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EDUCATION **University of Illinois Urbana-Champaign** Urbana, IL
Ph.D. in Computer Science Aug 2024 – (May 2029)
Advisor: [Prof. Tianyin Xu](#)
University of Illinois Urbana-Champaign Urbana, IL
M.S. in Computer Science Aug 2022 – May 2024
Advisor: [Prof. Tianyin Xu](#)
Thesis: A Software Approach to Accelerating Memory Translation for Virtualized Clouds
New Jersey Institute of Technology Newark, NJ
B.S. in Computer Science Jan 2020 – May 2022
GPA: 4.0/4.0

- REFEREED
CONFERENCE
PUBLICATIONS
1. [OSDI '25] Siyuan Chai*, **Jiyuan Zhang***, Jongyul Kim, Alan Wang, Fan Chung, Jovan Stojkovic, Weiwei Jia, Dimitrios Skarlatos, Josep Torrellas, and Tianyin Xu. “EMT: An OS Framework for New Memory Translation Architectures”. In *Proceedings of the 19th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, Jul 2025.
 2. [HotOS '25] **Jiyuan Zhang**, Jongyul Kim, Chloe Alverti, Peizhe Liu, Weiwei Jia, and Tianyin Xu. “Multiplexing File Systems to Reap the Benefits of Storage Innovations without Friction”. In *Proceedings of the ACM SIGOPS 20th Workshop on Hot Topics in Operating Systems (HotOS)*, May 2025.
 3. [ASPLOS '25] Yan Sun, Jongyul Kim, Zeduo Yu, **Jiyuan Zhang**, Siyuan Chai, Michael Jaemin Kim, Hwayong Nam, Jaehyun Park, Eojin Na, Yifan Yuan, Ren Wang, Jung Ho Ahn, Tianyin Xu, and Nam Sung Kim. “M5: Mastering Page Migration and Memory Management for CXL-based Tiered Memory Systems”. In *Proceedings of the 30th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, Apr 2025. [\[Link\]](#)
 4. [ASPLOS '24] **Jiyuan Zhang**, Weiwei Jia, Siyuan Chai, Peizhe Liu, Jongyul Kim, and Tianyin Xu. “Direct Memory Translation for Virtualized Clouds”. In *Proceedings of the 29th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, Apr 2024. [\[Link\]](#)
 5. [PACT '23] Weiwei Jia*, **Jiyuan Zhang***, Jianchen Shan, Yiming Du, Xiaoning Ding and Tianyin Xu. “HugeGPT: Storing Guest Page Tables on Host Huge Pages to Accelerate Address Translation”. In *Proceedings of the 32nd International Conference on Parallel Architectures and Compilation Techniques (PACT)*, Oct 2023. [\[Link\]](#)
 6. [EuroSys '23] Weiwei Jia*, **Jiyuan Zhang***, Jianchen Shan, and Xiaoning Ding. “Making Dynamic Page Coalescing Effective on Virtualized Clouds”. In *Proceedings of the 18th European Conference on Computer Systems (EuroSys)*, May 2023. [\[Link\]](#)
 7. [ICSE '23] Wenbo Wang, Tien N. Nguyen, Shaohua Wang, Yi Li, **Jiyuan Zhang**, and Aashish Yadavally. “DeepVD: Toward Class-Separation Features for Neural Network”. In *Proceedings of the 45th ACM/IEEE International Conference on Software Engineering (ICSE)*, May 2023. [\[Link\]](#)

8. [SoCC '22] Weiwei Jia, **Jiyuan Zhang**, Jianchen Shan, Jing Li, and Xiaoning Ding. “Achieving Low Latency in Public Edges by Hiding Workloads Mutual Interference”. In *Proceedings of the 13th Symposium on Cloud Computing (SoCC)*, Nov 2022. [\[Link\]](#)

* Co-lead author

REFEREED
JOURNAL
PUBLICATIONS

1. [TC '24] Weiwei Jia*, **Jiyuan Zhang***, Jianchen Shan, and Xiaoning Ding. “Effective Huge Page Strategies for TLB Miss Reduction in Nested Virtualization”. In *IEEE Transactions on Computers (TC)*, 2024. [\[Link\]](#)

