Samarth Kulshreshtha

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Industry Experience

Google Sunnyvale, CA

Software Engineer, Network Infrastructure *Jun '19 – Present*

- Currently working on the infrastructure to model all aspects of Google's network
- Currently working on the infrastructure to manage configuration of all devices within Google's network
- Own the design and implementation of a highly available and distributed network telemetry service which exports terabytes of data per day

Nvidia Santa Clara, CA

Software Intern, Distributed File Cache *May '18 – Aug '18*

- Implemented various features including APIs to query extended actions, checksum validation on warm GET, range read of objects, throttling of LRU eviction strategy, and migration of DFC APIs to the *Open API 3.0* specification (fka *Swagger*)
- Enhanced the hashing performance by 90% using an optimized version of *Rendezvous Hashing*

Microsoft Bangalore, India

Software Engineer, Azure StorSimple *Jun '16 – Jul '17*

- Designed and developed a new cloud service, *Data Discovery and Insights*, to search and retrieve files stored across backups
- Designed the schema for storing file metadata across tables to optimize for storage and transaction costs
- Designed, implemented, and automated the infrastructure to test the *Hybrid Data Services* architecture

Software Engineering Intern, Azure StorSimple *Jan '16 – May '16*

- Implemented the core logic for *Data Transformation Service* to trigger backups, clone and cleanup volume containers
- Implemented the host agent to estimate the workload for the execution phase

Software Engineering Intern, Azure StorSimple *May '15 – Jul '15*

- Integrated *Azure Site Recovery* with *Azure StorSimple* to facilitate a one-click unified failover through *Azure Automation*, this enabled the two products to be pitched as an integrated end to end backup solution to the customers
- Conducted performance analysis to identify bottlenecks involved in the import of StorSimple data to *Azure Blobs*, the results from this analysis laid the ground steps for a completely new standalone product – *Azure StorSimple Data Manager*

Education

Master of Science, University of Illinois Urbana-Champaign Aug '17 – May '19

Computer Science *GPA: 4.0/4.0*

Bachelor of Technology, Manipal Institute of Technology Aug '12 – May '16

Computer Science and Engineering, ***Gold Medalist*** *GPA: 9.77/10.0*

Research Experience

Decentralized Systems Lab

Graduate Research Assistant, Advisor: Prof. Andrew Miller *Jan '18 – May' 19*

- Worked on HoneyBadgerMPC, a new Multi Party Computation implementation with robust online and optimistic offline phase
- Master's thesis

Parallel Programming Laboratory

Graduate Research Assistant, Advisor: Prof. Laxmikant Kale *Aug '17 – May' 18*

- Worked on adding support for distributed section creation in Charmpy, a Python version of the Charm++ framework

Projects

Scheduling for modern distributed systems

- Designed a class of scheduling algorithms achieving high throughput, low latency, balanced load, scalability and fault tolerance
- Demonstrated its effectiveness through preliminary experiments and theoretical analysis
- Awarded one of the *Best Research Projects* for the *Advanced Distributed Systems* class

Distributed Graph Processing System

- Developed a fault-tolerant distributed graph processing engine from scratch, based on the Gather-Apply-Scatter model on top of a self implemented flat distributed file system
- Implemented in a modular way to allow writing various graph algorithms like Page Rank, Shortest Path, etc. with ease

Research Publications

HoneyBadgerMPC and AsynchroMix

D. Lu, T. Yurek, ***S. Kulshreshtha*** *et al.* at ACM CCS 2019

Languages and Technologies

Languages: C++, Golang, Python, C#, Java

Tools and Technologies: Microsoft Azure, Amazon Web Services, Git, Bash, Powershell