Otavio Sartorelli de Toledo Piza

Computer Science Honors

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About Me

Technical Skills C/C++, Python, Jupyter Notebooks, TypeScript, JavaScript, Java, Bash, SQL, Dart, LaTeX, R.
Technologies Express, React, Angular, Git, CMAKE, MongoDB, PostgreSQL, Firebase, Docker.
Languages English (C2), German (B2), Spanish (B2), Portuguese (native).
Interests Analysis of Algorithms, Databases, Search, Security, Distributed Systems, Infrastructure.

Work Experience

Google – Software Engineering Intern Boulder, CO (2023.05 – Current)

- Developing an end-to-end debugging framework for Google Search's notification infrastructure responsible for serving over 2 billion devices. The new framework enables partner teams to safely manipulate the live system even in a production environment without affecting non-targeted users or introducing breaking changes, thus significantly facilitating debugging new and existing features. Additionally, the new tool guarantees developers' changes are enforced for their time to live, after which they automatically are reversed.

Google – STEP Intern Irvine, CA (2022.05 – 2022.08)

- Created a full-stack web application for searching for a user-specified resoucrce in an internal tool, improving system stability by removing the need to perform error-prone manual searches and facilitating debugging.
- Developed an SQL database query to search for a user-specified resource inside an internal tool's storage.
- Built a back-end RPC service with C++ responsible for processing query requests received through a Java proxy service from the front-end and responding with the appropriate resources.
- Implemented a generic filter model for front-end tables, facilitating adding data filtration functionality and reducing boilerplate code between different components.
- Developed a front-end page utilizing AngularDart, allowing users to query for resources from a back-end service and see the results in a table.

Projects

SERVERCC – Distributed IOT Framework github.com/OtavioPiza/restpp

- Developing a completely decentralized framework for IOT using the C socket library.
- Implemented an auto initialization sequence in which a node utilizes one-to-many network communications to learn about other nodes and their services, allowing for dynamic asymmetric servers.
- Designed a message demultiplexing system that enables multiple threads of execution per node.
- Implemented a recovery system that gracefully handles other nodes disconnecting unexpectedly.
- Working on implementing a routing protocol that supports arbitrary indirect connections between nodes.

Xinu Lab github.com/real-xinu

- Fixed a resource deallocation issue in the operating system's shell which could lead to crashes. This unblocked a major update that introduced pipes to the shell.
- Working on implementing support for concurrent file access among many processes.

Education

Purdue University West Lafayette, IN (2020.08 – 2024.05)

- Bachelor of Computer Science Honors.
- Dean's List and Semester Honors (Fall 2020 – Spring 2023)
- Grade Point Average: 3.96 / 4.00.
- Teaching Assistant: Competitive Programming I & II (Fall 2022 – Current). Created solutions for homework problems. Hosted biweekly office hours to answer student questions. Lead problem discussions after class.

Student Organizations

BRASA – Fullstack Developer Remote (2021.08 – 2022.08)

- Created a unified authentication system, which supports multiple user types and access levels.
- Established an internal tool request and development process, reducing delivery time by 300%.
- Refactored our API into a centralized domain-driven design, improving maintainability and expandability.
- Onboarded new developers into the organization's systems.