Dean Menezes

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Experience

Fortanix

Software Engineer *March 2022-Present*

- Worked on cryptography and cybersecurity software based on Intel SGX (Software Guard Extensions), a set of security-related instructions that enable user-level code to allocate private memory regions called enclaves.
- Implemented frontend and backend software for key management and processing of machine learning datasets using C++ and Rust, ensuring secure enclave-based execution and data handling.
- Drove design and implementation of AWS Nitro Enclave File Persistence feature for Confidential Computing Manager (CCM) product, enabling ephemeral Nitro enclaves to securely persist encrypted files across enclave sessions.
- Developed SQL query and join logic library components for Data Execution Engine, enabling integration testing and production use for customer data workloads with high performance and reliability.
- Contributed to product improvements in the Confidential AI (CAI) system, focusing on secure execution of containerized Python-based AI workloads inside Intel SGX enclaves.

Google

Software Engineer Intern *January-March 2022*

- Developed C++ software for record-replay testing of derived intent generation, a system that displays infoboxes (e.g., weather, sports, finance) in response to search queries
- Improved debugging and test coverage of production intent logic.
- Collaborated cross-functionally with various Search teams to integrate testing tools into existing CI pipelines.

Snowflake

Software Engineering Intern *June-Dec 2021*

- Worked on enhancing the SQL compiler (written in Java) by implementing optimization rules such as filter pushdown and JOIN elimination, reducing query execution time by approximately 10% for common workloads.
- Enabled Bloom filters to be pushed across splits in distributed query plans, improving selectivity and reducing I/O and memory usage, leading to up to 20% faster query execution in large-scale benchmarks.
- Contributed to improvements in cardinality estimation algorithms, increasing the accuracy of set size predictions for complex SQL queries, improved the query planner's decision-making and reduced suboptimal query plans by up to 20% in test cases.

Education

University of California Los Angeles

M.A. in Mathematics, GPA: 3.99 *2017-2021*

- Qualifying Exams Completed: Algebra, Logic, and Analysis
- Achieved university-wide highest grades on Algebra, Logic, and Analysis exams Spring 2019
- Relevant Coursework: Combinatorics, Model Theory, Set Theory, Number Theory, Topology

The University of Texas at Austin

B.S. Mathematics, B.A. Plan II Honors, Highest Honors, Special Honors in Mathematics, GPA: 3.98 *2012-2016*

- **Undergraduate Thesis:** Cartesian Closed Categories and Typed Lambda Calculus
- **Budapest Semesters in Mathematics (Fall 2014):** High Honors

Technical Skills

Languages: C, C++, Python, Java, Rust
Technologies/Frameworks: NumPy, Pandas, SciPy, Scikit-Learn, FastAPI, BeautifulSoup, PyMongo, Matplotlib, Seaborn
Developer Tools: Linux / Unix, WireShark, ANTLR, Flex/Yacc, Docker