

Shashank Gugnani

CONTACT INFORMATION	400 Oracle Parkway Redwood City, CA	(614) 632-3094 shashank.gugnani@oracle.com
RESEARCH INTERESTS	High performance filesystems and storage, distributed computing, big data, high performance networking, and network-based computing	
EDUCATION	The Ohio State University , Columbus, OH Ph.D., Computer Science Thesis: Designing Scalable Storage Systems for Non-Volatile Memory	2015 - 2021
	BITS-Pilani , India B.E., Computer Science Thesis: Evaluation And Implementation of Utilizing Hadoop in a Scientific Gateway Environment	2011 - 2015
WORK EXPERIENCE	Senior Member of Technical Staff Oracle, Redwood Shores, CA Role: Design and implementation of next-generation Oracle database products	Feb 2021 - present
	Graduate Research Associate Department of Computer Science, The Ohio State University Role: Designing storage systems for next-generation cloud environments	Aug 2020 - Dec 2020 Aug 2015 - May 2019
	Research Intern Storage Systems Research Group, IBM Research Almaden Role: Designing software to make persistent memory easier to use	June 2020 - Aug 2020 May 2019 - Aug 2019
	Visiting Researcher Centre for Parallel Computing, University of Westminster, London Role: Extending scientific workflow systems to support MapReduce workloads	Jun 2014 - Dec 2014
ACHIEVEMENTS AND ACTIVITIES	<ul style="list-style-type: none">• Selected as participant for ACM Student Research Competition at SC'18 and SC'17• Awarded student travel grant for SC'18, SC'17, NVMW'18, and HiPC'17• Presented talks at VLDB'21, HPDC'21, IPDPS'21, Data Works Summit'18, HiPC'17, CloudCom'16, and IDCS'14• Presented tutorials at IISWC'20 and SC'18• External reviewer for IEEE TPDS, MASCOTS'19, IPDPS'18, and ICS'17	
RESEARCH PROJECTS	<i>Memory Fabric: Data Management for Large-Scale Hybrid Memory Systems</i> , National Science Foundation, Oct'18 - Dec'20 Role: Designing new abstractions and mechanisms to allow storage systems to efficiently utilize non-volatile memory.	
	<i>NeuroHPC: Advanced Computational Neuroscience</i> , National Science Foundation, Sep'16 - May'19	

Role: Developing scalable solutions for linear fascicle evaluation of the brain connectome with MPI. Resulting designs are publicly available on docker hub ([link](#)).

HiBD: Scalable Middleware for Managing and Processing Big Data on Next Generation HPC Systems, National Science Foundation, Aug'15 - Aug'17

Role: High-performance designs for HBase and Hadoop with RDMA. Developed designs were distributed as publicly available software releases ([link](#)).

Chameleon: A Large-Scale, Reconfigurable Experimental Environment for Cloud Research, National Science Foundation, Aug'15 - Sep'17

Role: Design and development of high-performance Big Data middleware and appliances for next-generation cloud environments. Developed appliances were made publicly available through the Chameleon appliance catalog ([link](#)).

CloudSME: Cloud-based Simulation Platform for Manufacturing and Engineering, European Commission FP7 Capacities, Jun'14 - Dec'14

Role: Extended scientific workflow systems to support MapReduce based applications in the cloud. As part of the project, optimal strategies for infrastructure management and integration with workflows were developed ([link](#)).

PATENTS

1. **S. Gugnani**, S. Guthridge, F. Schmuck, T. Anderson, and D. Bhagwat, "Fine-Grained Forced Cache Eviction", US Patent 201909738

POSTERS

1. **S. Gugnani**, X. Lu, and D.K. Panda, "Accelerating Big Data Processing in the Cloud with Scalable Communication and I/O Schemes", SC 2018

TUTORIALS

1. X. Lu, H. Shi, and **S. Gugnani**, "Benchmarking and Accelerating Big Data Systems With RDMA, PMEM, and NVMe-SSD", IISWC 2020
2. D.K. Panda, X. Lu, and **S. Gugnani**, "Exploiting HPC Technologies for Accelerating Big Data Processing and Associated Deep Learning", SC 2018

SELECT PUBLICATIONS

1. **S. Gugnani** and X. Lu, "DStore: A Fast, Tailless, and Quiescent-Free Object Store for PMEM", HPDC 2021
2. **S. Gugnani**, T. Li, and X. Lu, "NVMe-CR: A Scalable Ephemeral Storage Runtime for Checkpoint/Restart with NVMe-over-Fabrics", IPDPS 2021
3. **S. Gugnani**, A. Kashyap, and X. Lu, "Understanding the Idiosyncrasies of Real Persistent Memory", VLDB 2021
4. T. Li, D. Shankar, **S. Gugnani**, and X. Lu, "RDMP-KV: Designing Remote Direct Memory Persistence based Key-Value Stores with PMEM", SC 2020
5. **S. Gugnani**, X. Lu, and D.K. Panda, "Analyzing, Modeling, and Provisioning QoS for NVMe SSDs", UCC 2018
6. **S. Gugnani**, X. Lu, H. Qi, L. Zha, and D.K. Panda, "Characterizing and Accelerating Indexing Techniques on Distributed Ordered Tables", IEEE Big Data 2017
7. X. Lu, D. Shankar, **S. Gugnani**, and D.K. Panda, "High-Performance Design of Apache Spark with RDMA and Its Benefits on Various Workloads", IEEE BigData 2016
8. **S. Gugnani**, C. Blanco, T. Kiss, and G. Terstyanszky, "Extending Science Gateway Frameworks to Support Big Data Applications in the Cloud", Journal of Grid Computing, 2016

SOFTWARE SKILLS • C, C++, Java, SQL, UNIX/Linux, git, RDMA, NVMe, PMEM, QEMU, Hadoop/Spark, OpenStack, and others

TEACHING EXPERIENCE • Instructor for OSU CSE 1223: Introduction to Programming in Java, Spring 2020
• Instructor for OSU CSE 1223: Introduction to Programming in Java, Fall 2019
• Grader for OSU CSE 3421: Computer Architecture, Spring 2016
• Grader for OSU CSE 2331: Algorithms, Fall 2015

MENTORSHIP EXPERIENCE Mentored the following junior PhD students at OSU:
• Tianxi Li
• Arjun Kashyap

REFERENCES Available upon request