

# OTAVIO SARTORELLI DE TOLEDO PIZA

COMPUTER SCIENCE HONORS

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## ABOUT ME

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**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

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### 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 users. 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 resource 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

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### SERVERCC – Distributed IOT Framework

[github.com/OtavioPiza/restpp](https://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 Operating System Lab

- 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

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### Purdue University

West Lafayette, IN (2020.08 – 2024.05)

- Bachelor of Computer Science Honors.
- Grade Point Average: 3.96 / 4.00.
- Teaching Assistant: Competitive Programming I & II (Fall 2022 – Current).

## STUDENT ORGANIZATIONS

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### 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.