Justin Fortner

Website: justinfortner.com
LinkedIn: linkedin.com/in/jmfortner
Github: github.com/justinfortner/UCSC.git

203 Lighthouse Ave
Santa Cruz, CA 95060
(661) 478-7403
justinm.fortner@gmail.com

EDUCATION

University of California Santa Cruz — *BS in Computer Engineering : Robotics & Control Concentration*

September 2015 - December 2019

EXPERIENCE

Full Stack Web Developer — Wencor, Glendale, CA

April 2020 - Present

Modernizing and optimizing outdated websites to clearly convey information across desktop and mobile browsers. This is done through a combination of programming (HTML/CSS/JavaScript/jQuery) and graphic design tools (Photoshop).

Head Beach Volleyball Coach — Mountain View Volleyball Club, Mountain View, CA

May 2019 -August 2019

Technical - Created an automated system capable of pulling information from a google form, creating a schedule and keeping track of attendance for drop in sessions of all players in the program using. This was accomplished through google forms, google sheets and custom macros for the sheets.

Coaching - Coached several girls beach volleyball teams of various skill levels and ages.

Mechanical Engineering Intern — Fortner Engineering, Glendale, CA

June 2015 - September 2015 & June 2016 - September 2016

Mechanical - Created 30 specialized tools used to dismantle and assemble hundreds of unique precision made airplane parts for companies such as Southwest, United, FedEx, UPS, Ect. Schematics for these tools were created in AutoCAD and used by machinists to create the tools out of steel.

RELEVANT COURSEWORK

Robotics

- Mechatronics
- Bio-Inspired Locomotion
- Feedback & Control Systems
- Signals & Systems
- Electronic Circuits

Programming

- Computer Systems
- Assembly Language
- C Programming
- Algorithms
- Data Structures & Types

Hardware

- Computer Architecture
- Electronic Circuits
- Microprocessor System Design

SKILLS

Programming Languages

- OOP
  - Java
  - C/C++
- Web Development
  - HTML
  - CSS
  - JavaScript
- Scripting
  - MATLAB
- Hardware
  - Verilog

Robotics Programming Frameworks

- Arduino

CAD Programs

- Fusion360
- AutoCAD
- Solidworks

PROJECT HIGHLIGHTS

Mechatronics Final Project - *https://bit.ly/2TF8vUP*

Two fellow students and I created a fully autonomous robot capable of navigating unstructured and dynamic environments to transport and sort items to their appropriate containers. The robot used a combination of pressure, electromagnetic, infrared and proximity sensors to navigate its environment safely. We created the circuitry and embedded software to properly receive, analyze and react appropriately. The robot navigates through the use of integrated rear mounted motors for optimal traction based upon the mechanical design. A third integrated motor controls the elevator mechanism responsible for loading and unloading objects. All mechanical components were 3D modeled and simulated in Solidworks before being lasercut and fastened together. Behavior is coded in C++ through the use of a hierarchical state machine and ran on an arduino microcontroller. We treated this project as if it were early stage product development for a startup. Worked tirelessly to deliver a great project quickly and efficiently. This was possible due to thorough test plans at small milestones to ensure quick and efficient debugging of hardware, software and mechanical aspects as well as quantitatively assess performance of these individual components.

Soft Robotic Jellyfish Research Paper

This paper takes inspiration from a jellyfish bell in order to create a battery powered and autonomous bio-inspired soft robot. A jellyfish was chosen due to its combination of speed and efficiency. This is due to the natural aerodynamics of the jellyfish as well as their use of a toroidal vortex. In addition to the swimming characteristics of a jellyfish, the animal is also naturally soft and flexible allowing for an easy translation of the jellyfish kinematics to soft robots. A soft robot was chosen because the final intention of this robot is to aid marine researchers in their studies of fragile ecosystems such as coral reefs.

Terrastep - *IDEA Hub 2019 Pitch for Social and Creative Enterprise 1st Place Winner*

Collaborated with outdoor focused and safety conscious engineering teams across multiple disciplines to create a wearable system that is capable of warning prosthetic users if they are to make a step that could lead to injury. I personally worked on the sensor implementation, software development and mechanical integration teams. Strain gauges integrated into a custom 3D printed shoe insert transmit data to the teensy microcontroller. The teensy microcontroller, coded in C++, logs the data and run it through our detection algorithm. The detection algorithm uses slope differentials and moving averages to both detect mis-steps and adapt to each specific user as their needs change throughout the day. We treated this project as if it were early stage product development for a startup. Worked tirelessly to deliver a great product quickly and efficiently. This was possible due to thorough test plans at small milestones to ensure quick and efficient debugging of hardware, software and mechanical aspects as well as quantitatively assess performance of these individual components.

REFERENCES

Dr. Jeorge Hurtarte - Interim Professor at the University of California Santa Cruz

- jhurtart@ucsc.edu

Professor Mircea Teodorescu - Professor at the University of California Santa Cruz

- mteodore@ucsc.edu

Lake Merchen - Mountain View Volleyball Beach Club Director

- lake@mvvclub.com