Hector A. Soto

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🏠 Hillsboro, Oregon

Education

Associate in Arts - South Puget Sound Community College	**2015 - 2017**
Bachelor of Science, Computer Engineering - Portland State University	**2017 – June, 2022**

Skills

Programming
- **C, C++, C#, MATLAB, Assembly** (ARM + AVR), **JavaScript, HTML**
- Object Oriented Design, Data Structures (Lists, Trees, Hash Table), Linux driver development
- Simple DirectMedia Layer (C Library for video, audio, input devices, threads, networking, timers, etc)

Electronic/Hardware Design + Simulation
- **Circuit Design + Simulation** (LTspice), **Schematic + PCB Design** (KiCad)
- **SystemVerilog**

Other
- **3D Modeling** using CAD software such as Onshape, **3D Printing** (Basic printer maintenance and use)
- **Soldering**

Past Projects

RISC-V Simulator | Course Project
Description: Created a simulator in C++ with 32 registers, a PC register, and 4 GiB of memory that runs given RISC-V assembly code. Only the RV32I Base Instruction Set is supported, excluding CSR instructions.

Actions Taken
- Programmed the simulator to run on Linux and Windows.
- Created a GUI using SDL2. The simulation can be stepped backward or forward in time.

Manual Hole Disk Player | Course Project
Description: A device that spins a physical disk consisting of 16 (4-bit) rows of holes that could be manipulated by hand to be in off or on positions. While the disk is spinning, it plays the tone encoded in each row when reached. Can provide technical details of operation when asked.

Actions Taken
- Designed the circuit and created its schematic in KiCad
- Did virtual simulation/testing for portions of design in LTspice
- Picked out parts and created bill of materials for project
- Designed PCB in KiCad and ordered it from a manufacturer
- 3D-modeled + printed the disk for the device as well as the disk-reading structure
- Soldered components to the PCB and assembled the whole device
- Programmed device's microprocessor (ATmega328P) in C

Traffic Intersection Model | Course Project
Description: Miniature scaled model of a traffic intersection.

Actions Taken
- Researched traffic intersection regulations and took real-world timings of traffic
- Designed the intersection and modeled 3D printable parts that would hold electrical components
- Assembled the intersection and used a LabJack (control hardware) running MATLAB code I wrote to simulate the final model

Model Heathkit H8 Computer Chassis | Personal Project
Description: Was requested to 3D model the chassis of the Heathkit H8 computer.

Actions Taken
- Measured by hand the 12 parts of the disassembled chassis that were given
- Completely 3D modeled the chassis and was given compliments on the models