Jason Ashley

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Education

University of Virginia Charlottesville, VA *May 2021*

Bachelor of Science, Double Major in Computer Science and Computer Engineering

Relevant coursework: Algorithms, Embedded System Design, and Defense Against the Dark Arts

Combined Majors GPA: 3.912/4.000

Work Experience

Amazon Seattle, WA *August 2021 – Present*

Scout Robotics Embedded Engineer

- Integrate new feature requests and debug issues in firmware for lighting boards and "main" microcontroller in C, both in μC/OS-II RTOS and bare-metal codebases
- Enhance ROS-based camera, radar, and MCU management drivers written in C++ for safe, reliable autonomous vehicle operation, significantly reducing MCU manager downtime and eliminating unchecked firmware version risks
- Collaborate with external vendors and nearby teams to solve problems and improve products
- Deep dive and resolve issues captured by metrics in AWS CloudWatch, AWS Athena, and system logs in AWS S3
- Develop and maintain software architecture documentation and prepare long-term plans focusing on safety, security, and reliability

Lancium Compute Charlottesville, VA *September 2019 – August 2021*

Software Developer

- Architected and implemented solutions for CPU and GPU job checkpointing and migration by managing devices and control groups using solutions built in C++ and Java
- Designed, developed, and owned tools for containerization and remote management of compute jobs in Go and C, such as extensions to existing containerization tools to support requests to checkpoint
- Communicated and coordinated operations with engineering teams around the world to release new products

University of Virginia School of Engineering Charlottesville, VA *July 2019 & Spring 2020 – May 2021*

CS 4102: Algorithms & CS4414: Operating Systems Teaching Assistant

- Led students through problems towards success with individual instruction
- Prepared and organized assignments and assignment schedules
- Assessed student performance and communicated results to faculty

Projects

Robotany: Smart Robotic Plant Pot | *Paper* | *GitHub* | *Demo Video*

- Published capstone project with focus on IoT, robotics, and signal amplification with noise reduction
- Moves plant based on action potentials, reports soil moisture and plant growth to server to view in application
- Worked on camera driver, sensor capture, ESP32 network connection, API, database, and mobile application
- Utilizes frameworks based on FreeRTOS, Node.js with Express running on AWS EC2, MongoDB, React Native

Internet-Based Telegraph | *OSHWLab*

- An in-progress project to send Morse code messages over the internet from a board with a key-like mechanism
- Includes an ESP32, LCD screen, audio amplification circuit, lighting, and RTC to perform intended functions
- Software stack utilizes Node.js with Express and Arduino

FPGA Wavetable Synthesizer | *GitHub* | *Demo Video*

- Final course project that takes an input from a MIDI keyboard then synthesizes a sample for that note on FPGA
- Worked on reading MIDI bytes from keyboard, wavetable creation/reading, and preparing/sending audio to codec
- Utilizes an Altera DE2–115 FPGA board, a Raspberry Pi as USB and MIDI intermediary, Python, and VHDL

Skills

Programming:

- Proficient in C, C++, Python, MySQL, VHDL, and JavaScript
- Familiar with Java, Go, MATLAB, R, and Verilog

Operating Systems: Extensive experience using/configuring Linux (Ubuntu and Arch distros), Windows, and macOS

Debugging: Experience using logic analyzers, oscilloscopes, GDB, and JTAG

Technologies: Experience with Git, ROS, FreeRTOS, μC/OS-II, Docker, Amazon Web Services, and Google Cloud

Communication Protocols: Experience working with SPI, UART, I^2C, CAN, and Ethernet

Standards: Knowledge of and work within MISRA C, ISO 26262, and ISO 21448