

# Robert Mushkot

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## EDUCATION

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### University of California – Santa Cruz

Santa Cruz, CA

Bachelor of Science with Honors in Computer Science – 3.58/4.00

June 2020

Dean's Honors: Winter 2017, Fall 2019, Spring 2020

## SKILLS

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**Languages:** C/C++, Python, Java, OpenCL, Go, JavaScript

**Other:** Git, Unix/Linux, MySQL, PostgreSQL, Flask, FPGA, Docker, HTML, CSS

## EXPERIENCE

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### SAP Sponsorship

Santa Cruz, CA

#### Undergraduate Researcher

January 2020 – June 2020

- Worked on SAP's HANA database, which serves over 32,000 customers, to improve key in-memory database functionality.
- Partnered with SAP and Intel to improve performance of HANA's Delta Merge process, which operates on millions of column entries, using OpenCL and FPGA technology.
- Utilized pipeline parallelism and vectorization techniques to optimize the Delta Merge operation, achieving a 200% increase in data throughput.

### Storage Systems Research Center

Santa Cruz, CA

#### Undergraduate Researcher

August 2018 – June 2020

- Researched and implemented various methods of locating cellular towers along with preventing a man-in-the-middle attack between a cellular phone and a cellular tower.
- Wrote C code for serial communication with GPS, LTE, and Radio modules that send GPS location and radio frequency samples to a remote server.
- Maintained clear and concise documentation, quarterly reports, and design documents for effective communication with team members and faculty advisors.

## PROJECTS

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### IMSI Catcher Detector

C, Python, MySQL, GPS & RTL Modules, Git

- Devised a communication protocol for sending GPS and radio sample data from client to server.
- Developed a database to store location data gathered from multiple clients placed around the local area and performed geolocation calculations on radio frequency samples.
- Capitalized on a Real-Time Operating System to synchronously run a radio sampling algorithm across multiple clients, with a 2% timing error.

### Sharded Fault Tolerant Key-Value Store

Python, Flask, Docker, Git

- Created a distributed key-value store that uses replication to ensure fault tolerance across thousands of keys.
- Implemented data sharding to increase capacity and throughput of the key-value store.
- Utilized vector clocks to ensure causal consistency between keys in replicas.

### Truck-d

Python, MySQL, Flask, React, Redux, Git

- Web application where food truck vendors can display their menus and locations while customers can make food orders through a shopping cart design.
- Designed python API to create and edit user profiles, food orders, and vendor menus.
- Managed and set up a database to store user data, vendor menu items, order lists, and locations.