Sanidhya Kashyap

Assistant Professor

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I. Earned Degrees

Ph.D.	2020	Georgia Institute of Technology (GaTech)	*Computer Science*
M.S.	2014	International Institute of Information Technology - Hyderabad (IIIT-H)	*Computer Science*
B.Tech.	2012	International Institute of Information Technology - Hyderabad (IIIT-H)	*Computer Science*

II. Employment History

Assistant Professor	School of Computer and Communication Science EPFL, Lausanne, Switzerland	*Nov 2020–present*
Research Intern	VMware Research VMware, Mountain View, CA	*May 2018–Aug 2018*
Research Intern	Penumbra Oracle Labs, Burlington, MA	*Jun 2017–Aug 2017*
Research Intern	Penumbra Oracle Labs, Burlington, MA	*May 2016–Aug 2016*

III. Honors and Awards

[1] **Best paper award.**
SOSP (2023)

[2] **Early Career Research Grant.**
VMware (2022)

[3] **Dissertation Award.**
College of Computing, Georgia Institute of Technology (2021)

[4] **Outstanding Graduate Research Assistant Award.**
College of Computing, Georgia Institute of Technology (2020)

[5] **Best student paper award.**
EuroSys (2017)

[6] **Best paper award.**
APSys (2015)

IV. Research

A. Refereed Publications and Submitted Articles

A.1. Thesis

[1] **Ph.D. Thesis**
Title: *Scaling Synchronization Primitives*

Date: June 2020
Advisors: Taesoo Kim and Changwoo Min
Georgia Institute of Technology (GaTech)

[2] **M.S. Thesis**
Title: *An Enhanced Approach to Live Migration of Virtual Machines*
Date: May 2014
Advisor: Suresh Purini
International Institute of Information Technology - Hyderabad (IIIT-H)

A.2.   Conference Articles (Refereed)

[1] **Towards Structurally Extensible Host Network Stacks**. Kumar Kartikeya Dwivedi, Rishabh Iyer, and Sanidhya Kashyap. *In Proceedings of the 24th ACM Workshop on Hot Topics in Networks (HotNets 2025).*

[2] **eBPF Misbehavior Detection: Fuzzing with a Specification-Based Oracle**. Tao Lyu, Kumar Kartikeya Dwivedi, Thomas Bourgeat, Mathias Payer, Meng Xu, and Sanidhya Kashyap. *In Proceedings of the 30th ACM Symposium on Operating Systems Principles (SOSP 2025).*

[3] **Scalable Far Memory: Balancing Faults and Evictions**. Yueyang Pan, Yash Lala, Musa Unal, Yujie Ren, Seung-seob Lee, Abhishek Bhattacharjee, Anurag Khandelwal, and Sanidhya Kashyap. *In Proceedings of the 30th ACM Symposium on Operating Systems Principles (SOSP 2025).*

[4] **FlexGuard: Fast Mutual Exclusion Independent of Subscription**. Victor Laforet, Sanidhya Kashyap, Călin Iorgulescu, Julia Lawall, Jean-Pierre Lozi. *In Proceedings of the 30th ACM Symposium on Operating Systems Principles (SOSP 2025).*

[5] **Analyzing and Enhancing ArckFS: An Anecdotal Example of Benefits of Artifact Evaluation**. Jonguk Jeon, Subeen Park, Sanidhya Kashyap, Sudarsun Kannan, Diyu Zhou, and Jeehoon Kang. *In Proceedings of the 30th ACM Symposium on Operating Systems Principles (SOSP 2025).*

[6] **Demystifying CXL Memory Bandwidth Expansion for Analytical Workloads**. Georgiy Lebedev, Hamish Nicholson, Musa Unal, Sanidhya Kashyap, and Anastasia Ailamaki. *In Proceedings of the 16th International Workshop on Accelerating Analytics and Data Management Systems Using Modern Processor and Storage Architectures (ADMS'25).*

[7] **Single-Address-Space FaaS with Jord**. Yuanlong Li, Atri Bhattacharyya, Madhur Kumar, Abhishek Bhattacharjee, Yoav Etsion, Babak Falsafi, Sanidhya Kashyap, and Mathias Payer. *52nd International Symposium on Computer Architecture (ISCA'25).*

[8] **Tolerate It if You Cannot Reduce It: Handling Latency in Tiered Memory**. Musa Unal, Vishal Gupta, Yueyang Pan, Yujie Ren, and Sanidhya Kashyap. *In Proceedings of the 20th Workshop on Hot Topics in Operating Systems (HotOS XX).*

