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ARMAAN SOOD

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EDUCATION

Seattle, WA **University of Washington** **Fall 2016 – Spring 2020**

3.9 GPA (Phi Beta Kappa, Dean's List)

- B.S. in Computer Science (direct admission) and Mathematics (double major)
- **Upcoming Courses**: Real analysis; abstract algebra; topology
- **Past Coursework**: Computer Networks; Distributed Systems; Operating Systems; Database Systems (grad); Theory of Computation; Compiler Construction; Computer Vision; Algorithms; FPGA Programming
- **Interest**: Systems programming (databases, distributed systems, operating systems).

EXPERIENCE

Software Engineer Intern **Microsoft – Azure Cosmos DB** **June 2019 – Present**

- Creating and integrating a mutation proxy fuzzer system for Cosmos DB's Cassandra query engine.
- Adding Azure AD authentication to every Cosmos DB request sent.

Data Scientist Intern **Microsoft – Surface** **June 2018 – September 2018**

- Implemented a real-time statistical process control system for Microsoft devices, processing 200 gigabytes of data per day, with Azure and .NET tools – the first usage of real-time analytics within Microsoft devices manufacturing.
- Will be used to improve quality, avoid excess costs, and find root causes during quality failures significantly faster.

Chair **Association for Computing Machinery** **September 2016 – June 2019**

- Elected to be the external face of ACM and represent over 1,200 CSE students.
- Coordinating with the school and industry affiliates.

Teaching Assistant **University of Washington** **March 2017 – August 2017**

- Head Grader for Software Design and Implementation (CSE 331).
- Taught a section of 20-25 students and answered content-related questions on forums.
- Graded theory-based code reasoning and project-based assignments.
- Held office hours for homework help and course questions.

PROJECTS

- **Torgo** (June 2019): Anonymous overlay network based on the Tor protocol. Routes traffic from a browser through a randomized circuit of Tor routers before sending it to the web server. Other Tor routers are found using a peer discovery registration service. Can run (for multiple days or longer) in a heterogeneous environment without resource leaks or deadlock. Wrote around 1.5k lines of code in Golang.

- **Distributed Database System** (June 2019): A linearizable, Paxos replicated, sharded key-value store with multi-key updates and dynamic load balancing, similar in functionality to Amazon's DynamoDB or Google's Spanner.

- **Operating System** (March 2019): Created a working operating system in C that can run multiple processes efficiently and store file data reliably. Based on the Experimental Kernel (XK).

- **Java to x86-64 Compiler** (June 2018): Uses JFlex (lexical analyzer generator) and CUP (LALR parser generator) to generate a scanner and parser using context-free grammars, then transforms the program into an AST for static semantics checking, type checking, and symbol table generation via the visitor pattern. Finally, generates x86-64 code based on the AST which can be run.

- **SimpleDB** (March 2018): A relational database management system in Java that handles queries (joins, aggregate functions, selections, etc.), ACID transactions, and a steal/no-force crash recovery (with a write-ahead redo/undo log + non-quiescent checkpoints). It can run in parallel or as a distributed system across multiple machines

RESEARCH EXPERIENCE

Undergraduate Assistant **UW Database Group** **Spring 2018**

- Developing a cost model for LightDB, a database system for virtual and augmented reality content at scale.

Undergraduate Assistant **Taskar Center for Accessible Technology** **Autumn 2016 – Winter 2017**

- Worked with Dr. Anat Caspi and Nick Bolton to Developed a tutorial module for the OpenSidewalks Project in Unity.