

Om Rameshwar Gatla

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<https://ogatla.github.io/>

EDUCATION

PHD IN COMPUTER ENGINEERING (CONTINUING) | [Iowa State University](#)

2018–Present | GPA: 4.0 | Ames, IA

PHD IN COMPUTER SCIENCE | [New Mexico State University](#)

2017–2018 | GPA: 3.68 | Las Cruces, NM

MASTER OF SCIENCE IN COMPUTER SCIENCE | [New Mexico State University](#)

2014–2017 | GPA: 3.68 | Las Cruces, NM

Thesis: Understanding the Fault Resilience of File System Checkers

Advisor: Mai Zheng

BACHELOR OF TECHNOLOGY IN ELECTRICAL AND ELECTRONICS ENGINEERING | [Jawaharlal Nehru Technological University](#)

2006–2010 | GPA: 3.3 | Hyderabad, India

Project: Modeling and Performance Analysis of 6/4 Switched Reluctance Motor using MATLAB / SIMULINK

EXPERIENCE

RESEARCH ASSISTANT | [Iowa State University](#)

Aug 2018 – Present | Ames, IA

Current research focus is on analyzing the performance of Persistent Memory systems, memory trace analysis.

RESEARCH & TEACHING ASSISTANT | [New Mexico State University](#)

May 2017 – Jul 2018 | Las Cruces, NM

Worked on improving existing file system checkers to sustain system failures and developed programs to fragment a file system.

TEACHING ASSISTANT | [New Mexico State University](#)

Jan 2015 – May 2017 | Las Cruces, NM

Mentored students in courses related to data structures, Java programming, discrete math and computer architecture.

SYSTEMS ENGINEER | [Tata Consultancy Services Ltd.](#)

Feb 2011 – Dec 2013 | Chennai, India

Worked as a Java programmer in developing back-end RESTful web services, XSD schema and writing test cases.

RESEARCH PROJECTS

DEVAGENT: A BOTTOM-UP DIRECT APPROACH TO ASSIST DIAGNOSIS OF LINUX KERNEL | [Kernel](#)

Propose a new methodology to help diagnose kernel bugs. Built a tool “DevAgent” to compare the ordering semantics of system calls made by the application to kernel and the ordering semantics of SCSI commands observed at the device layer. Any discrepancy in the ordering would help find the kernel bug.

ANALYZING MEMORY ACCESSES OF PERSISTENT MEMORY AWARE SYSTEMS | [Persistent Memory](#)

In this ongoing project, we aim to study the performance PM-Aware systems by analyzing the memory read/write traces and also perform cache hit/miss analysis. We instrument the PM-Aware systems using Intel’s Pin tool to fetch the memory traces and Perf to perform cache analysis.

TESTING THE RECOVERABILITY GUARANTEES OF PM-AWARE SYSTEMS | [Crash Consistency](#)

In this ongoing project, we test the recovery process of PM-Aware systems under emulated system failures. We emulate faults by manually analyzing vulnerable points in the system’s execution and record memory traces using Intel’s Pin tool. The PM-Aware system under test was a KV-Store called “N-Store”. Going forward we would like to automate the process of identifying vulnerable points either using static or dynamic instrumentation tools.

AGING LOCAL FILE SYSTEMS | [File System Performance](#)

This project aims to efficiently age local file systems (EXT4, XFS, btrfs, etc.) by creating user specified directory structure and performing multiple file operations (create, modify, delete) at various directory levels to achieve file fragmentation. In addition to these we also use FALLOCATE for effective fragmentation.

RFSCCK: A REDO LOG FOR LOCAL FILE SYSTEM CHECKERS | [Crash Consistency](#)

Developed a generic redo log framework that provides fault resilience to existing file system checkers (fsck), so as to avoid severe corruption of file systems during recovery process. Applied this framework to checkers of EXT and XFS file systems.

TESTING FAULT RESILIENCE OF FILE SYSTEM CHECKERS | [Crash Consistency](#)

This project aims to test the behavior of fscks under power faults. Developed a record and replay mechanism using “tgt” framework to emulate faults.

PEER REVIEWED PUBLICATIONS

A PERFORMANCE STUDY OF LUSTRE FILE SYSTEM CHECKER: BOTTLENECKS AND POTENTIALS

Dong Dai, Om Rameshwar Gatla and Mai Zheng. To appear in Proceedings of the 35th International Conference on Massive Storage Systems and Technology (MSST), 2019.

TOWARDS ROBUST FILE SYSTEM CHECKERS [[Invited Paper](#)]

Om Rameshwar Gatla, Mai Zheng, Muhammad Hameed, Viacheslav Dubeyko, Adam Manzanares, Filip Blagojevic, Cyril Guyot and Robert Mateescu. ACM Transactions on Storage, 2018.

PFAULT: A GENERAL FRAMEWORK FOR ANALYZING THE RELIABILITY OF HIGH-PERFORMANCE PARALLEL FILE SYSTEMS

Jinrui Cao, Om Rameshwar Gatla, Mai Zheng, Dong Dai, Vidya Eswarappa, Yan Mu, Yong Chen. Proceedings of the 32nd ACM SIGARCH International Conference on Supercomputing, 2018.

TOWARDS ROBUST FILE SYSTEM CHECKERS [[Best Paper Honorable Mention](#)]

Om Rameshwar Gatla, Muhammad Hameed, Mai Zheng, Viacheslav Dubeyko, Adam Manzanares, Filip Blagojevic, Cyril Guyot and Robert Mateescu. Proceedings of the 16th USENIX Conference on File and Storage Technologies (FAST), 2018.

UNDERSTANDING THE FAULT RESILIENCE OF FILE SYSTEM CHECKERS

Om Rameshwar Gatla and Mai Zheng. Proceedings of the 9th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage), 2017.

POSTERS & WORK-IN-PROGRESS

LET THE DEVICE TALK

Om Rameshwar Gatla, Yealim Sung and Mai Zheng. Work in Progress (WiP) & Poster Sessions, 17th USENIX Conference on File and Storage Technologies (FAST), 2019.

ON THE RECOVERABILITY OF PERSISTENT MEMORY SYSTEMS

Ryan Chartier, Om Rameshwar Gatla, Mai Zheng and Henry Duwe. Work in Progress (WiP) & Poster Sessions, 17th USENIX Conference on File and Storage Technologies (FAST), 2019.

ON FAULT RESILIENCE OF FILE SYSTEM CHECKERS

Om Rameshwar Gatla and Mai Zheng. Work in Progress (WiP) & Poster Sessions, 15th USENIX Conference on File and Storage Technologies (FAST), 2017.

DO NOT BLAME DEVICES FOR ALL FAILURES

Simeng Wang, Jinrui Cao, Om Rameshwar Gatla and Mai Zheng. Poster Session, 8th Annual Non-Volatile Memories Workshop (NVMW), 2017.

AWARDS & GRANTS

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

SKILLSET

PROGRAMMING & SCRIPTING LANGUAGES

- Proficient in developing programs in C, C++ with significant work experience in Java
- Expertise in developing test scripts using shell and Python

TOOLS

- Knowledge in using Intel's Pin instrumentation tool
- Knowledge in using benchmarks such as YCSB, IOBench and FileBench

SYSTEMS

- Proficient in file system architecture, especially EXT, XFS and btrfs
- Proficient with file system utility packages such as e2fsprogs and xfsprogs