Ruben Perez

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Website:

Summary

Enthusiastic and results-driven Computer Engineer with a strong background in robotics and software engineering. Seeking to leverage my expertise in autonomous systems and software development to contribute to innovative projects in the field of robotics.

Education

Bachelor of Science | ***Computer Engineering with a Concentration in Robotics*** September 2017 – June 2021
University of California, Santa Cruz Santa Cruz, CA

Projects

Custom OBD2 Python Module | ***Python, C++*** Ongoing
Independent

Work Experience

Advanced Farm Davis, CA
Software Engineering Manager of Testing October 2022 – Present

- Lead software development efforts at an agricultural robotics startup, specializing in autonomous fruit harvesters.
- Successfully managed a cross-functional team of 3 software test engineers and 3 software support engineers
- Proposed, prioritized, and resourced 30+ projects in alignment with overarching company goals
- Led a project to migrate our robots compute and vision stack from a combination of an ***Intel NUC*** and ***Nvidia Jetson TX2*** with a proprietary camera to a single ***Nvidia Jetson Orin AGX*** computer with a mini ***Zed*** camera.
- Wrote a custom Python module to ***GPU-accelerate*** and optimize Python micro-services using ***Numba***, effectively reducing CPU utilization of a single service by 40 percent.
- Engineered robust, ***asynchronous***, and event-driven Python micro-services, capable of collaborating seamlessly across computers with different architectures and OS's, providing efficient and precise robotic control through ***Python***, ***Twisted***, and ***ZeroMQ***.
- Designed and implemented a pipeline for receiving, extracting, and storing data from a fleet of automated packlines (***Debian***, ***Prometheus***, ***AWS***, ***Grafana***, ***Python***).
- Developed command line tool (Python) to decode CAN traffic into ***CANopen*** messages and plot-relevant sensor data and device state information.

└ ***Software Test Engineer*** November 2021 – October 2022

- Commissioned and validated a fleet of 16 robotic strawberry harvesters, ensuring the successful integration and functionality of their sub-assemblies and individual components
- Developed code using the Twisted framework and asynchronous state machines for testing hardware sub-assemblies
- Optimized and took ownership of a critical robotic sub-system within three months, Effectively reducing position following error by a factor of 5 and greatly improved driveability in rough terrain.
- Analyzed robot current data using signal processing (***power spectral density curve***) to help identify abnormalities in hardware and forecast corrective maintenance.

└ ***Software Support Engineer*** March 2021 – November 2021

- Monitored a fleet of strawberry harvesters in the field, providing software support and conducting maintenance to optimize performance and minimize downtime
- Set up test protocols and collected test and performance data to inform R&D activities

Skills

Languages: English (Fluent), Spanish (Native)
Programming: Python (NumPy, SciPy, Matplotlib, Twisted, ZMQ, Seaborn, Click, Numba, Asyncio), MATLAB, C++, Bash, Git
Software: ROS, Github, Linux, Gazebo, Excel, Fusion 360,