Steven Thomas Mathew

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Education

University of Toronto St. George

Expected: Sept 2023

Year 3 Specialist in Computer Science and Minor in Mathematics (BSc)

Dean's List Scholar (2020, 2021) award, cGPA of **3.94/4.00** (Major: 4.00), and **$2000** UofT Entrance Scholarship.

Experience

SWD Intern
Ciena
Jan 2022 - Present (4 mos.)

Optimizing internal tooling that will be used by most of the company (through multithreading and multiprocessing). Upgrading it with high configurability to validate builds before deployed to production, improving developer experience and cutting down previously manual outreach.

Desgining and building a Flask server to log and monitor use of the tool to triage build failures.

Projects

Speedrun.com Data Inquiry
repo

Crawled routes on speedrun.com to scrape **29,000** games and **30,000** speed runs. Vectorized results from JSON to data frames, cleaned, and exported to CSV using pandas.

Improved validity of scraped data by asserting **cross-table constraints** in Python before importing to Postgres.

Designed a Postgres **DDL** schema that eliminates nullable values and redundancy based on functional dependency with **BCNF** decomposition.

Synthesized current speedrun data to produce a report by making several optimized queries using **PostgresQL** and presented findings with matplotlib.

readme.
repo

Developed a fully-featured backend for curating projects targeted towards developers.

Designed a scalable, maintainable **RESTful** API using **Typescript**, **Express**, and PostgresQL and built out a scalable schema using **TypeORM**.

Architected performant, robust code with resilient error and exception handling, and used **JWT** authentication middleware to persist session information.

tcp
[IPR]

Implementing the TCP protocol. Followed RFC 793, the original protocol, to establish an incoming TCP connection using the three-way handshake and gracefully terminate a connection.

Designing support for data segments, retransmissions, and timers. Currently implementing RFC 1122 and RFC 7414, which lay out the requirements for clean interoperability for internet hosts.

Building out multiple TCP streams management, with support for blocking operations, reading and writing data, and application-controlled shutdown.

Other Projects

msg-queue
[AOR]

Built a multithreaded message queue with I/O multiplexing functionality (similar to the `poll()` syscall).

Alice Maze Solver
repo

Programmed a Python API that solves the Alice Maze puzzle in the shortest path using BFS.

Othello/Reversi
repo

Created a Java application that uses Minimax and Alpha-Beta Pruning for AI to play Othello.

bowlo
devpost

A decentralized platform, inspired by Mastodon, for open, global converstaion about politics. Presented to judges at University of Waterloo's **Hack the North**.

Skills

Languages

Python, C, C++17, Java, GoLang, (Java | Type)script, SQL, Rust

Technologies

Node, Express, Flask, PostgreSQL, MongoDB, Docker, NumPy, Next, Tailwind