* Co-lead author

RESEARCH
EXPERIENCE

- UIUC xLab, Prof. Tianyin Xu** Aug 2022 – Present
- Multiplexing File Systems to Reap the Benefits of Storage Innovations without Friction*
- Working on designing and implementing of a new filesystem architecture that realizes tiering by directly multiplexing device-specific file systems.
- EMT: An OS Framework for New Memory Translation Architectures*
- Designed the Extensible Memory Translation (EMT) framework and interface that enables extensibility to translation architectures without sacrificing performance.
 - Identified and gearalized correctness and performance issues in hash-table-based page table designs (e.g., ECPT) and proposed solutions and mitigations.
 - Evaluated, analyzed, and optimized the overhead of EMT-Linux implementation.
- Direct Memory Translation for Virtualized Clouds*
- Designed and implemented a novel address translation scheme that minimizes the worst-case memory translation overhead to 1, 2, and 3 for native, virtualized, and nested virtualized memory, with backward compatibility to modern architectures including x86, ARM, and RISC-V.
 - Evaluated the performance in native, virtualized, and nested virtualized environments with a hardware simulator.
- Using Huge Pages to Accelerate Address Translation for Weak Locality Data*
- Designed and implemented a software system solution to improve the Page Walk Cache efficiency, which strategically clusters page table pages in physical memory.
 - Evaluated the effectiveness of such design in a virtualized environment.
- NJIT Operating System Group, Prof. Xiaoning Ding** Sep 2021 – Aug 2022
- Making Dynamic Page Coalescing Effective on Virtualized Clouds*
- Identified host-guest page size mismatch as a main cause of high TLB misses and low performance in virtualized systems.
 - Designed and implemented a software-only solution to page size mismatch in virtualized systems.
- Achieving Low Latency in Public Edges by Hiding Workloads Mutual Interference*
- Designed and implemented a task scheduler that can identify critical paths in workloads and perform adaptive scheduling.
 - Evaluated the performance of the task scheduler.
- NJIT SPACE Lab, Prof. Shaohua Wang** May 2021 – Sep 2021
- Identifying Software Vulnerabilities with Graph-based Neural Networks*
- Designed and implemented an automated toolchain to identify security patches from software repositories, and to extract source code class-separation features.

PROFESSIONAL
EXPERIENCE

- Hewlett Packard Labs** Milpitas, CA
Research Associate Intern (Network and Distributed Systems Lab)
May 2025 – Aug 2025
- University of Illinois Urbana-Champaign** Champaign, IL

	Graduate Research Assistant	Jan 2024 – May 2025
	Graduate Research Assistant	Aug 2022 – Aug 2023
	New Jersey Institute of Technology	Newark, NJ
	Undergraduate Research Assistant	Jan 2022 – May 2022
AWARDS AND HONORS	Wing Kai Cheng Fellowship, UIUC	2024 - 2025
	NJIT President’s Medal for Academic Excellence, NJIT	2022
	Summa Cum Laude, NJIT	2022
	Dean’s List, NJIT	2020 - 2022
TALKS AND PRESENTATIONS	Direct Memory Translation for Virtualized Clouds	
	• Cornell University [Invited] (Ithaca, New York), Oct 10, 2024	
	• ACM Int’l. Conf. on Architectural Support for Programming Languages and Operating Systems [Conf. talk] (San Diego, USA), May 1, 2024	
	HugeGPT: Storing Guest Page Tables on Host Huge Pages to Accelerate Address Translation	
	• Int’l. Conf. on Parallel Architectures and Compilation Techniques [Conf. talk] (Vienna, Austria), Oct 23, 2023	
TEACHING AND MENTORING EXPERIENCE	Research Mentoring	
	• Peizhe Liu (Graduate Student, UIUC)	Oct 2023 – Present
	I am mentoring Liu on the project of Direct Memory Translation for Virtualized Clouds and Multiplexing File Systems to Reap the Benefits of Storage Innovations without Friction.	
	• Siyuan Chai (Graduate Student, UIUC)	Aug 2022 – Apr 2025
	I am mentoring Chai on the project of EMT: An OS Framework for New Memory Translation Architectures.	
	• Fan Chung (Undergraduate Student, UIUC)	Jan 2023 – Aug 2024
	I am mentoring Chung on the project of EMT: An OS Framework for New Memory Translation Architectures.	
	• Yiming Du (Graduate Student, University of Rhode Island)	Aug 2022 – May 2023
	I mentored Du on the project of Using Huge Pages to Accelerate Address Translation for Weak Locality Data.	
	Teaching Assistant	
	• UIUC CS 423: Operating Systems Design	Aug 2023 – Dec 2023
	Worked with Prof. Tianyin Xu	
	• NJIT CS 114: Introduction to Computer Science II	Jan 2021 – May 2021
	Worked with Prof. Calvin M. James	
GRANTS	Travel grants for EuroSys ’23, OSDI ’23, and ASPLOS ’24	
SERVICES	Artifact Evaluation Committee: SOSP ’23	
REFERENCES	Tianyin Xu	
	University of Illinois Urbana-Champaign	
	Assistant Professor, Department of Computer Science	
	tyxu@illinois.edu	
	Weiwei Jia	
	University of Rhode Island	

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