Irfan Sharif

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Summary

· Experience with distributed systems, ML, storage and search engines, file systems, SAT solvers

Education

University of Waterloo — 2014 – 2019
Bachelor of Applied Science in Honours Computer Engineering (with Distinction)

Experience

Cockroach Labs — *Toronto, ON*
Senior Software Engineer (Transactional KV) — 2019 – Present
· Leading admission control: overload protection, work prioritization, and inter-tenant fairness
· Built elastic CPU limiter using patched Go, protecting latencies from in-process background work
· Improved schema count scalability from $O(10k)$ to $O(1M)$, re-architecting for multi-tenancy
· Worked on flow control for quorum writes, upgrades infrastructure, bazel-ifying monorepo, tracing

LinkedIn — *Sunnyvale, CA*
Software Engineering Intern (Machine Learning Infrastructure) — 2018
· Worked on model serving, versioning, runtime and deployment across thousands of hosts

Amazon — *Palo Alto, CA*
Software Engineering Intern (Search Relevance) — 2018
· Used sequence-to-sequence learning to generate alternative search suggestions, authored query reformulation modules to improve system recall, and incorporated OCR text into ranking models

Cockroach Labs — *New York, NY*
Backend Engineering Intern (Storage, Distributed SQL) — 2016 – 2017
· Designed dedicated storage engine for Raft, contributed to TLA+ verified PreVote extension
· Implemented aggregations, sorting, n-way parallel joins, and row de-duplications for query engine

Shopify — *Ottawa, ON*
Production Engineering Intern (Infrastructure) — 2016
· Built an auto-scaling build system with dynamic workload distribution handling 1000+ builds/day

Publications

[1] Rebecca Taft, **Irfan Sharif**, et al. CockroachDB: The Resilient Geo-Distributed SQL Database. In *Proceedings of the ACM SIGMOD International Conference on Management of Data*, 2020.

[2] Nathan VanBenschoten, Arul Ajmani, Marcus Gartner, Andrei Matei, Aayush Shah, **Irfan Sharif**, et al. Enabling the Next Generation of Multi-Region Applications with CockroachDB. In *Proceedings of the ACM SIGMOD International Conference on Management of Data*, 2022.

[3] **Irfan Sharif**. Hitchhiker's Guide to Transactions. In *Hydra: Computing Conference*, 2021.

Research

Waterloo Artificial Intelligence Institute *(SAT/SMT solvers)* — 2016
· Studied search space pruning, clustering and parallelization techniques under Prof. Vijay Ganesh

Projects

· **Kura** – An E2EE, synchronized, distributed file system with live-sharing and file streaming
· **Solver** – SAT solver library in Go (wraps around Google's Operational Research Tools)
· **CFilter** – Cuckoo Filter implementation with 770+ stars and 35+ forks on GitHub