

Chinmay Kulkarni (www.chinmayk.net)

EDUCATION

University of Utah Salt Lake City, USA

Doctor of Philosophy in Computer Science, May 2021

Dissertation: Reconfiguration and Extensibility for Low-Latency Key-Value Stores

Advised by Prof. Ryan Stutsman

Indian Institute of Technology Bombay Bombay, India

Master of Technology in Computer Science, August 2016

Thesis: Mitigating Busy Waiting in SMP Virtual Machines

Advised by Prof. Purushottam Kulkarni

National Institute of Technology Surathkal, India

Bachelor of Technology in Electronics and Communication, November 2013

EXPERIENCE

Lightstep (acquired by Servicenow) Remote, Salt Lake City, USA

Senior Software Engineer, Data Platform Team, June 2021 - November 2023

Member of the data platform and query experience teams. Worked on Lightstep's in-house time-series databases, query engine, query language, and public APIs (for spans, metrics, and traces).

Notable projects:

1. Led a project to build a service-graph-connector for OpenTelemetry. Designed and built an API that queries spans and metrics telemetry to determine the set of kubernetes resources running within a customers' environment. Generated multiple million dollars of pipeline across many big name enterprise customers for Lightstep. When released on the ServiceNow store, broke the record for the most downloaded connector.
2. Led a project to build a query logging system to identify queries of death. Paired with teammate for the implementation. Reduced incident MTTR from hours to minutes. Logger is also now used to guide improvements to the query layer. Logger also powers key product feature that allows customers to reduce cost by identifying unused timeseries.
3. Worked on a team to migrate data from spanner into an in-house database. Designed and built a fault-tolerant, idempotent, highly-concurrent, distributed ETL job for the migration. Validated data post-migration. Helped root cause and fix issues caused by the migration. Reduced yearly operating cost by 0.5 million dollars.
4. Made contributions to the query engine and language including support for template variables etc. Shepherded tweaks to cluster autoscaler, reducing yearly operating cost by 1 million dollars. Built dashboards to measure unit margins. Embedded within product team to implement product features for alerting.

University of Utah Salt Lake City, USA

Google Ph.D Fellow, August 2019 - May 2021

Designed, implemented, and evaluated a new distributed key-value store called Shadowfax. Shadowfax can serve 130 Million updates per second on Azure virtual machines, can span local as well as remote cloud storage, and can scale out in under 20 seconds. Work published at VLDB '21.

Research Assistant advised by Ryan Stutsman, August 2016 - May 2019

Designed, implemented, and evaluated mechanisms for reconfiguration and extensibility in low-latency key-value stores. Work published at SOSP '17 and OSDI '18.

Google Sunnyvale, USA

Research Intern hosted by Larry Kai, May 2020 - August 2021

Worked on defining and measuring the availability of Google services. Designed and built a dashboard that Google engineers can use to visualize and monitor the availability of their service.

VMware Palo Alto, USA

Research Intern hosted by Gerd Zellweger, May 2019 - August 2019

Designed, built, tested and evaluated a Rust library that constructs a highly scalable, linearizable, concurrent data structure from a single threaded implementation.

	Microsoft Redmond, USA <i>Research Intern hosted by Badrish Chandramouli, May 2018 - August 2018</i> Worked on an RPC layer and scale out protocol for FASTER, a key-value store that scales linearly across cores to service 160 million updates per second.		
	Cisco Systems Bangalore, India <i>Software Development Engineer, August 2013 - December 2013</i> Worked with the core switching - platforming team. Also involved with the development of the inband, datapath and env components of the Cisco Catalyst 6K series of switches. <i>Software Development Intern, May 2012 - August 2012</i> Worked on Openstack and Openflow plugins for the Cisco Catalyst 6K series of switches.		
PUBLICATIONS	Achieving High Throughput and Elasticity in a Larger-than-Memory Store VLDB 2021 Chinmay Kulkarni , Badrish Chandramouli, and Ryan Stutsman Collaboration with Microsoft NrOS: Effective Replication and Sharing in an Operating System OSDI 2021 Ankit Bhardwaj, Chinmay Kulkarni , Reto Achermann, Irina Calciu, Sanidhya Kashyap, Ryan Stutsman, Amy Tai, and Gerd Zellweger Collaboration with VMware Adaptive Placement for In-memory Storage Functions ATC 2020 Ankit Bhardwaj, Chinmay Kulkarni , and Ryan Stutsman Splinter: Bare-Metal Extensions for Multi-Tenant Low-Latency Storage OSDI 2018 Chinmay Kulkarni , Sara Moore, Mazhar Naqvi, Tian Zhang, Robert Ricci, and Ryan Stutsman Rocksteady: Fast Migration for Low-latency In-memory Storage SOSP 2017 Chinmay Kulkarni , Aniraj Kesavan, Tian Zhang, Robert Ricci, and Ryan Stutsman Beyond Simple Request Processing with RAMCloud IEEE DEB 40(1) Chinmay Kulkarni , Aniraj Kesavan, Robert Ricci, and Ryan Stutsman Benchmarking Multiprocessing Parameters in a Virtualized Multi-Core Environment Chinmay Kulkarni and Purushottam Kulkarni IIT Bombay Technical Report		
OPEN SOURCE	microsoft/FASTER	vmware/node-replication	utah-scs/splinter
TALKS AND POSTERS	Achieving High Throughput and Elasticity in a Larger-than-Memory Store <i>VLDB 2021, Copenhagen, Denmark</i> Reconfiguration and Extensibility for Low-Latency Key-Value Stores <i>PhD Defense, 2021, University of Utah, Salt Lake City, Utah, USA</i> Scaling an Operating System to Many Cores Using a System Call Log <i>SOSP 2019 (Poster), Huntsville, Ontario, Canada</i> Raising The Efficiency of μ Storage <i>Google PhD Fellowship Summit 2019, Mountain View, California, USA</i> Splinter: Bare-Metal Extensions for Multi-Tenant Low-Latency Storage <i>OSDI 2018, Carlsbad, California, USA</i> Rocksteady: Fast Migration for Low-latency In-memory Storage <i>SOSP 2017, Shanghai, China</i>		
SERVICE	JSys (Student Editor, 2021), HotCloud '20 (External Reviewer)		
AWARDS	Google PhD Fellowship , <i>Systems and Networking, 2019</i>		

SKILLS

Go, Rust, Python, R, C++, Kubernetes, Kernel-bypass networking, Lock-free programming