

# Alberto Valle | Software Engineer II | 2+ years

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## Technical Skills

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- **Programming Languages:** Python, Rust, C/C++, JavaScript, Scala
- **Frameworks and Libraries:** Paho-mqtt, Pytest, Locust, Tokio, Bytes, Flask, Django, Pandas
- **Infrastructure:** Message Brokers (Mosquitto, RabbitMQ), Web Servers (Lighttpd, Nginx), Linux (Debian), SQL (PostgreSQL, SQLite), NoSQL (Couchbase), Jenkins, TestRail, Github, Bitbucket
- **Other Technical Knowledge:** MQTT/3.1.1, AMQP, HTTP/1.1, REST, Robotics, Distributed Systems, Gitflow

## Professional Experience

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### Software Engineer II – Full Time

May 2024 – Present

*Omron Robotics and Safety Technologies*

*Pleasanton, CA*

- Led the implementation of MQTT-based communication for mobile robots, driving 5+ new major customers from alpha to production by developing translation layer and MQTT API using multithreaded Python
- Cut release testing by 97% (1 week to 4 hrs) by developing test framework (Pytest) covering 70+ MQTT topics
- Collaborated cross-functionally with OS (Linux), navigation, and integration teams to debug and enhance features for 3+ robotics applications, including analytics, MQTT/REST APIs, and message broker infrastructure
- Improved security compliance (IEC 62443) by mitigating 45+ vulnerabilities by providing thread analysis (STRIDE)

### Software Engineer I – Full Time

June 2022 – May 2024

*Omron Robotics and Safety Technologies*

*Pleasanton, CA*

- Scaled up robot inter-process and IoT communication to 100+ distributed systems by integrating message broker
- Optimized broker configuration and prevented 3+ potential DoS attacks by stress testing on robot fleets
- Identified network and CPU/MEM bottlenecks through load testing and resolved by setting message rate limits
- Reduced API latency by 98% (from 1s to 15ms) by refactoring NoSQL queries and applying indexing best practices
- Developed REST endpoints for multi-day data aggregation in a robotics analytics platform, supporting efficient processing and insights from large-scale robot data

### Software Engineer Intern - Full Time

June 2021 – August 2021

*Omron Robotics and Safety Technologies*

*Pleasanton, CA*

- Saved \$1,000+ in robot damages by building linear regression alert system to predict abnormal sensor readings
- Developed Flask backed for analytics web application by developing REST API and integrating NoSQL database
- Reduced map rendering time from 2s to 300ms using a quadtree algorithm and canvas for DOM optimizations
- Improved robot operations by building a position density map to highlight high-traffic areas in customers maps

### Research Intern - Full Time

May 2020 - August 2020

*University of California, Merced*

*Merced, CA*

- Automated acquisition of 2400+ house images using Selenium and Jsoup for large-scale data preservation
- Built an 82% accurate segmentation model with Mask R-CNN and Detectron2 for classification of houses
- Presented **research** [Acquisition and Segmentation of Historic Buildings of the City of Merced](#) to 50+ people

## Project Experience

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[BeeMQ](#) - Open Source MQTT Initiative

Ongoing

- Developed an MQTT 3.1.1 packet decoder using Tokio and bytes crates to allow asynchronous message handling

[digitalcaverns.dev](#) - Personal and Blogging Website

Ongoing

- Published 2 technical articles by building personal blogging app using Django, PostgreSQL, and Bootstrap

## Education

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**University of California, Merced**

Bachelor's of Science in Computer Science & Engineering (with Highest Honors)