800 Dongchuan Road
RM 3-126, SEIEE
Minhang District, China

Ruiming Lu

(+86) 18721659180
ruiming_lu@outlook.com
lrm318@sjtu.edu.cn

EDUCATION

Ph.D Candidate **Shanghai Jiao Tong University** **Sep 2020 – present**

- Ph.D Candidate in Computer Science, Department of Computer Science, SEIEE.
- Research Fields: Interested in analyzing the failure characteristics of massively-deployed storage devices (e.g., NVMe SSD), understanding novel failure modes (e.g., the fail-slow failure), and designing practical fault-tolerant systems.

Visiting Ph.D Student **University of Michigan** **Jun 2023 – Jun 2024**

- Visiting PhD student affiliated with the CSE Department, University of Michigan, Ann Arbor.
- Advisor: Professor Ryan Huang.
- Research Fields: Understanding and improving fail-slow tolerance in large distribtued system softwares.

B.Eng **Shanghai Jiao Tong University** **Sep 2016 – Aug 2020**

- B.Eng in Electrical and Computer Engineering (E.C.E.), University of Michigan - Shanghai Jiao Tong University Joint Institute.
- Graduate with distinction: **Outstanding Graduate in Shanghai** (top 1%).
- Core Coursework: Honors Calculus; Circuits; Signals and Systems; Data Structures; Discrete Mathematics; Linear Algebra; Probabilistic Methods; Bayesian Analysis; Computer Architecture; Operating Systems; Computer Network.
- Thesis: Six-degree-of-freedom Fixed Magnetic Levitation Device.

PUBLICATIONS

Conference Paper

[1] **Ruiming Lu**, Yunchi Lu, Yuxuan Jiang, Guangtao Xue, Peng Huang. One-Size-Fits-None: Understanding and Enhancing Slow Fault Tolerance in Modern Distributed Systems. *Just Accepted*. **USENIX NSDI '25**.

[2] **Ruiming Lu**, Erci Xu, Yiming Zhang, Fengyi Zhu, Zhaosheng Zhu, Mengtian Wang, Zongpeng Zhu, Guangtao Xue, Jiwu Shu, Minglu Li, Jiesheng Wu. Perseus: A Fail-Slow Detection Framework for Cloud Storage Systems. *In Proceedings of the 21st USENIX Conference on File and Storage Technologies*, February 2023. **USENIX FAST '23**. **Best Paper Award**. **Invited to appear in USENIX ;login: and fast-tracked to ToS**.

[3] **Ruiming Lu**, Erci Xu, Yiming Zhang, Zhaosheng Zhu, Mengtian Wang, Zongpeng Zhu, Guangtao Xue, Minglu Li, Jiesheng Wu. NVMe SSD Failures in the Field: the Fail-Stop and the Fail-Slow. *In Proceedings of the 2022 USENIX Annual Technical Conference*, July 2022. **USENIX ATC '22**.

[4] Yanbo Zhou, Erci Xu, Li Zhang, Kapil Karkra, Mariusz Barczak, Wayne Gao, Wojciech Malikowski, Mateusz Kozlowski, Łukasz Łasek, **Ruiming Lu**, Feng Yang, Lilong Huang, Xiaolu Zhang, Wenrui Li, Jinhu Li, Keqiang Niu, Jiaji Zhu, Jiesheng Wu. CSAL: the Next-Gen Local Disks for the Cloud. *In Proceedings of the 19th European Conference on Computer Systems*, April 2024. **EuroSys '24**.

Journal & Magazine Articles

[5] **Ruiming Lu**, Erci Xu, Yiming Zhang, Fengyi Zhu, Zhaosheng Zhu, Mengtian Wang, Zongpeng Zhu, Guangtao Xue, Jiwu Shu, Minglu Li, Jiesheng Wu. From Missteps to Milestones: A Journey to Practical Fail-Slow Detection. *ACM Transactions on Storage, Volume 19, Issue 4, 2023*. **ACM ToS**.

