020

Technical Skills

Programming Languages

- C, C++, Python, Java, Bash, Verilog, Javascript

Interests

Distributed System

- Accelerating distributed system through better scheduling.

Deep Learning

- Graph Neural Network (GNN) and its interpretability.