

Krystine M. Carrington

✉ krystinecarrington"at"gmail.com 📄 Krystine 🏠 users.soe.ucsc.edu/ kmcarrin/

Education

University of California, Santa Cruz

MASTERS OF SCIENCE IN COMPUTER ENGINEERING

Santa Cruz, CA

Graduated Jun. 2020

BACHELORS OF SCIENCE IN COMPUTER ENGINEERING

Graduated Cum Laude, Jun. 2018

Saddleback College

ASSOCIATE OF SCIENCE IN PHYSICS, ASSOCIATE OF SCIENCE IN ASTRONOMY

Mission Viejo, CA

Graduated August 2017

Experience

KBR - NASA Ames Research Center

RESEARCH ENGINEER

Moffett Field, CA

January 2020 - Present

- Designing and implementing payload flight software cFS applications supporting aerospace missions such as Starling 1.
- Developing applications to assist in communication and experimentation of autonomous cluster flight.
- Programming embedded drivers in C and C++ to integrate with the cFS on research and development projects.
- Developed a GPU driver to interface with a real-time system to control autonomous technologies such as rovers.
- Developed and deployed a machine learning pipeline for deploying neural networks on embedded GPUs.
- Writing various hardware and software drivers for flight and non-flight systems.

NASA Goddard Space Flight Center

FLIGHT SOFTWARE SYSTEMS INTERN

Greenbelt, MD

June 2019 - Aug. 2019

- Worked on a research and development project that investigated new ways of deploying the Core Flight System (cFS) on embedded flight processors.
- Created a prototype to demonstrate the developed system.

University of California, Santa Cruz

TEACHING ASSISTANT

Santa Cruz, CA

Jan. 2017 - Dec. 2019

- Assisted students in a laboratory environment with embedded C programming and circuit construction.
- Instructed Verilog and logic design on physical hardware in a laboratory setting.
- Tutored various assembly languages including LC3 and MIPS.

Applied Medical

TECHNOLOGY AND DEVELOPMENT ELECTRICAL INTERN

Rancho Santa Margarita, CA

Summer 2017, Summer 2018

- Developed a software application to analyze output from the Voyant Electrosurgical Generator.
- Worked on safety critical C code updating system failure states for the Voyant Electrosurgical Generator.
- Validated hardware and software integration for the Voyant system.

Projects

SealHAT - Seal Heart and Activity Tracker

SENIOR CAPSTONE PROJECT

- Worked on a team of undergraduate computer and electrical engineers to create a data logger solution for researchers studying Northern elephant seals. My largest contribution to the project was data storage: finding a low power solution capable of holding large amounts of data. I integrated NAND flash chips and wrote a flash translation layer that allowed the microcontroller to communicate with the flash via serial connection. In addition, I worked on the operating system for the device which utilized FreeRTOS and custom drivers.

Digital Oscilloscope

SCHOOL COURSEWORK PROJECT

- Used a PSoC and Raspberry Pi to create a dual channel oscilloscope. This scope was capable of sampling analog signals up to 1000kHz and displaying both waveforms on a screen connected to the Pi. Trigger conditions were able to be set as well as x- and y-axis scales.

Holocron - Star Wars Prop

PERSONAL PROJECT

- Used a microcontroller to control a series of LEDs. These LEDs had different patterns and cycles which created different lighting effects. In addition, audio and accelerometry were used to create additional effects. These were integrated with a 3D printed design of the prop to create the final model.

Honors

Cum Laude, Highest Honors in Major

UC Santa Cruz

UNIVERSITY HONORS, MAJOR HONORS

Spring 2018

- University honor Cum Laude given to top 15% of graduating seniors. Highest Honors in Computer Engineering awarded to top 15% within the major.

Tau Beta Pi Engineering Honor Society

UC Santa Cruz

MEMBER

2017 to Present

- Invited for being within the top fifth of the senior engineering class at University of California Santa Cruz. Attend weekly meetings with the UC Santa Cruz chapter in which projects are discussed and implemented.

Technical Skills

Programming Experience Researched deployment methods for flight software on embedded systems. Development and test team member working on safety critical code for medical devices. Team member in a Qt Application development team utilizing the Scrum process and various Agile management tools, UML, version control, use cases and state diagrams.

Programming Languages C/C++, Verilog, Python, Java, Bash, LaTeX, MATLAB, MIPS, RISC-V

Relevant Coursework Microprocessor System Design, Logic Design, Artificial Intelligence, Feedback Control Systems, Digital Signal Processing, Operating Systems, Data Structures, Algorithms, Computer Architecture
Assembly Language, Circuits, Differential Equations

Software Qt, Atmel Studio, Visual Studio, Xilinx Vivado, Eclipse, Vim, IAR Embedded Platform, PSoC Creator

Hardware PSoC, Raspberry Pi, BASYS FPGA, chipKIT Uno32, SAMD Chip Family

Operating Systems Linux, Windows, FreeRTOS, TI-RTOS, FreeBSD