

# Dhruv Rengarajan

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**Education**      **Oregon State University** B.S. Electrical Engineering, Minor in Computer Science  
expected June 2022

**Skills**            C++, C, Python, Assembly, Oscilloscope, Signal Generator, Spice, Quartus,  
SystemVerilog, ModelSim, MATLAB

## Experience

### Carenami, April 2021 - present

- Researching and implementing various machine learning algorithms with the purpose of training a TI mmWave sensor to accomplish various tasks, including differentiating between a human being and other moving objects, identifying the number of human beings in the sensor's field of vision, and determining a person's posture and activity

## Circuit Design

- Worked in a team to design and build an FFT implemented with an Arduino Nano that samples an incoming audio signal, filters out sound below the signal-to-noise ratio, and turns on an LED corresponding to the frequency of that specific musical pitch. Worked in a team to solder a crossover filter onto a through-hole PCB that splits an input AC signal into high, middle, and low frequencies, and outputs each frequency to the speaker. Soldered 3.3-volt and 5-volt power supplies onto a surface-mount PCB and connected it to an Arduino Nano which can send variable amounts of load current for testing purposes

## Digital Logic

- Implemented PS/2 keyboard and NES controller interfaces onto a Max10 DE-10 FPGA board, allowing either interface to be used to play the game Flappy Bird
- Used the same board to design a variety of logic modules, such as a four to seven segment decoder and a sequential clock with a ripple-carry adder

## C++

- Created several object-oriented programming designs; a virtual restaurant where the user can place or accept orders as either the customer or manager, a virtual zoo in which the user can buy and care for different animals while keeping track of profits, and a turn-based exploration game

## Extracurriculars

### Pi Kappa Alpha Fraternity, Beta Nu Chapter, September 2018 - Present

- Helped run Fireman's Challenge philanthropy and generated over \$2000 for the Muscular Dystrophy Association. Volunteering over 30 hours every year for a number of philanthropies and organizations such as the Red Cross and Oregon Food Bank