Sijie Lan

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RESEARCH AREAS

My research focuses on I/O stack optimization, including storage systems (such as F2FS and Btrfs) and storage devices (ZNS and FDP). I also study storage systems to improve efficiency and reliability. My goal is to develop reliable and efficient storage systems that fully utilize underlying device features.

EDUCATION

The Pennsylvania State University Aug, 2021 – May, 2026
Ph.D. student in Computer Science and Engineering (advisor: Prof. Mahmut Kandemir) *University Park, USA*

Xiamen University Sept, 2018 – June, 2021
M.Eng. in Computer Technology (advisor: Prof. Suzhen Wu) *Xiamen, China*

Zhejiang Sci-Tech University Sept, 2013 – June, 2017
B.Eng. in Computer Science and Technology *Hangzhou, China*

RESEARCH EXPERIENCE

Optimization on Zoned Namespace SSDs. Sept, 2023 – Present
Research Assistant *Penn State, USA*

- **New I/O Interface Beyond Block Abstraction:** Improve I/O stack efficiency and CPU utilization by redesigning the storage interface beyond traditional block-based abstractions. [Under Review]
- **Mapping Strategies for Emerging ZNS Devices:** Design efficient logical-to-physical mapping mechanisms to improve space utilization and performance on zoned storage devices. [Under Review]
- **Garbage Collection Optimization:** Reduce request latency and minimize GC overhead through improved reclamation strategies.

Flash Memory Reliability Sept, 2019 – May, 2021
Research Assistant *Xiamen University, China*

- **BitFlip Scheme for NAND Flash:** Improve reliability and reduce read latency by mitigating bit-error probabilities. [MSST 2020]

PUBLICATIONS

[C1] Suzhen Wu, **Sijie Lan**, Jindong Zhou, Hong Jiang, Zhirong Shen. *BitFlip: A Bit-Flipping Scheme for Reducing Read Latency and Improving Reliability of Flash Memory.* MSST 2020.

[C2] Yingtian Zhang, Yan Kang, Ziyu Ying, Wanhang Lu, **Sijie Lan**, Huijuan Xu, Kiwan Maeng, Anand Sivasubramaniam, Mahmut T. Kandemir, and Chita R. Das. *Pirate: No Compromise Low-Bandwidth VR Streaming for Edge Devices.* ASPLOS 2025.

WORK EXPERIENCE

Software Engineer Intern May, 2025 – Aug, 2025
Meta *Bellevue, WA*

- Developed SSD-based cached system for objective store.
- Implemented data validation and consistency mechanisms.
- Analyzed system-level storage efficiency and data organization.

SPECIALIZED SKILLS

Research Areas: Storage Devices, Storage Systems, Flash Memory.
Programming Languages: C++, C, Shell, Python
Systems: Linux, Windows

TEACHING EXPERIENCE

Teaching Assistant CMPSC 132 (Python and Data Structures)
Penn State *Spring 2022*

Teaching Assistant C Programming Language
Xiamen University *Fall 2019*