Ben Holmes

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EXPERIENCE

University of British Columbia Jan 2019 - Present
Teaching Assistant

- Assisting students with experimental and measurement techniques
- Helping teach basic data analysis and plotting

Blue Willow Systems Jan - May 2018
Co-op Software Engineer

- Researched emerging localization technologies and wrote Python algorithms for a proof of concept that integrated the new technology with our existing system.
- Tested and iterated on filtering algorithms to reduce location error from 4 meters to less than 1 meter.
- Implemented front-end, back-end, and SQL database changes to production web and mobile applications which added new features including an incident report system and an announcements board where customers could post company-wide announcements.
- Wrote a custom Android application that used bluetooth to showcase company technology during sales meetings when the full, cloud-based system could not be installed.

UBC Solar Oct 2016 - Sept 2017
Mechanical Design Team Member

- Designed the car's battery saftey box in SolidWorks to cool the battery by maximizing airflow, reduce weight, and allow for fast and easy repairs when needed.
- Performed finite element analysis on the rear suspension using Ansys, to ensure the car met FSGP safety requirements during 1G cornering, 1G braking, or in the event of a 2G bump.
- Designed the steering rack and suspension mounting tabs, and fabricated using a water-jet cutter.

PROJECTS

WikiGame Bot Nov 2018
Personal Project

- Created a large graph datatype in the form of a SQL database that stores all connected Wikipedia pages.
- Wrote a bot in Java that uses Selenium to play an online game where players race to navigate from one random Wikipedia page to another. The bot regularly scores 5-10x higher than its human opponents.

Autonomous Rescue Robot Jun - Aug 2018
Course Project

- Designed and built an autonomous rescue robot able to naviate a complex course of ramps, gaps, and IR tripwires while finding and retrieving stuffed animals along the way.
- One of only two teams to implement a computer vision system running on a Raspberry Pi to detect the stuffed animals from much farther away than the traditional approach of IR distance sensors.
- Designed several computer vision systems in MATLAB, Keras, and OpenCV, and evaluated them to determine the fastest and most accurate system.
- Designed and built a digital to analog converter, allowing the Raspberry Pi to send steering commands to the STM32 microcontroller responsible for motor control and other sensor inputs.

A full list of my projects can be found at benholmes.net

SUMMARY

Enthusiastic and creative problem solver with a passion for applying engineering knowledge to create a more positive and sustainable future.

SKILLS

Software:
Java, Python (Keras, OpenCV), C++, C, MATLAB, R, Excel, Arduino, Raspberry Pi

Electrical:
Analog circuit development and analysis, soldering, multimeter and oscilloscope

Design/Prototyping:
Rapid prototyping, hand tools, water-jet cutter, 3D printing, OnShape/SolidWorks, Ansys

LINKS

Github: /BenGHolmes
LinkedIn: /in/BenGHolmes
Website: benholmes.net

COURSEWORK

Statistics and data analysis
Instrument design (robotics)
Object-oriented programming
Circuit design and analysis
Technical communication
Signals and systems
Ordinary and partial differential equations
Mechanics of materials
Sustainable development

EDUCATION

University of British Columbia
BASc. Engineering Physics (year 3)
Expected Grad. May 2021

ACTIVITIES & INTERESTS

Climbing, backpacking, and skiing
Craft beer and cooking
Travel and adventures
Photography

OTHER EXPERIENCE

UBC Local Hack Day 2018
Ubyssey Volunteer Web Developer

CITIZENSHIPS

Canada
United States