[9] **PolyStore: Exploiting Combined Capabilities of Heterogeneous Storage**. Yujie Ren, David Domingo, Jian Zhang, Paul John, Rekha Pitchumani, Sanidhya Kashyap, and Sudarsun Kannan. *23rd USENIX Conference on File and Storage Technologies (FAST 25).*

[10] **Fast, Flexible, and Practical Kernel Extensions**. Kumar Kartikeya Dwivedi, Rishabh Iyer, and Sanidhya Kashyap. *In Proceedings of the 30th ACM Symposium on Operating Systems Principles (SOSP 2024).*
Accepted to LPC'23

[11] **Monarch: A Fuzzing Framework for Distributed File Systems**. Tao Lyu, Liyi Zhang, Zhiyao Feng, Yueyang Pan, Yujie Ren, Meng Xu, Mathias Payer, and Sanidhya Kashyap. *In Proceedings of the 2024 USENIX Annual Technical Conference (ATC 2024).*

[12] **Context-aware Prefetching for Near-Storage Accelerators**. Jian Zhang, Marie Nguyen, Sanidhya Kashyap, and Sudarsun Kannan. *In Proceedings of the 16th ACM Workshop on Hot Topics in Storage and File Systems (HotStorage 2024).*

[13] **Transparent Multicore Scaling of Single-Threaded Network Functions**. Lei Yan, Yueyang Pan, Diyu Zhou, George Candea, and Sanidhya Kashyap. *In Proceedings of the 19th ACM European Conference on Computer Systems (EuroSys 2024).*

[14] **Enabling High-Performance and Secure Userspace NVM File Systems with the Trio Architecture**. Diyu Zhou, Vojtech Aschenbrenner, Tao Lyu, Jian Zhang, Sudarsun Kannan, and Sanidhya Kashyap. *In Proceedings of the 29th ACM Symposium on Operating Systems Principles (SOSP 2023).*
🏆 Best paper

[15] **Ship your Critical Section, Not Your Data: Enabling Transparent Delegation with TCLocks**. Vishal Gupta, Kumar Kartikeya Dwivedi, Yugesh Kothari, Yueyang Pan, and Sanidhya Kashyap. *In Proceedings of the 2023 USENIX Symposium on Operating Systems Design and Implementation (OSDI 2023).*
Also accepted to LPC'23 Usenix Login article

[16] **Skadi: Building a Distributed Runtime for Data Systems in Disaggregated Data Centers**. Cunchen Hu, Chenxi Wang, Sa Wang, Ninghui Sun, Yungang Bao, Jieru Zhao, Sanidhya Kashyap, Xiaoyang Deng, Pengfei Zuo, Rongfeng He, Xushen Chen, Liangliang Xu, Qin Zhang, Hao Feng, and Yizhou Shan. *In Proceedings of the 19th Workshop on Hot Topics in Operating Systems (HotOS XIX).*

[17] **TENET: Memory Safe and Fault tolerant Persistent Transactional Memory**. R. Madhava Krishnan, Diyu Zhou, Wook-Hee Kim, Sudarsun Kannan, Sanidhya Kashyap, and Changwoo Min. *21st USENIX Conference on File and Storage Technologies (FAST 23).*

[18] **Odinfs: Scaling PM Performance with Opportunistic Delegation**. Diyu Zhou, Yuchen Qian, Vishal Gupta, Zhifei Yang, Changwoo Min, and Sanidhya Kashyap. *In Proceedings of the 2022 USENIX Symposium on Operating Systems Design and Implementation (OSDI 2022).*

[19] **Application-Informed Kernel Synchronization Primitives**. Sujin Park, Diyu Zhou, Yuchen Qian, Irina Calciu, Taesoo Kim, and Sanidhya Kashyap. *In Proceedings of the 2022 USENIX Symposium on Operating Systems Design and Implementation (OSDI 2022).*

[20] **Birds of a Feather Flock Together: Scaling RDMA RPCs with FLOCK**. Sumit Kumar Monga, Sanidhya Kashyap, and Changwoo Min. *In Proceedings of the 28th ACM Symposium on Operating Systems Principles (SOSP 2021).*

[21] **PACTree: A High Performance Persistent Range Index Using PAC Guidelines**. Wook-Hee Kim, R. Madhava Krishnan, Xinwei Fu, Sanidhya Kashyap, and Changwoo Min. *In Proceedings of the 28th ACM Symposium on Operating Systems Principles (SOSP 2021).*

[22] **Preventing Use-After-Free Attacks with Fast Forward Allocation**. Brian Wickman, Hong Hu, Insu Yun, Daehee Jang, JungWon Lim, Sanidhya Kashyap, and Taesoo Kim. *In Proceedings of the 30th USENIX Security Symposium (Security 2021).*

