

# Douglas Huang

Mechatronics Engineering | University of Waterloo

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## SKILLS

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

## EXPERIENCE

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- Jan. 2015 – May 2015 • **Bioinformatics Software Developer**, Agriculture and Agri-Food Canada
- Developed and maintained genome assembly and sequence analysis pipelines for next-generation sequencing data using Python and Bash shell scripting.
  - Implemented GNU Parallel on existing microRNA annotation pipeline to increase efficiency by 45% and designed new modules for improved data analysis.
  - Proposed, designed, and developed genome assembly file merger using MapReduce methodology.
- 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

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- 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 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 AutoCAD.

## EDUCATION

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- 2014 – 2019 • **Bachelor of Applied Science in Mechatronics Engineering**, University of Waterloo  
GPA: 3.7/4.0 (81.4% average)