Xiaoke Zhu

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Education

Beihang University Beijing, China

SKLSDE (State Key Laboratory of Software Development) *Sep. 2020 - Present*

- Ph.D. Candidate in Software Engineering
- Advisor: Prof. Wenfei Fan (Foreign Members of the Chinese Academy of Science, ACM Fellow)
- Expected date of the PhD graduation: 06/2025

Yunnan University Kunming, Yunnan

National Pilot School of Software *Sep. 2017 - Jun. 2020*

- M.Sc. (Engg.) in Software Engineering.
- Advisor: Prof. Shaowen Yao.
- Secondary advisor: Prof. Wei Zhou.

Guilin University of Electronic Technology Guilin, Guangxi

Computer Engineering Dept. *Sep. 2013 - Jun. 2016*

- B.E. in Computer Science and Engineering

Publications

- **Xiaoke Zhu**, Min Xie, Ting Deng and Qi Zhang. HyperBlocker: Accelerating Rule-based Blocking in Entity Resolution using GPUs. PVLDB 2025.
- Yang Liu, Wenfei Fan, Shuhao Liu, **Xiaoke Zhu** and Jianxin Li. A Single Machine System for Querying Big Graphs with PRAM. PVLDB 2025.
- **Xiaoke Zhu**, Qi Zhang, Wei Zhou and Ling Liu. Deep Learning Service for Efficient Data Distribution Aware Sorting. BigData 2024.
- **Xiaoke Zhu**, Yang Liu, Shuhao Liu and Wenfei Fan. MiniGraph: Querying Big Graphs with a Single Machine. PVLDB 2023.
- Ting Deng, Wenfei Fan, Ping Lu, Xiaomeng Luo, **Xiaoke Zhu**, and Wanhe An. Deep and Collective Entity Resolution in Parallel. ICDE 2022.
- **Xiaoke Zhu**, Qi Zhang, Taining Cheng, Ling Liu, Wei Zhou, and Jing He. DLB: Deep Learning Based Load Balancing, CLOUD 2021.

Manuscripts

- Wenchao Bai, Wenfei Fan, Shuhao Liu Kehan Pang, **Xiaoke Zhu** and Jiahui Jin. GPU-Accelerated Graph Cleaning with a Single Machine. SIGMOD 2025 (under review).
- **Xiaoke Zhu**, Min Xie, and Ting Deng. Acceleration of Rule-Based Blocking in Entity Resolution. TKDE 2025 (under review).

Research Experience

My research are broadly in the field of graph computing and databases, with an emphasis on optimizing runtime systems for shared-memory and heterogeneous architectures of CPUs/GPUs. This work has been published in SIGMOD, VLDB, ICDE, BigData, CLOUD. A brief summary of my past work can be found below.

Single Machine Graph Processing

- I have worked on building a high-level programming model and runtime system that can execute applications on shared-memory or out-of-memory architectures with CPUs or GPUs. For out-of-core graph analytics (e.g., PageRank, SSSP), I improved I/O efficiency, and for graph mining (e.g., Graph Data Cleaning, Pattern Matching), I optimized GPU performance. Relevant results were published in [VLDB23, SIGMOD25, VLDB25]

Parallel Data Cleaning

- I have worked on improving the performance of data cleaning systems on modern hardware like GPU or on distributed cluster. I have also compared different parallel runtime systems for data cleaning, and identified their performance bottlenecks. Relevant results were published in [ICDE22, VLDB25, TKDE25, SIGMOD25]

AI4DB

- I have leverages machine learning and deep learning model to improve tasks traditionally handled by human database administrators or classical algorithms, enabling more efficient data processing and resource management. Specially I have designed learned models for sorting, load balancing, and scheduling. Relevant results were published in [CLOUD21, VLDB23, BigData24]

Work Experience

Research Intern, Shenzhen Institute of Computing Sciences *Sep. 2021 - Jan. 2025*

- Engaged in research related to databases, data quality, graph computing systems, and GPU-accelerated algorithms. Contributed to several academic papers (2×VLDB 2025, VLDB 2023, and Sigmod 2025), 3× patents and collaborated on algorithm design for database products such as RockDQ and Fishing Fort.

Teaching Fellow, Yunnan University *Sep. 2018 - Feb. 2019*

- Undergraduate Course: Big data mining and analysis

Research Assistant, Yunnan Radio Monitoring Center & Yunnan University *Sep. 2017 - May 2020*

- Use deep learning models to classify and detect abnormal signals in radio monitoring. The main tasks include data preprocessing, analysis, simulation, deep learning-based detection, real-time monitoring, and evaluation, ensuring effective identification of abnormal signals.

Skills & Others

Programming C/C++, CUDA, Python, Bash & Linux, SQL,

Tools Git, CMAKE, LaTeX, MPC, Spark, Hadoop, Docker

Services

Subreviewer HPCC 2019, ICDE 2024