[23] **NrOs: Effective Replication and Sharing in an Operating System**. Ankit Bhardwaj, Chinmay Kulkarni, Reto Achermann, Irina Calciu, Sanidhya Kashyap, Ryan Stutsman, Amy Tai, and Gerd Zellweger. *In Proceedings of the 2021 USENIX Symposium on Operating Systems Design and Implementation (OSDI 2021).*

[24] **Contextual Concurrency Control**. Sujin Park, Irina Calciu, Taesoo Kim, and Sanidhya Kashyap. *In Proceedings of the 18th Workshop on Hot Topics in Operating Systems (HotOS XVIII).*

[25] **Rethinking Software Runtimes for Disaggregated Memory**. Irina Calciu, M. Talha Imran, Ivan Puddu, Sanidhya Kashyap, Hasan Al Maruf, Onur Mutlu, Aasheesh Kolli. *In Proceedings of the 26th ACM Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2021).*

[26] **KRACE: Data Race Fuzzing for Kernel File Systems**. Meng Xu, Sanidhya Kashyap, Hanqing Zhao, and Taesoo Kim. *In Proceedings of the 41st IEEE Symposium on Security and Privacy (S&P 2020).*

[27] **Scalable and Practical Locking With Shuffling**. Sanidhya Kashyap, Irina Calciu, Xiaohe Cheng, Changwoo Min, and Taesoo Kim. *In Proceedings of the 27th ACM Symposium on Operating Systems Principles (SOSP 2019).*
📰 GT News

[28] **Finding Semantic Bugs in File Systems with an Extensible Fuzzing Framework**. Seulbae Kim, Meng Xu, Sanidhya Kashyap, Jungyeon Yoon, Wen Xu, and Taesoo Kim. *In Proceedings of the 27th ACM Symposium on Operating Systems Principles (SOSP 2019).*
📰 GT News, GT News

[29] **RECIPE: Converting Concurrent DRAM Indexes to Persistent-Memory Indexes**. Se Kwon Lee, Jayashree Mohan, Sanidhya Kashyap, Taesoo Kim, and Vijay Chidambaram. *In Proceedings of the 27th ACM Symposium on Operating Systems Principles (SOSP 2019).*
📖 GT News

[30] **SplitFS: Reducing Software Overhead in File Systems for Persistent Memory**. Rohan Kadekodi, Se Kwon Lee, Sanidhya Kashyap, Taesoo Kim, Aasheesh Kolli, and Vijay Chidambaram. *In Proceedings of the 27th ACM Symposium on Operating Systems Principles (SOSP 2019).*
📖 PIRL, GT News

[31] **Fuzzing File Systems via Two-Dimensional Input Space Exploration**. Wen Xu, Hyungon Moon, Sanidhya Kashyap, Po-Ning Tseng, and Taesoo Kim. *In Proceedings of the 40th IEEE Symposium on Security and Privacy (S&P 2019).*
📖 GT News

[32] **MV-RLU: Scaling Read-Log-Update with Multi-Versioning**. Jaeho Kim, Ajit Mathew, Sanidhya Kashyap, Madhava Krishnan Ramanathan, and Changwoo Min. *In Proceedings of the 23rd ACM Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2019).*
📖 Concurrency Freaks

[33] **Scaling Guest OS Critical Sections With eCS**. Sanidhya Kashyap, Changwoo Min, and Taesoo Kim. *In Proceedings of the 2018 USENIX Annual Technical Conference (ATC 2018).*

[34] **A Scalable Ordering Primitive for Multicore Machines**. Sanidhya Kashyap, Changwoo Min, Kangnyeon Kim, and Taesoo Kim. *In Proceedings of the 13th ACM European Conference on Computer Systems (EuroSys 2018).*

[35] **SOLROS: A Data-Centric Operating System Architecture for Heterogeneous Computing**. Changwoo Min, Woonhak Kang, Mohan Kumar, Sanidhya Kashyap, Steffen Maass, and Taesoo Kim. *In Proceedings of the 13th ACM European Conference on Computer Systems (EuroSys 2018).*

[36] **LATR: Lazy Translation Coherence**. Mohan Kumar, Steffen Maass, Sanidhya Kashyap, Jan Vesely, Zi Yan, Taesoo Kim, Abhishek Bhattacharjee, and Tushar Krishna. *In Proceedings of the 23rd ACM Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2018).*

