Sid **Agrawal**

Software Engineer · Graduate Student

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Summary

Ph.D. student seeking summer internships with a research focus on operating systems and security. Prior experience as a software engineer in kernel development and DevOps roles. Ongoing research focuses on different isolation abstractions provided by the typical operating systems ranging from processes, containers and VMs intra-address space compartmentalization provided by CHERI.

Education

University of British Columbia *Vancouver, BC, Canada*

Ph.D. in Computer Science: Operating Systems Architecture and security *Jan. 2021 - (exp.)Dec 2025*

- Advised by Prof. Margo Seltzer
- Developed a formal model to express and compare different isolation abstractions available in an OS.
- Implement a framework to let the user explore the design space of all OS isolation abstractions.

University of Florida *Gainesville, Florida, USA*

MS. in Electrical and Computer Engineering *Aug. 2010 - Dec. 2011*

BITS(Birla Institute of Technology and Science) Pilani *Goa, India*

B.E. in Electrical and Electronics Engineering *Aug. 2005 - Aug. 2009*

Work Experience

ARM *Vancouver, BC, Canada*

Intern, Research - Systems Security *May 2022 - Aug 2022*

- Ported a microkernel (seL4) to ARM's Morello experimental platform with hardware capability support (CHERI). link

Arista Networks *Vancouver, BC, Canada*

Software Engineer *Sep. 2016 - Dec. 2020*

- Developed micro-services to detect, triage, and fix faulty testbeds.
  This automation led to savings of 10s of person-hours per month per engineer.
- Developed and maintained a service to store distributed file systems blob data in a NoSQL store.

Panzura *Campbell, CA, USA*

Software Engineer *Apr. 2015 - Aug. 2016*

- Designed and implemented support to transactionally update file metadata
  for Panzura's Global Distributed File System, which heavily simplified recovery after crashes.

Oracle *Santa Clara, CA, USA*

Solaris Kernel Engineer *Mar. 2012 - Apr. 2015*

- Enhanced the virtual memory predictor in Solaris by developing an algorithm to determine which segments in the address space can be upgraded to large pages
- Developed C and assembly level kernels to stress test cache interconnects and database co-processor of the SPARC microprocessor

Tools and Languages

Languages	C, Golang, ARM and x86 Assembly
Operating Systems Internal	seL4 (high), Solaris, Linux and FreeBSD (beginner)
Debugging	GDB, KDB, Dtrace

Publications

OSmosis: No more Déjà vu in OS isolation *ArXiv 2309.09291*

Sidhartha Agrawal, Reto Achermann, and Margo Seltzer

This work lays out the ground for an isolation model for the entire operating system, and it is the groundwork for my thesis.

CHERI-picking: Leveraging capability hardware for prefetching *PLOS 2023, Germany*

Shaurya Patel, **Sidhartha Agrawal**, Alexandra Fedorova, and Margo Seltzer

The work uses a new ISA (CHERI) which was built for security and instead uses to build a system with higher performance