

PERSONAL INFORMATION	jiyuanz3@illinois.edu https://jiyuan.is	
EDUCATION	University of Illinois Urbana-Champaign Ph.D. in Computer Science Advisor: Prof. Tianyin Xu and Nam Sung Kim University of Illinois Urbana-Champaign M.S. in Computer Science Advisor: Prof. Tianyin Xu Thesis: A Software Approach to Accelerating Memory Translation for Virtualized Clouds New Jersey Institute of Technology B.S. in Computer Science GPA: 4.0/4.0	Urbana, IL Aug 2024 – (May 2029) Urbana, IL Aug 2022 – May 2024 Newark, NJ Jan 2020 – May 2022
REFEREED CONFERENCE PUBLICATIONS	<ol style="list-style-type: none"> [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 <i>Proceedings of the 19th USENIX Symposium on Operating Systems Design and Implementation (OSDI)</i>, Jul 2025. [HotOS '25] Jiyuan Zhang, Jongyul Kim, Chloe Alberti, Peizhe Liu, Weiwei Jia, and Tianyin Xu. “Rethinking Tiered Storage: Talk to File Systems, Not Device Drivers”. In <i>Proceedings of the ACM SIGOPS 20th Workshop on Hot Topics in Operating Systems (HotOS)</i>, May 2025. [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 <i>Proceedings of the 30th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)</i>, Apr 2025. [Link] [ASPLOS '24] Jiyuan Zhang, Weiwei Jia, Siyuan Chai, Peizhe Liu, Jongyul Kim, and Tianyin Xu. “Direct Memory Translation for Virtualized Clouds”. In <i>Proceedings of the 29th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)</i>, Apr 2024. [Link] [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 <i>Proceedings of the 32nd International Conference on Parallel Architectures and Compilation Techniques (PACT)</i>, Oct 2023. [Link] [EuroSys '23] Weiwei Jia*, Jiyuan Zhang*, Jianchen Shan, and Xiaoning Ding. “Making Dynamic Page Coalescing Effective on Virtualized Clouds”. In <i>Proceedings of the 18th European Conference on Computer Systems (EuroSys)</i>, May 2023. [Link] [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 <i>Proceedings of the 45th ACM/IEEE International Conference on Software Engineering (ICSE)</i>, 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 generalized 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 2026)
- University of Illinois Urbana-Champaign** Champaign, IL

	Graduate Research Assistant Graduate Research Assistant	Jan 2024 – May 2025 Aug 2022 – Aug 2023
	New Jersey Institute of Technology Undergraduate Research Assistant	Newark, NJ Jan 2022 – May 2022
AWARDS AND HONORS	Wing Kai Cheng Fellowship , UIUC NJIT President's Medal for Academic Excellence , NJIT Summa Cum Laude , NJIT Dean's List , NJIT	2024 - 2025 2022 2022 2020 - 2022
TALKS AND PRESENTATIONS	<p>EMT: An OS Framework for New Memory Translation Architectures</p> <ul style="list-style-type: none"> USENIX Symposium on Operating Systems Design and Implementation [Conf. talk] (Boston, USA), Jul 9, 2025 <p>Direct Memory Translation for Virtualized Clouds</p> <ul style="list-style-type: none"> 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 <p>HugeGPT: Storing Guest Page Tables on Host Huge Pages to Accelerate Address Translation</p> <ul style="list-style-type: none"> Int'l. Conf. on Parallel Architectures and Compilation Techniques [Conf. talk] (Vienna, Austria), Oct 23, 2023 	
TEACHING AND MENTORING EXPERIENCE	<p>Research Mentoring</p> <ul style="list-style-type: none"> Peizhe Liu (Graudate Student, UIUC) Oct 2023 – Aug 2025 I mentored 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 (Graudate Student, UIUC) Aug 2022 – Apr 2025 I mentored Chai on the project of EMT: An OS Framework for New Memory Translation Architectures. Fan Chung (Undergraduate Student, UIUC) Jan 2023 – Aug 2024 I mentored Chung on the project of EMT: An OS Framework for New Memory Translation Architectures. Yiming Du (Graudate 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. <p>Teaching Assistant</p> <ul style="list-style-type: none"> 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, ASPLOS '24, and HotOS '25	
SERVICES	Artifact Evaluation Committee: SOSP '23	
REFERENCES	<p>Tianyin Xu University of Illinois Urbana-Champaign Assistant Professor, Department of Computer Science txu@illinois.edu</p>	

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