

Yue Han

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Education

Tsinghua University

PhD in Computer Science and Technology, GPA – 3.92/4

2019–2024

Harbin Institute of Technology

Bachelor of Computer Science and Technology, GPA – 90.6/100

2015–2019

Work Experience

Huawei Technologies Co., Ltd. - Gauss Lab Database Management System Engineer

Jul. 2024–Present

- Responsible for the multi-threaded parallel execution framework of the database compute engine.
- Developed and delivered features including primary-standby parallel computing, shared-disk distributed query processing, distributed cache affinity, adaptive degree of parallelism of query, and thread resource management. Improved the scalability of multi-core parallel computing and strengthened the quality and robustness of the parallel execution module.

Research & Projects

AI-Based Optimization of Database Materialized Views - Ph.D. Research Project

Tsinghua University

- Designed the architecture of an autonomous materialized view system.

Sep. 2019–Jun. 2024

Leveraged recurrent neural networks to estimate the benefits of materialized views based on historical query workloads, and designed a reinforcement learning model to recommend high-benefit materialized views.

- Designed a dynamic materialized view system for evolving query workloads. Developed a graph-based materialized view modeling method and a graph neural network-based model for materialized view benefit estimation and selection, improving both materialized view utility and algorithmic efficiency.
- Published three papers in ICDE, a top-tier international database conference, and one paper in TKDE, a top-tier journal. Both are ranked CCF-A.
- Participated in a collaborative Huawei database self-tuning project and was responsible for the research and development of materialized view algorithms.

Database Query Optimization Based on Pre-trained Large Language Models

Tsinghua University

- Designed a framework for adapting pre-trained large language models to

Mar. 2023–Jun. 2024

database query optimization, including prompt templates and model fine-tuning pipelines.

- Evaluated the performance, stability, and generalization ability of fine-tuned pre-trained large language models on query optimization tasks.

Database Query Optimization Based on Deep Reinforcement Learning - Graduation Project

HIT

- Proposed an autonomous materialized view management system, AutoView, with DRL.

Dec 2018–Jun 2019

- Designed a sequence-to-sequence model, Encoder-Reducer, to estimate cost and benefit of using MVs to answer a query.
- Proposed a serializing and encoding method to encode query's features.
- Proposed a reinforcement model to select MVs for materialization, and integrated the vectors outputted by the Encoder-Reducer model into the model.

Research of Query and Analysis on Knowledge Graph

HIT

- Supported by Student Innovation Training Program of Honors School of HIT.

Dec 2016–Mar 2018

- Proposed an efficient subgraph matching approach based on graph database for complex query on RDF data.
- Designed an efficient query graph simplifying and memory management strategy to accelerate the process of subgraph matching.
- Research Paper *Answering Complex RDF Query by Subgraph Matching on a Single Machine* was included by proceedings of The 10th Student Academic Forum of Harbin Institute of Technology and obtained the Second Prize.

Intelligent Personal Assistant - Developer

HIT

- Developed in Harbin Institute of Technology International Summer School—

Jul 2017

“Cutting edge of Computer Science and Technology-Sensing the world and making life intelligent project”.

- Developed the mail and image searching function in the application.
- Achieved the Best Creating & Idea award.

Friend Reader Application - Developer

HIT

- An application to grab, integrate and analyze the activities of friends on multi social platform.

Fall 2017

- The application can analyze the activeness and interests of friends. It can also build a social network and analyze the hot topics between friends.

Publications

[1] MVGPT: Generative Materialized View Forecasting. (*ICDE 2026, CCF-A*)

Yue Han, Guoliang Li, Wenchun Xu, Xianglei Ran, Zeya Gong, Wei Guo, Guang Qiu, Bo Zheng

[2] Dynamic Materialized View Management using Graph Neural Network. (*ICDE 2023, CCF-A*)

Yue Han, Chengliang Chai, Jiabin Liu, Guoliang Li, Chuangxian Wei, Chaoqun Zhan

- [3] AutoView: An Autonomous Materialized View Management System with Encoder-Reducer. (*TKDE 2022, CCF-A*)
Yue Han, Guoliang Li, Haitao Yuan and Ji Sun
- [4] An Autonomous Materialized View Management System with Deep Reinforcement Learning. (*ICDE 2021, CCF-A*)
Yue Han, Guoliang Li, Haitao Yuan and Ji Sun
- [5] openGauss: An Autonomous Database System. (*VLDB 2021, CCF-A*)
 Guoliang Li, Xuanhe Zhou, Ji Sun, Xiang Yu, **Yue Han**, Lianyuan Jin, Wenbo Li, Tianqing Wang, Shifu Li
- [6] Automatic View Generation with Deep Learning and Reinforcement Learning. (*ICDE 2020, CCF-A*)
 Haitao Yuan, Guoliang Li, Ling Feng, Ji Sun, **Yue Han**
- [7] A Survey of Machine Learning-Based Database Technologies. (Chinese Journal of Computers 2019, CCF-A)
 Guoliang Li, Xuanhe Zhou, Ji Sun, Xiang Yu, Haitao Yuan, Jiabin Liu, **Yue Han**

Patents

- [1] A Method for Querying Data in a Database, Guoliang Li; **Yue Han**, CN113515539A

Experience

Intern, Intelligent Analytics Engine Department, Alimama

Alibaba

- Conducted research on key technologies for autonomous materialized views. 2022.9–2023.3
- Designed algorithms to recommend materialized views for optimizing queries in Alimama advertising businesses, such as audience targeting and user profiling queries in Damopan platform.
- Developed materialized view generation algorithms based on generative models and time-series regression models to predict user queries and recommend materialized views.