[37] **Designing New Operating Primitives to Improve Fuzzing Performance**. Wen Xu, Sanidhya Kashyap, Changwoo Min, and Taesoo Kim. *In Proceedings of the 24th ACM Conference on Computer and Communications Security (CCS 2017).*
📖 Mozilla research

[38] **Scalable NUMA-aware Blocking Synchronization Primitives**. Sanidhya Kashyap, Changwoo Min, and Taesoo Kim. *In Proceedings of the 2017 USENIX Annual Technical Conference (ATC 2017).*

[39] **Mosaic: Processing a Trillion-Edge Graph on a Single Machine**. Steffen Maass, Changwoo Min, Sanidhya Kashyap, Woonhak Kang, Mohan Kumar, and Taesoo Kim. *In Proceedings of the 12th ACM European Conference on Computer Systems (EuroSys 2017).*
🏆 **Best Student paper**
📖 Hacker News, The Next Platform, GT News, the morning paper

[40] **Instant OS Updates via Userspace Checkpoint-and-Restart**. Sanidhya Kashyap, Changwoo Min, Byoungyoung Lee, Taesoo Kim, and Pavel Emelyanov. *In Proceedings of the 2016 USENIX Annual Technical Conference (ATC 2016).*
📖 Linux Plumbers Conference 2015, CRIU

[41] **Understanding Manycore Scalability of File Systems**. Changwoo Min, Sanidhya Kashyap, Steffen Maass, Woonhak Kang, and Taesoo Kim. *In Proceedings of the 2016 USENIX Annual Technical Conference (ATC 2016).*

[42] **Cross-checking Semantic Correctness: The Case of Finding File System Bugs**. Changwoo Min, Sanidhya Kashyap, Byoungyoung Lee, Chengyu Song, and Taesoo Kim. *In Proceedings of the 25th ACM Symposium on Operating Systems Principles (SOSP 2015).*
📖 Bug Report

[43] **Scalability in the Clouds! A Myth or Reality?**. Sanidhya Kashyap, Changwoo Min, and Taesoo Kim. *In Proceedings of the 6th Asia-Pacific Workshop on Systems (APSys 2015)*.
🏆 **Best paper, nominated to Operating Systems Review (OSR)**
📖 LWN: qspinlock in Linux

[44] **RLC: A Reliable Approach to Fast and Efficient Live Migration of Virtual Machines in the Clouds**. Sanidhya Kashyap, Jaspal Singh Dhillon, and Suresh Purini. *In Proceedings of the 8th IEEE Conference on Cloud Computing (CLOUD 2014)*.

[45] **Virtual Machine Coscheduling: A Game Theoretic Approach**. Jaspal Singh Dhillon, Suresh Purini, and Sanidhya Kashyap. *In Proceedings of the 6th ACM/IEEE Conference on Utility Computing (UCC 2013)*.

A.3. Journal Articles

[1] **Using Local Cache Coherence for Disaggregated Memory Systems**. Irina Calciu, M. Talha Imran, Ivan Puddu, Sanidhya Kashyap, Hasan Al Maruf, Onur Mutlu, Aasheesh Kolli. *ACM SIGOPS Operating Systems Review (OSR 2023)*.

[2] **Finding Bugs in File Systems with an Extensible Fuzzing Framework**. Seulbae Kim, Meng Xu, Sanidhya Kashyap, Jungyeon Yoon, Wen Xu, and Taesoo Kim. *ACM Transactions on Storage (TOS 2020)*.
📖 GT News, GT News

[3] **Opportunistic Spinlocks: Achieving Virtual Machine Scalability in the Clouds**. Sanidhya Kashyap, Changwoo Min, and Taesoo Kim. *ACM SIGOPS Operating Systems Review (OSR), Volumn 50-1*.
📖 LWN: qspinlock in Linux

A.4. Non-Refereed Articles

[1] **Correct, Fast Remote Persistence**. Sanidhya Kashyap, Dai Qin, Steve Byan, Virendra J. Marathe, and Sanketh Nalli. *Arxiv,* September, 2019.
Arxiv preprint: 1909.02092

[2] **Persistent Memory Transactions**. Virendra Marathe, Achin Mishra, Amee Trivedi, Yihe Huang, Faisal Zaghloul, Sanidhya Kashyap, Margo Seltzer, Tim Harris, Steve Byan, Bill Bridge, and Dave Dice. *Arxiv,* March, 2018.
Arxiv preprint: 1804.00701

B. TALKS AND PRESENTATIONS

[1] **Towards Adaptive and Evolving Systems Software**
- IBM Zurich (04/2025)
- University of British Columbia (02/2025)
- IIT Bombay (01/2025)
- Columbia University (10/2024)
- Rutgers University (10/2024)
- Microsoft Research (10/2024)
- Google Systems Research Group (10/2024)
- University of California, Berkeley (10/2024)
- Carnegie Mellon University (10/2024)

