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. Outstanding Graduate Research Assistant Aaward from College of Computing (GaTech), 2020
2. Best Student Paper at EuroSys, 2017
3. Best Paper at APSys15 (invited for OSR), 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] **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).*

[2] **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).*

[3] **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).*

[4] **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

[5] **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

[6] **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

[7] **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

[8] **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

[9] **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

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

[11] **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).*

[12] **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).*

[13] **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).*

[14] **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

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

[16] **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

[17] **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

[18] **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).*

[19] **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

[20] **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

[21] **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).*

[22] **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] **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

[2] **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,* Sep 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. Presentations

[1] **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)

[2] **Scalable and Practical Locking with Shuffling**
ACM Symposium on Operating Systems Principles (10/2019)

[3] **Scaling Guest OS Critical Sections with eCS**
USENIX Annual Technical Conference (08/2018)

[4] **A Scalable Ordering Primitive for Multicore Machines**
European Conference on Computer Systems (04/2018)

[5] **Scalable NUMA-aware Blocking Synchronization Primitives**
Paypal (08/2017), USENIX Annual Technical Conference (08/2017)

[6] **Instant OS Updates via Userspace Checkpoint-and-Restart**
USENIX Annual Technical Conference (07/2016), Oracle Labs (06/2016)

[7] **Rebootless Kernel Update and its Verification**
Linux Plumbers Conference (07/2015)

[8] **Do Virtual Machines Really Scale?**
Linux Plumbers Conference (07/2015)

[9] **Scalability in the Clouds! A Myth or Reality?**
Asia-Pacific Workshop on Systems (06/2015)

V. Service

A. Professional Contributions

A.1. Conference Committee Activities

[1] Program Committee: *SYSTOR*–2021

[2] Program Committee: *ATC*–2021

A.2. Journal

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