Alexis Garado

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EDUCATION

UC Santa Cruz
B.S. Computer Engineering
Concentration: Digital Hardware
Expected Graduation: Fall 2022
GPA: 3.61 / 4.00

Technical Skills
Microcontroller programming
C, C++, assembly
Verilog, FPGA design
Linux

Relevant Coursework
Embedded system design
Logic design with Verilog
Computer architecture (graduate)
VLSI design (graduate)

EXPERIENCE

Maxar Technologies
San Jose, CA

Ground Software Engineer Intern (June 2021 - Sep 2021)
- Automated the daily verification of satellite telemetry for 90+ spacecraft, saving hours of the team's time per day
- Created system to efficiently notify the team of any errors
- Ran unit test procedures for command and telemetry processing to prepare for new software releases

Ground Software Engineer Intern (June 2020 - Dec 2020)
- Developed satellite telemetry archival software in the ground software department
- Worked closely with software involving encryption/decryption of telemetry

Jack Baskin School of Engineering
Santa Cruz, CA

Embedded System Design Tutor (Sept 2021 - Dec 2021)
- Clearly explained concepts related to microprocessor and microcontroller architecture, programming techniques, bus and memory organization, DMA, timing issues, interrupts, peripheral devices, serial and parallel communication, and interfacing to analog and digital systems

Introduction to Logic Design Tutor (Mar 2021 - June 2021)
- Explained key concepts to students regarding FPGA lab assignments
- Taught boolean algebra, logic minimization, finite-state machine design, sequential circuits, common logic elements, programmable logic devices, and introductory system-level design

Computer Systems & Assembly Language Tutor (Mar 2019 - Mar 2021)
- Taught digital logic design, computer architecture, and assembly language concepts while facilitating a positive and productive learning environment
- Graded digital logic and assembly lab assignments for 300+ students.

PROJECTS

Game Boy emulator
Nov 2021 - Present
- Nintendo Game Boy emulator in C++ and SDL2
- Software implementation of system memory map and CPU, allowing instructions to be read and executed from Game Boy ROM images

Oscilloscope
May 2021
- Dual-channel oscilloscope on 32-bit microcontroller written in C
- User-inputted commands determined free-running or trigger modes, as well as x- and y-scaling and scrolling capabilities

Enigma machine
March 2021
- FPGA programmed in Verilog to emulate functionality of a WWII encryption device
- Performed encryption and decryption of user-inputted messages

Chip8 emulator
August 2020
- Retro video game emulator in C++ with graphics displayed on Raspberry Pi-controlled LED matrix

Real-time operating system
April 2021
- Software-based UART communication protocol between 2 microcontrollers using FreeRTOS
- Optimized code to be able to run 4 concurrent communication stream

Engineers Without Borders
President: May 2020 - Present
Treasurer: Sept 2019 - May 2019

Managed finances for engineering projects that empower communities to meet their basic human needs, including an on-site hardware installation of a solar energy system within an underserved community to alleviate its ongoing energy crisis and a hands-on Arduino workshop for building renewable energy systems.

Formula 1/10th
Sept 2019 - Dec 2020

Developed a simultaneous localization and mapping algorithm for a one-tenth scale autonomous electric car using data from onboard IMU and LiDAR sensors.