# Dayi Fan

## Personal Info


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## Research Interest

My current research focuses on parallel computing, algorithm engineering, and data management in computer systems. I have developed state-of-the-art parallel solutions for three fundamental problems — tree edit distance, graph maximum matching, and bipartite weighted matching — by combining innovative algorithm design with efficient hardware implementation on multicore CPUs and GPUs.

I am open to ML-related research topics and have hands-on experience with Transformers models. I am also interested in system-level challenges for AI and data-intensive applications, including accelerating model training and improving data retrieval efficiency.

## Education

2022.01-CURRENT Ph.D. candidate in Computer Science and Engineering,
The Ohio State University, U.S.
Advised by **Prof. Xiaodong Zhang**
Topic: *Parallel Algorithm Design and its Hardware Acceleration for Irregular Datacentric Applications*

2021.01-2021.05 Undergraduate Exchange in Computer Science,
National University of Singapore, Singapore
Advised by Prof. Trevor E. Carlson
Project: LSTM implementation with spiking neural networks

2017.09-2021.07 B.Eng. in Microelectronics Science and Engineering,
Southern University of Science and Technology, China
Advised by Prof. Quan Chen
Project: RRAM-based neural network optimization

## Conference Paper

2025 X-Blossom: Massive Parallelization of Graph Maximum Matching [PDF][Code]
**Dayi Fan**, Rubao Lee, Xiaodong Zhang
The 51st International Conference on Very Large Databases (*VLDB 2025*)

- Developed the first large-scale parallel computation framework for graph maximum matching; Proposed new recursion-free sequential and parallel Blossom algorithms
- Accelerates graph applications in quantum computing, social platforms, and financial systems

2024 X-TED: Massive Parallelization of Tree Edit Distance [PDF][Code]
**Dayi Fan**, Rubao Lee, Xiaodong Zhang
The 50th International Conference on Very Large Databases (*VLDB 2024*)

- Developed the first large-scale parallel computation framework for tree edit distance; Proposed a new algorithm for TED computation that breaks data dependencies in dynamic programming
- Benefits ML evaluation workflows in natural language processing, code analysis, and structured data comparison

## Journal Article

2024 RR-Compound: RDMA-Fused gRPC for Low Latency, High Throughput, and Easy Interface [PDF]
Liang Geng, Hao Wang, Jingsong Meng, **Dayi Fan**, Sami Ben-Romdhane, Hari Kadayam Pichumani, Vinay Phegade, Xiaodong Zhang
IEEE Transactions on Parallel and Distributed Systems (*TPDS 2024*)

## Academic Service

*VLDB 2027* Shadow Program Committee Reviewer

## Teaching Experience

2022.01-2024.05 Graduate Teaching Assistant
CSE 3421 Computer Architecture
The Ohio State University

## Academic Performance

Postgraduate GPA: 3.951/4.000
Undergraduate GPA: 3.90/4.00

2021.06 Excellent Graduate Award
Southern University of Science and Technology

2017-2020 First Class Student Scholarship (Top 5%, three consecutive years)
Southern University of Science and Technology