[2] **Towards Evolving OS with Fast, Flexible, and Practical Extensions**
- Global Software Technology Summit & Thames Summit (07/2024)

[3] **Towards Evolving Operating Systems**
- IIIT Hyderabad (01/2024)
- IIT Bombay (01/2024)
- IIT Delhi (01/2024)

[4] **Next-Generation Storage Stack**
- HCIO 2022 Next-Generation Cloud Infrastructures (06/2022)
- Huawei Innovation Summit 2022 (07/2022)

[5] **Contextual Concurrency Control**

- IISC Bangalore (03/2022)

[6] **Application-defined Concurrency**

- Huawei Systems Software Innovations Summit (03/2021)

[7] **Scaling Synchronization Mechanisms for Many-core OS**

- Purdue University (01/2020)
- Boston University (02/2020)
- Yale University (02/2020)
- Microsoft Research (03/2020)
- VMware Research (03/2020)
- EPFL (04/2020)
- UBC (04/2020)

[8] **Scalable and Practical Locking with Shuffling**

- ACM Symposium on Operating Systems Principles (10/2019)

[9] **Scaling Guest OS Critical Sections with eCS**

- USENIX Annual Technical Conference (08/2018)

[10] **A Scalable Ordering Primitive for Multicore Machines**

- European Conference on Computer Systems (04/2018)

[11] **Scalable NUMA-aware Blocking Synchronization Primitives**

- Paypal (08/2017)
- USENIX Annual Technical Conference (08/2017)

[12] **Instant OS Updates via Userspace Checkpoint-and-Restart**

- USENIX Annual Technical Conference (07/2016)
- Oracle Labs (06/2016)

[13] **Rebootless Kernel Update and its Verification**

- Linux Plumbers Conference (07/2015)

[14] **Do Virtual Machines Really Scale?**

- Linux Plumbers Conference (07/2015)

[15] **Scalability in the Clouds! A Myth or Reality?**

- Asia-Pacific Workshop on Systems (06/2015)

TEACHING EXPERIENCE

Spring 2025	CS 300: Data-Intensive Systems
Spring 2025	CS 202: Computer Systems
Fall 2024	CS 300: Data-Intensive Systems
Spring 2024	CS 206: Concurrency & Parallelism
Fall 2023	CS 323: Introduction to Operating Systems
Spring 2023	CS 206: Concurrency & Parallelism
Fall 2022	CS 323: Introduction to Operating Systems
Spring 2022	CS 206: Concurrency & Parallelism
Fall 2021	CS 323: Introduction to Operating Systems
Spring 2021	CS 601: Topics in Designing Scalable Systems Software

V. SERVICE

A. PROFESSIONAL CONTRIBUTIONS

A.1. Conference Committee Activities

[1] Program Committee: *SOSP*–2024, 2025

[2] Program Committee: *OSDI*–2024, 2025

[3] Program Committee: *PPoPP*–2024

[4] Program Committee: *ASPLOS*–2024

[5] Program Committee: *NSDI*–2024

[6] Program Committee: *NVMW*–2023

[7] Program Committee: *EuroSys*–2023, 2024, 2025

[8] External Review Committee: *ASPLOS*–2023

[9] Program Committee: *NVMW*–2023

[10] Program Committee: *HotStorage*–2023

[11] Program Committee: *FAST*–2022, 2023, 2024, 2025, 2027

[12] Program Committee: *SYSTOR*–2021

[13] Program Committee: *ATC*–2021, 2023

A.2. Journal

[1] *ACM Transactions on Architecture and Code Optimization (TACO)*, 2020

B. CONFERENCE/WORKSHOP ORGANIZATION ACTIVITES

[1] *SOSP Artifact Evaluation*, Co-chair, 2025

[2] *FAST Best Paper Committee*, Member, 2025

[3] *EuroDW*, Co-chair, 2025

[4] *SYSDW*, Co-chair, 2023

[5] *ASPLOS*, Web chair, 2022

[6] *Yarch*, Co-chair, 2022

B.1. Memberships and Activities in Professional Societies

[1] Member, Association for Computing Machinery (ACM)

[2] Member, The Advanced Computing Systems Association (USENIX)

C. INSTITUTE CONTRIBUTIONS

[1] *EDIC Admissions Committee*: 2021, 2022, 2023, 2024, 2025

[2] *IC Faculty Recruitment Committee*: 2023