Om Rameshwar Gatla

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Links: Website ⋄ LinkedIn ⋄ Google Scholar

EDUCATION

Iowa State University — GPA: 3.73
PhD Candidate, Computer Engineering — *Aug 2018 - Present*
Thesis: Manifesting Reliability Issues in Storage Systems

New Mexico State University — GPA: 3.63
PhD Student, Computer Science — *May 2017 - July 2018*

New Mexico State University — GPA: 3.63
Master of Science, Computer Science — *Jan 2014 - May 2017*
Project: Understanding the Fault Tolerance of File System Checkers

Jawaharlal Nehru Technological University — GPA: 3.3
Bachelor of Technology, Electrical and Electronics Engineering — *Aug 2006 - Jul 2010*
Project: Modeling and Performance Analysis of 6/4 Switched Reluctance Motor using MATLAB / SIMULINK

WORK EXPERIENCE

Graduate Research Assistant — Aug 2018 - Present
Data Storage Lab, Iowa State University — *Ames, IA*
My research emphasizes on manifesting vulnerabilities in the storage stack. The key contributions of my thesis are:

- **Dataset of Persistent Memory Bugs in the Linux Kernel**: In this project we have performed a survey on existing Persistent Memory related vulnerabilities in the Linux kernel, and identified the dominant and unique bug patterns. This dataset would help guide future research at building efficient bug detection tools
- **Analysis of Failure Recovery Procedures in Parallel File Systems**: In this project we study recovery procedures in Parallel File Systems (such as Lustre) to identify their failure patterns. We built a black-box fault injection framework called PFault to systematically inject failures in PFS and study the consequences. We have also performed another study to identify the performance bottlenecks in Lustre checker that may cause long recovery time.
- **Fault Resilient File System Checker (RFSCK)**: In this project we uncover the impact of interrupted repair procedure on file systems, and device a generalized redo logging library called "RFSCK-LIB" to mitigate these issues.

In addition, my responsibilities include mentoring graduate and undergraduate students, and collaborating with my peers to support their research.

Graduate Teaching Assistant — Aug 2021 - May 2022
Iowa State University — *Ames, IA*
Worked as teaching assistant for Operating Systems course. Designed course homework and lab projects. Other responsibilities include teaching and mentoring undergraduate students.

Research Intern — May 2019 - Aug 2019
Western Digital — *Milpitas, CA*
Assisted researchers at developing a kernel module called "HMMAP". This module enables users to create memory map-able character device with a pluggable cache that provides additional memory to applications. Developed a methodology to identify frequently accessed memory pages and promote them to the cache for faster access.

Graduate Teaching Assistant — Jan 2015 - Jul 2018
New Mexico State University — *Las Cruces, NM*
Worked as teaching assistant for courses such as Computer Architecture, Compiler and Java programming. Other responsibilities include designing course assignments and mentoring students in respective courses.

Systems Engineer — Feb 2011 - Dec 2013
Tata Consultancy Services, Ltd. — *Chennai, India*
Worked as software developer building retail software in Java and writing backend RESTful webservices. Other responsibilities include building XML Schema for new REST webservices, writing scripts for deploying new build in Jenkins and coordinating with testing team to generate workflow test cases.

Publications

- **Om Rameshwar Gatla**, Duo Zhang, Wei Xu and Mai Zheng. Understanding Persistent-Memory Related Issues in the Linux Kernel. Submitted to ACM Transactions on Storage (ToS), 2022. [**Under Review**]

- Duo Zhang, Tabassum Mahmud, **Om Rameshwar Gatla**, Runzhou Han, Yong Chen and Mai Zheng. On the Reproducibility of Bugs in File-System Aware Storage Applications. To appear in the Proceedings of the 16th IEEE International Conference on Networking, Architecture and Storage (NAS), 2022.

- Tabassum Mahmud, Duo Zhang, **Om Rameshwar Gatla** and Mai Zheng. Understanding Configuration Dependencies of File Systems. Proceedings of the 14th ACM Workshop on Hot Topics in Storage and File Systems (HotStorage), 2022. Best Paper Nominee

- Runzhou Han, **Om Rameshwar Gatla**, Mai Zheng, Jinrui Cao, Di Zhang, Dong Dai, Yong Chen, and Jonathan Cook. A Study of Failure Recovery and Logging of High-Performance Parallel File Systems. ACM Transactions on Storage (TOS), Volume 18, Issue 2, 2022.

- Duo Zhang*, **Om Rameshwar Gatla***, Wei Xu, and Mai Zheng. A Study of Persistent Memory Bugs in the Linux Kernel. Proceedings of the 14th ACM International Systems and Storage Conference (SYSTOR), 2021. *Both authors contributed equally.*

- Dong Dai, **Om Rameshwar Gatla**, and Mai Zheng. A Performance Study of Lustre File System Checker: Bottlenecks and Potentials. Proceedings of the 35th International Conference on Massive Storage Systems and Technology (MSST), 2019.

- **Om Rameshwar Gatla**, Mai Zheng, Muhammad Hameed, Viacheslav Dubeyko, Adam Manzanares, Filip Blagojevic, Cyril Guyot, and Robert Mateescu. Towards Robust File System Checkers. ACM Transactions on Storage (TOS), Volume 14 Issue 4, 2018. Fast Tracked

- Jinrui Cao, **Om Rameshwar Gatla**, Mai Zheng, Dong Dai, Vidya Eswarappa, Yan Mu, and Yong Chen. PFault: A General Framework for Analyzing the Reliability of High-Performance Parallel File Systems. Proceedings of the 32nd ACM/SIGARCH International Conference on Supercomputing (ICS), 2018.

- **Om Rameshwar Gatla**, Muhammad Hameed, Mai Zheng, Viacheslav Dubeyko, Adam Manzanares, Filip Blagojevic, Cyril Guyot, and Robert Mateescu. Towards Robust File System Checkers. Proceedings of the 16th USENIX Conference on File and Storage Technologies (FAST), 2018. Best Paper Nominee

- **Om Rameshwar Gatla** and Mai Zheng. Understanding the Fault Resilience of File System Checkers. Proceedings of the 9th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage), 2017.

Skills Summary

Languages:	C, C++, Java, Python, SQL, Bash
Tools:	Intel Pin, perf, GIT, QEMU, LLVM, RocksDB, Memcached, Redis
Platforms:	Linux, Windows, Chameleon and CloudLab
File Systems:	Knowledge in EXT 2/3/4, XFS, Btrfs, Lustre
Others:	Knowledge in NVDIMM subsystems, PMDK and filesystem utilities

Honors and Awards

- Received USENIX Student Grant to attend FAST'17, FAST '19 and FAST '20 Conference
- Received "Best Paper Honorable Mention" at FAST '18 Conference

Other Professional Activities

- Served as sub-reviewer for the 36th IEEE International Parallel & Distributed Processing Symposium (IPDPS), 2022

- Served as sub-reviewer for the IEEE Transactions on Reliability, 2020

- Served as sub-reviewer for the 14th International Conference on Networking, Architecture, and Storage (NAS), 2019

- Volunteered in Iowa STEMS Festival (Spring 2019) for K-12 students