DEVASHISH R. PURANDARE

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WORK EXPERIENCE

Microsoft Corp., Santa Clara, CA ⬩ Software Engineer, Azure Storage April 2024–present
Working on scale-out block storage for Azure on pipelined Data Processing Units (DPUs) (C, C++).

Center for Research in Storage and Systems, UC Santa Cruz ⬩ Graduate Student Researcher 2017–2024
(i) Setup and maintenance of research clursters: ldap, NFS, provisioning, troubleshooting, sysadmin, and networking. (ii) Mentoring, collaboration, feedback, and assitance to other CRSS research projects. (iii) Teaching Assistant for courses in operating systems, databases, and programming.

SK Hynix America Inc., San Jose, CA ⬩ Architecture Enabling Intern 2019
Worked on two projects: (i) Analysis an simulation of a variety cold storage workloads for QLC flash in Python, and (ii) Reduce Ceph's recovery bandwidth with inline compression (C++).

Riverbed Inc., Sunnyvale, CA ⬩ Engineering Intern 2017
Refactored and modernized outdated network statistics collection codebase to implement a multi-threaded, non-blocking solution in golang.

PROJECTS & PUBLICATIONS

Shimmer: Hint Generation and Data Placement on Modern SSDs 2022–2023
Shimmer is a dynamic library written in Rust which uses a *shim* layer to intecept `libc` calls and redirect them with workload hints. Shimmer improves write throughput by 30–90% on ZNS SSDs while reducing tail latency by 14× for RocksDB, MongoDB, and Cachelib.
Publications: [CIDR'22] [Under Submission].

Persimmon: A filesystem for Zoned Namespaces 2021–2023
Persimmon updates F2FS metadata to be append-only, optimizing the filesystem for the ZNS interface, reducing garbage collection, tail latency, and improving storage utilization.
Publications: [ICCD'23].

Analysis of peta-scale scientific archives 2016–2019
Analysis of a year of petabyte filesystem activity at CERN, spanning 2.4 billion file events done in Apache spark, with suggestions for optimizations, and comparison with historical trends.
Publications: [CHEOPS'22] [SIGOPS operating systems review #56].

EDUCATION

University of California, Santa Cruz, Baskin School of Engineering 2016– 2024
Ph.D. Computer Science. June 2024
Dissertation: *"Enhancing Flash Storage Performance and Lifetime with Host-Guided Data Placement."*
MS Computer Science 2022

Savitribai Phule Pune University, Pune, India. 2012–2016
BE Computer Engineering — First Class with Distinction

PROGRAMMING SKILLS

Programming: Rust, C, C++, Python, SQL, NVMe.
Tools: Linux storage stack, filesystems, `io_uring`, shell, Spark, LaTeX, qemu, strace.

SERVICE

!!Con West ⬩ Organizer 2019, 2020
Conference on the joy, surprise, and excitement of computing.
Mastodon: discuss.systems ⬩ Administrator 2022–present
A Mastodon instance for systems researchers run by Dan Ports, Irene Zhang, and me.