MADHAVA KRISHNAN RAMANATHAN

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EDUCATION

05/2018 – Present **Ph.D. in Computer Engineering, Virginia Tech**

- ➢ Research Area: Storage Systems, Operating Systems, Concurrency, and Multi-core Scalability.
- ➢ Advisor: Dr. Changwoo Min.
- ➢ CGPA: 3.85/4.0

08/2015 – 05/2017 **M.S. in Computer Engineering, University of Texas, San Antonio**

- ➢ Thesis: "A Statistical Fetching Approach for Effective Physical Register File Management in SMT processors."
- ➢ Advisor: Dr. Wei-Ming Lin.
- ➢ CGPA: 3.9/4.0

08/2011 – 04/2015 **B.E. in Electronics and Communication, Anna University**

- ➢ Final Project: "Design of Autonomous 6 DOF Robotic Arm and Gesture Controlled Hand."
- ➢ CGPA: 8.0/10 **(First Class Honors)**

WORK EXPERIENCE

05/2020 – 08/2020 **Software Engineer Intern-- Filesystems, Nvidia.**

- ➢ Worked in the DGX SW team, extended the XFS filesystem to support GPU direct storage.
- ➢ Developed IO benchmarks using CUDA to evaluate GPU direct storage.
- ➢ Worked on integrating Swift object storage to use GPU direct storage.

06/2019 – 08/2019 **Research Intern-- Advanced Wireless and Systems Group, AT&T Labs.**

- ➢ Designed and implemented a key-value store framework for emerging persistent memory.
- ➢ Ported the Redis key-value store using the framework developed.

RESEARCH PUBLICATIONS

- ➢ **M.K.Ramanathan**, C.Min, "Timestone-shield: Memory Safe and Reliable Durable Transactional Memory for NVMM", (In progress, scheduled for submission to OSDI 2022).
- ➢ W.Kim, **M.K.Ramanathan**, S.Kashyap, C.Min, "PACTree: A High-Performance Persistent Range Index Using PAC Guidelines, In Proceedings of **SOSP**, October 2021
- ➢ **M.K.Ramanathan**, W.Kim, H.Lee, M.Jang, S.Monga, A.Mathew, C.Min, "TIPS: Making Volatile Index Persistent Using DRAM-NVMM Tiering, In Proceedings of the **USENIX ATC**, July 2021.

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- **M.K.Ramanathan**, W.Kim, H.Lee, M.Jang, A.Mathew, C.Min, “Making Volatile Index Persistent Using TIPS, 12th Non-Volatile Memories Workshop (**NVMW**), March 2021.
- Anthony Demeri, Wookhee Kim, **M.K.Ramanathan**, Jaeho Kim, Mohannad Ismail, Changwoo Min.” Poseidon: Safe, Fast and Scalable Persistent Memory Allocator”, In Proceedings of the 21st Middleware Conference **(Middleware '20**), December 2020.
- **M.K.Ramanathan**, J.Kim, A. Mathew, X.Fu, A.Demeri, C.Min, and S.Kannan, “Durable Transactional Memory Can Scale with Timestone”, In Proceedings of the **ASPLOS**, March 2020.
- **M.K.Ramanathan**, J.Kim, A. Mathew, X.Fu, A.Demeri, C.Min, and S.Kannan, “Durable Transactional Memory Can Scale with Timestone”, 11th Annual Non-Volatile Memories Workshop (**NVMW**), March 2020.
- J.kim, A.Mathew, S.kashyap, **M.K.Ramanathan**, and C.W.Min, “MV-RLU: Scaling Read-Log-Update with Multi Versioning”, In Proceedings of the **ASPLOS**, RI, April 2019.
- **M.K. Ramanathan** and W.-M. Lin, “A Controlled Fetching Technique for Effective Management of Shared Resources in SMT Processors.” Microprocessors and Microsystems 57C (2018).
- **M.K. Ramanathan** and W.-M. Lin, "An Intelligent Fetching Algorithm for Efficient Physical Register File Allocation in Simultaneous Multithreading CPUs", In International Journal of Computer Systems (IJCS), pp: 78-85, Volume 4, Issue 4, April 2017.

HONORS and AWARDS

- **Travel Grant for** ASPLOS 2019, ASPLOS 2020, NVMW 2020.
- **OCI Research Scholarship** – Awarded by The Open Cloud Institute at the University of Texas, San Antonio in Spring 2017.
- **Valero Research Scholarship** - Awarded by Valero Energy Corporation in Spring 2016.
- **ECE Pioneer Scholarship** - Awarded by The Department of ECE, University of Texas, San Antonio in Fall 2016.

RESEARCH INTERESTS

- Storage and Operating systems.
- Concurrency and Multi-Core Scalability.
- Distributed Storage.
- Systems for Machine Learning
- Computer Architecture