ALBERTO VALLE

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Software Engineer with 2+ years of experience developing and testing APIs and infrastructure for robotics

TECHNICAL AND LANGUAGE SKILLS

Programming: Python, JavaScript, Rust, C++, Bash   Speaking (certified): English, Spanish

Frameworks/Libraries: Pytest, Paho, Flask, Django   Other: MQTT, REST, SQL, NoSQL, Linux, Docker, PLC, Windows

PROFESSIONAL EXPERIENCE

Software Engineer II – Full Time   **May 2024 – Present**
Omron Robotics and Safety Technologies   *Pleasanton, CA*

- Led 2 software developers for the sustaining and development of new MQTT APIs for a fleet of mobile robots
- Conducted threat analysis on 4+ software components in robot fleet manager and identified 45+ vulnerabilities

Software Engineer I – Full Time   **June 2022 – May 2024**
Omron Robotics and Safety Technologies   *Pleasanton, CA*

- Developed test framework for MQTT APIs using Pytest and reduced release testing from ~1 week to ~4 hours
- Released MQTT API with 20+ pub/sub topics, enhancing system interoperability and attracting 5+ new customers
- Integrated MQTT broker infrastructure in robots and simplified interoperability with customer's IoT devices
- Conducted stress test on MQTT broker and fined tuned configuration to enhance security to prevent DoS attacks
- Conducted load test on MQTT services to develop a message governor to protect network, CPU, and MEM usage
- Reduced API response latency from ~1s to ~15ms by improving NoSQL cardinality-selectivity and key searching
- Configured web server infrastructure to hide ports and allow live streaming of robot data to analytics website

Software Engineer Intern - Part Time   **January - May 2022**
Innovate to Grow in collaboration with Omron Robotics and Safety Technologies   *Merced, CA*

- Led team of 4 students to build dashboard for industrial robots and won 1st place (out of 7) in best user experience
- Developed API in Flask and line graph in D3.js that provided simulated live robot data to a React dashboard

Software Engineer Intern - Full Time   **June – August 2021**
Omron Robotics and Safety Technologies   *Pleasanton, CA*

- Developed RESTful API in Flask and NoSQL database to enable analytics website to display mobile robot data
- Created position density map for robots in D3.js to identify high traffic-zones and aid users to optimize their maps
- Reduced rendering time of map from ~2s to ~300ms, by replacing SVGs with a canvas and quadtree algorithm

Data Scientist - Research Internship   **May - August 2020**
University of California, Merced   *Merced, CA*

- Scraped 2,500+ images from Google Street View, Zillow, and Redfin to study and preserve Merced's architecture
- Trained CNN using PyTorch with ~82% accuracy for the instance segmentation of historical houses in Merced
- Presented research "Acquisition and Segmentation of Historic Buildings of the City of Merced" at UC Merced

PROJECT EXPERIENCE

www.digitalcaverns.dev - Personal website used to network and share knowledge with other developers

- Designed, develop, and deployed personal website with 3+ pages using Django, Bootstrap, and Vercel
- Created a blogging page using PostgreSQL and markdown-to-html converter and published 2 technology articles

BeeMQ - Open source project initiative to implement MQTT broker and libraries in Rust programming language

- Implemented decoder for MQTT 3.1.1 network packets using Tokio and bytes crates

EDUCATION

University of California, Merced   **May 2022**

Bachelor's of Science in Computer Science & Engineering (With Highest Honors)   GPA: 3.926