

SHAURYA PATEL

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EDUCATION

University of British Columbia, Vancouver Ph.D. in Electrical and Computer Science & Engineering Advised by Dr. Alexandra Fedorova & Dr. Margo Seltzer	<i>2021 - Present</i>
University of Massachusetts, Amherst M.S. in Computer Science GPA - 3.71	<i>2019 - 2021</i>
Nirma University, Ahmedabad B.Tech in Computer Engineering GPA - 8.46	<i>2013 - 2017</i>

PUBLICATIONS

CHERI-picking: Leveraging capability hardware for prefetching Shaurya Patel, Sidharth Agrawal, Alexandra (Sasha) Fedorova, Margo Seltzer Programming Languages and Operating Systems workshop (PLOS) @ SOSPP'23	<i>2023</i>
FreeLunch: Compression-based GPU Memory Management for Convolutional Neural Networks Shaurya Patel, Tongping Liu, Hui Guan IEEE/ACM Workshop on Memory Centric High Performance Computing (MCHPC)	<i>2021</i>

PROFESSIONAL EXPERIENCE

- **Google - Ghost scheduler team** Research Intern
Vancouver, BC (remote)
Sep 2022 - Dec 2022
 - Identified required components of the Linux completely fair scheduler to implement a minimum CFS policy.
 - Implemented a working CFS policy based on the components identified in the Ghost framework in eBPF.
 - Identified key future components to implement like Load balancing.
- **Google** May 2020 - Aug 2020
Amherst, MA (remote)
SDE Intern
 - Updated a cache library for indexing location data being used by multiple teams to reduce latency by upto 6% across multiple projects.
 - Added a feature to low-latency serving infrastructure at google to enable faster auctions of ads to be served by early rejection of 5% of total ads.
- **Morgan Stanley** Aug 2017 - Jul 2019
Mumbai, India
Senior Associate
 - Optimized the scalability distributed trading platform. Used containerization, machine learning and improved load balancing. Successfully increased throughput by 300%.
 - Developed a distributed platform to calculate the fees for a given trade being processed using Gemfire. This increased efficiency of business processes by 200%.

RESEARCH EXPERIENCE

Memory management and prefetching

October 2021 - Current

- I'm interested in memory management in general and solving the problem of performance degradation because of using far memory in datacenters.
- I'm looking at how to design and create a generalized pointer prefetcher in an operating system kernel using capability hardware.
- I'm also exploring how memory page prefetching can be modeled as a Machine Learning problem.

FreeLunch

October 2021

- Developed a novel memory management technique for ML training that uses compression.
- FreeLunch has up to 35% less memory consumption and up to 70% better throughput than swapping and recomputation.

Automatic Thread Scheduler

Aug 2020 - May 2021

- Proved with benchmarks the effect of scheduling on thread co-degradations.
- Created a scheduler that automatically learns the groups of threads to schedule based on assigned rewards.
- The scheduler has 10% higher throughput as compared to the CFS by setting affinity of threads.

SERVICE

- Submission Chair, Eurosys 2023.
- VP Social External 2022 - 2023, ECEGSA.
- Volunteer, Splash 2020.

AWARDS AND GRANTS

- SOSP student scholarship, 2023
- OSDI student scholarship, 2021
- UBC President's Academic Excellence Initiative Award, 2021-2023
- Morgan Stanley Global Tech Excellence Award, 2019

TECHNICAL STRENGTHS

Computer Languages

C++, C, Java

Operating systems

Linux, FreeBSD, CheriBSD.