Students' Life Department, Graduates Union of Tsinghua University - Minister

Tsinghua University

- Developed and operated the "Shui Mu Hui" WeChat mini-program, including both front-end and back-end development, as well as database management. Created a campus feedback system and automated operational weekly reports, contributing to the overall information system of the university. Established an all-in-one campus life service platform. 2022.1–2023.1
- Enhanced the functionality of the "Shui Mu Hui" mini-program by optimizing the review and rating feature, integrating on-campus store information, and implementing the electronic "Shui Mu" card system. Planned and executed activities related to lost and found items, as well as promoting friendly transactions. Organized the 2022 Graduation and Flea Market events.
- Awarded the title of Outstanding Student Leader of Tsinghua University in 2022.

Social Practice

Singapore and Malaysia

- Visit NUS, etc. and have discussion and interview about the topics of urban governance and talent cultivation. Winter 2023

Tanzhen Technology Review Club, Graduate Student Union - Team Leader

Tsinghua University

- Operated and maintained the "Micro Salon" mini-program, an on-campus academic exchange platform for faculty and students. Organized six academic discussion group activities on frontier technologies. 2021.6–2021.12
- Awarded the "Graduate Student Star" title by the Graduate Student Union.

C++ Programming - Teaching Assistant

Tsinghua University

- Provided in-class Q&A, support lab sessions, group discussions, and graded course projects. Spring 2021–Spring 2023

Ph.D. Summer Practice

Dishang Group, Weihai, Shandong

- Conducted project investigation, algorithm design, and experiments for pre-balancing garment factory assembly lines. 2021.7–2021.8
- Designed an automatic assembly line pre-balancing algorithm to replace the manual pre-balancing process. The proposed solution achieved a line balancing rate of 80%, meeting the practical requirements of the factory.
- Designed an algorithm to quantify workers' skill proficiency, improving upon traditional experience-based methods. By eliminating 87% of redundant decision variables, the algorithm significantly accelerated problem solving, reducing computation time from hours to minutes.
- Served as Secretary of the Party Branch of the Weihai Practice Team and organized multiple red-themed educational activities.

Byte Camp - Participant

ByteDance, Beijing

- Conducted project of predicting Douyin users' video click behavior. 2019.8
- Analyzed and cleaned data, and used a logistic regression model to predict users' likelihood of clicking videos, thereby recommending the video preloading order.

USC Summer Research Internship - Visiting Scholar

University of Southern California

- Researching on reasoning on knowledge graphs. Summer 2018

Cambridge Summer Exchange Programme - Exchange Student

Cambridge

- Researched and Surveyed 60 persons about Social Inequality in Britain and make the research report. Aug 2017
- Achieved the scholarship for the excellent performance as "Best Individual".

High Level Programming Language (C) Course - Teaching Assistant

HIT

- Class and Experiment Q&A . Fall 2016/2017

HIT ACM Summer Training 2017 - Lecturer

HIT

- Lectured about search and divide and conquer algorithm. Summer 2017

The 3rd International Cultural Carnival of Harbin Institute of Technology - Volunteer

HIT

- Helped Ethiopian students organize booth activities and dance performance. Jun 2017

Selected Honors & Awards

Competition.....

2017: Gold Medal, The ACM-ICPC Asia Regional Contest Shenyang Site (top 10% out of 180 teams)

2017: Gold Medal, CCF Collegiate Computer Systems & Programming Contest (Rank 12 among 404 competitors)

2017: First Prize, Contemporary Undergraduate Mathematical Contest in Modeling (top 292 out of 33062 teams)

2016: Gold Medal, Northeast Collegiate Programming Contest (top 10%)

Scholarships & Honors.....

2019: Best 10 Graduates of Honors School Harbin Institute of Technology (top 10 out of 142 students)

2017: China National Scholarship (highest level of scholarship set by the government of China)

2017: Provincial-Level Merit Student in Heilongjiang province (top 3 out of 414 students)

2016: CASC Scholarship (top 10 out of 714 students)

2016: First-class People's Scholarship (top 5% out of HIT students)

Technical Skills

Languages: C/C++, Python, Java, MATLAB, L^AT_EX, Pascal, BASIC

Experiences: Linux, Git, Hadoop, Spark, PyTorch