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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**: Database Systems (grad); Computer Networks; Distributed Systems; Operating Systems; Theory of Computation; Compiler Construction; Computer Vision; Algorithms; FPGA Programming.
- **Interest**: Systems programming (databases, distributed systems, operating systems); C++.

EXPERIENCE

Software Engineer Intern　　　　**Microsoft – Azure Cosmos DB**　　　　**June 2019 – September 2019**
- Created and integrated a mutation proxy fuzzer system for Cosmos DB's Cassandra query processor.
- Integrated Azure Active Directory authentication to every Cosmos DB request sent and demoed feature to Fortune 500 customers.

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.
- 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.
- Coordinated and planned events 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. Finally, generates runnable optimized x86-64 code.

- **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.