

Max Knutsen

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Sonos - Player Control API, Embedded Software Engineer II

May 2021 – March 2023

- Added features to the Python script that generates the C++ Control API code on all products
- Debugged a variety of runtime errors occurring on the embedded Linux based speakers
- Provided documentation that codified team best practices for our on-call rotation
- Created a GitHub Actions workflow to provide a clang-format label for GitHub reviews

Amazon - Halo Firmware, Embedded Firmware Engineer II

August 2018 – May 2021

- Contributed to firmware development in C for the Alexa Loop, which is based on FreeRTOS
- Added metrics to the Alexa Loop which provided insight into quality of user experience
- Developed testing strategy for Alexa Loop Over the Air (OTA) update stress test
- Deployed OTA update test, which ran more than 3,000 times without manual intervention
- Tests caught multiple issues and generated data that confirmed new metrics were accurate
- Worked with stakeholders to plan and develop a Python based test environment
- Delivered environment that included pytest plugins for devices used in testing the Halo View
- Wrote Python review checklist for the Halo Firmware organization to ensure quality at scale

Microsoft - Windows Core Firmware, Firmware Engineer

February 2017 – August 2019

- Contributed to the firmware release for Surface Pro X as well as the iMX8
- Wrote a firmware driver that extracts memory page table as it appears in DXE and SMM
- Used the extracted memory map to validate memory protections introduced by Intel
- Analyzed the UEFI spec to determine how to update individual drivers within a firmware image
- Created Python script to patch a given firmware image with an updated driver
- The Python patching script was used to allow for rapid development of the Surface Hub
- Created a mechanism for building a driver to be updatable and to load the driver at runtime
- Worked towards open sourcing the Python build system we developed to the community
- Added documentation, unit tests, and CI/CD infrastructure as a part of the open source release

Facebook - BLOB Storage, Software Engineer Intern

May 2016 – August 2016

- Added the ability for a server to restart from a cache file, reducing startup time by 99%
- Created the first deployable test system for the distributed photo storage service
- This allows distributed components to be set to behave unexpectedly, testing resiliency

Cougaar Software - Robotics R&D, Software Engineer Intern

May 2014 – January 2016

- Tested and configured the company's product to run smoothly on a Raspberry Pi
- Built a distributed subsumption-based robotics framework in Java
- Designed and implemented a Java / Arduino communication bridge over serial
- Prototyped and delivered operational robot proof of concept with four connected water tanks
- Each tank would be aware of their own water level and can request water to be pumped in
- Tanks each maintain their desired water level when a leak is introduced
- Proof of concept robot was used to secure a contract with a gas company
- Created the interface for the robotics framework to keep track of its physical integrity
- Delivered Angular.JS based dashboard for monitoring health of the robotics network

University of Maryland, Baltimore County - B.S. Computer Science

September 2013 – December 2016

- Founding member, treasurer, lead programmer, mentor for Retriever Robotics VEX Team
- Graduated with a 3.3 GPA