[6] **Ruiming Lu**, Erci Xu, Yiming Zhang, Fengyi Zhu, Zhaosheng Zhu, Mengtian Wang, Zongpeng Zhu, Guangtao Xue, Jiwu Shu, Minglu Li, Jiesheng Wu. Detecting Fail-Slow Failures in Large-Scale Cloud Storage Systems. *USENIX ;login: Online, February 9, 2023*. **USENIX ;login:**.

[7] Xinqi Chen, Erci Xu, Dengyao Mo, **Ruiming Lu**, Haonan Wu, Dian Ding, Guangtao Xue. MasterPlan: A Reinforcement Learning Based Scheduler for Archive Storage. *Just Accepted*. **ACM TACO**.

RESEARCH EXPERIENCE

Research Intern	**Microsoft Research Asia**	**Aug 2024 – Nov 2024**

- **Project:** An Empirical Study of Issues in Large Language Model Training Systems
- **Supervisor:** Dr. Jilong Xue.
- **Work:** Comb through issue tickets of three mainstream LLM training systems: Microsoft DeepSpeed, Nvidia Megatron-LM, and Hugging Face Transformers. Understand the common symptoms, root causes and current testing and debugging practices.

Research Intern	**Alibaba Cloud**	**Aug 2021 – Jun 2023**

- **Project:** Intelligent Analytic Methods for Safe Deployment in Large-Scale Cloud Infrastructures.
- **Supervisor:** Dr. Erci Xu, Professor Yiming Zhang, and Professor Guangtao Xue.
- **Work:** Design and implementation of a general, accurate, and adaptive fail-slow detection framework for storage devices (deployed in Alibaba Cloud).

Research Intern	**Alibaba Cloud**	**Jan 2021 – Apr 2022**

- **Project:** NVMe SSD Failure Study.
- **Supervisor:** Dr. Erci Xu, Professor Yiming Zhang, and Professor Guangtao Xue.
- **Work:** Comb through telemetry data of NVMe SSD at Alibaba Cloud; compare NVMe SSD with SATA SSD on recent reliability changes; analyze and benchmark a novel failure type – fail-slow;

Research Assistant	**WNAI Lab, UM-SJTU JI**	**Sep 2018 – Sep 2019**

- **Project:** 3D Finger Tracking based on Acoustic Sensor Array.
- **Supervisor:** Professor Xudong Wang.
- **Work:** Establish an acoustic sensor array platform using Arduino; experiment on position tracking of moving objects using FPGA.

SCHOLARSHIPS & AWARDS

- **Yang Yuanqing PhD Fellowship**, Oct 2024,
- **Huatai Technology Scholarship**, Dec 2023,
- **Outstanding Paper Award Honorable Mention**, World Artificial Intelligence Conference, Jun 2023
- **USENIX FAST 2023 Best Paper Award**, Feb 2023.
- **USENIX FAST 2023 Student Travel Grant**, Jan 2023.
- **Outstanding Graduate in Shanghai**, Aug 2020.
- **Annual Excellence Scholarship**, Sep 2017.
- **Yu Liming Scholarship**, Jan 2018 and Jan 2020.
- **Dean's List**, Sep 2017.
- **Best Innovation Award**, the Design Expo of UM-SJTU JI, Aug 2017.

TEACHING

Teching Assistant	**UM-SJTU JI**	**Jun 2018 – Aug 2018**

- Teaching assistant for VG100: Introduction to Engineering.
- Hold weekly recitation classes and office hour; organize lab sessions.

PROFESSIONAL SKILLS

- **Programming Languages:** Python; Java; Go; Julia; C++; C; R; Matlab.
- **English Qualifications:**
  - TOFEL: 106 (Reading: 28; Listening: 28; Speaking: 24, Writing: 26).
  - CET6: 637 (Reading: 229; Listening: 214; Writing and Tranlation: 194).