Armaan Sood

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Last updated November 2020

Experience

- **Microsoft**
  Software Engineer Intern, Cosmos DB Security June 2019 – September 2019
  - Implemented Active Directory authentication so that only authenticated clients can modify the database.
    - Demoed to large customers who have a critical dependency on this feature.
  - Created and integrated a mutation proxy-fuzzer system for Cosmos DB's Cassandra query processor.

  Data Scientist Intern, Surface June 2018 – September 2018
  - Accelerated the digital transformation of Microsoft Devices manufacturing by designing and implementing a real-time statistical process control system.
    - This system improves quality by predicting failures, avoiding excess costs, and finding root causes significantly faster (from a 5-8 hour delay to a 0-30 second delay).
    - Coordinated with international factory managers to ensure the system was accessible and would integrate with existing workflows.

Education

- **University of Washington** 2016 – 2020
  B.S. in Computer Science, B.A. in Mathematics *3.9/4.0*

  Computer Science Senior Electives:
  - Database Systems
  - Distributed Systems
  - Operating Systems
  - Computer Networks
  - Theory of Computation
  - Compilers
  - Computer Architecture
  - Computer Vision
  - Machine Learning Algorithms

  Mathematics Senior Electives:
  - Abstract Algebra
  - Topology
  - Differential Geometry
  - Combinatorial Theory
  - Real Analysis
  - Complex Analysis
  - Linear Analysis

  Honors: *Phi Beta Kappa*, *cum laude*, Dean's List every quarter
  Activities: ACM Chair, teaching assistant, Allen School K-12 outreach ambassador

Projects

- **Distributed Storage System** April 2019 – June 2019
  - Created a linearizable, Paxos-replicated, sharded key-value store with multi-key updates and dynamic load balancing, similar to Amazon's DynamoDB or Google's Spanner.
- **Torgo** June 2019
  - Created a distributed anonymous overlay network based on the Tor protocol.
  - It can run for multiple days or longer in a heterogeneous environment without resource leaks or deadlock.
- **BabyDB: Baby's First Multi-User Distributed RDBMS** January 2018 – March 2018
  - Implemented a relational database management system (RDBMS) that can handle queries (projections, selections, order by), joins, aggregate functions, ACID transactions, and includes a write-ahead redo/undo log for steal/no-force crash recovery with nonquiescent checkpointing.
  - Queries are optimized to run in parallel on a single machine or distributed across multiple physical machines.
- **Java to x86-64 Compiler** March 2018
  - Created a compiler that compiles a subset of Java to x86-64 assembler.
  - Uses JFlex (lexical analyzer generator) and CUP (LALR parser generator) to generate a scanner and parser using context-free grammars, then transforms the input program into an abstract syntax tree (AST) for pretty printing, static semantics checking, type checking, and symbol table generation. Finally, generates runnable x86-64 code.