Douglas Huang

Mechatronics Engineering | University of Waterloo

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Skills

- Proficient in **C/C++**, **Python** development and **Bash** shell scripting.
- Familiarity with web development using **HTML**, **CSS**, **JavaScript**, **JQuery**, and **Flask**.
- Development tools: **Git**, **Eclipse**, **UNIX environment**, **SSH**, and **Heroku**.
- Experience with **Arduino** microcontroller, hardware design, testing, soldering, and assembly of electronic parts.
- Knowledge of 2D and 3D modelling using **AutoCAD** and **Solidworks**, and PCB design with **Altium**.

Experience

Jan. 2015 – May 2015

Bioinformatics Software Developer, Agriculture and Agri-Food Canada

- Developed and maintained data analysis pipelines using Python, Perl, and Bash shell scripting for DNA sequence annotation and genome assemblies of wheat and flax.
- Implemented GNU Parallel to parallelize microRNA annotation pipeline, decreasing processing time by 40%, and coded new modules for improved data analysis using R
- Independently developed a genome assembly file merger using MapReduce programming paradigm combining 53,000 DNA scaffolds from 403 genotypes.

Jun. 2014 – Sep. 2014

Founder and Instructor, Android Academy for Young Learners

- Developed unique curriculum to introduce computer science principles through building mobile apps and hardware applications with Arduino.
- Instructed over 20 students ages 10-18 in Android app development.
- Created and maintained company website with course registration functionality and utilized social media and press mediums to advertise.

Projects

Jan. 2015

CodePaper, UofT Hacks

- Created a graphical programming language that interprets user-drawn flow diagrams for functional programming.
- Implemented Python OpenCV computer vision library for image processing and used a binary search tree algorithm to identify nodes and edges.
- Developed web application using Flask for photo submission and online processing.

Nov. 2014

Serial Protocol Parser, Waterloo Hybrid SAE Team

- Developed engine data parser in C to transform raw data from hybrid race car vehicle control unit into analyzable information.
- Designed multiple test cases to verify code efficiency and accuracy.
- Utilized Arduino microcontroller and IDE to stream serial data.

Sep. 2014

TurnIT Bike Indicator Light System, Hack the North

- Engineered a Bluetooth motion-activated bicycle indicator light system using Arduino microcontroller and Pebble smart-watch.
- Programmed watch accelerometer to detect arm gestures and control corresponding lights connected to Arduino via Bluetooth module.
- Created a five – segment LED arrow array embedded into a 3-D printed electronics housing designed using Solidworks.

Education

2014 – 2019

Bachelor of Applied Science in Mechatronics Engineering, University of Waterloo
GPA: 3.7/4.0