


Abhinav Agrahari

MECHATRONICS ENGINEERING

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AbhinavA10 

Summary of Skills

Languages:

- C, C++, Java, Processing, Python, HTML/CSS

Frameworks:

- Familiar with Bootstrap, Node.js
- Beginner with Scikit-learn and TensorFlow

Tools:

- Git, MATLAB, SolidWorks, AutoCAD, Fusion360

Soft Skills:

- Teamwork, leadership and communication skills
- Flexibility developed through student design teams
- Able to learn quickly, creative, minimal supervision required

Education

University of Waterloo

Candidate for B.A.Sc.,
Mechatronics Engineering
(2018-2023)

Relevant Courses:

- Data Structures and Algorithms
- Linear Algebra

Awards

- Governor General's Bronze Academic Medal for Highest Academic Average (2018)
- University of Waterloo, President's Scholarship of Distinction (2018)
- Achieved top 25% in the Pascal and Fermat Math Contest (2016-2017)

Interests

- Robotics, photography, woodworking, playing various musical instruments, Inner workings of electronics and repair processes

Projects

Machine Learning Projects (Python, sklearn, TensorFlow) *Dec 2018 – Current*

- Implemented the Scikit-learn library to create a handwritten digit classifier using the MNIST dataset
- Currently learning TensorFlow through the Machine Learning Course by Google Developers

WATHealth | StarterHacks Hackathon (Firebase, Vue.js, Watson) *Jan 2019*

- Co-created online forum for mental health, using Firebase and Vue.js
- Integrated Tone Analyzer from IBM's Watson API to parse a user's posts, and determine the overall emotion of the user over time

Matrix-Solving Robot (ROBOTC) *Oct 2018 – Dec 2018*

- Collaboratively prototyped a robot, to scan a printed matrix, and output the solution using Gauss-Jordan elimination
- Co-created image recognition algorithm for printed digits based off the concept of Hamming Distance

PS2 Controller Interface (circuits.io, C) *Oct 2017 – Feb 2018*

- Designed and etched a PCB to interface a Sony PS2 controller with a PIC Microcontroller
- Programmed and debugged PIC Microcontroller to handle the standard PS2 communication protocol

Flex Sensing Robotic Hand (Fusion 360, C) *Apr 2017 – June 2017*

- Designed and 3D printed robotic hand capable of mimicking a user's hand movements through a flex-sensing glove, that could be further developed to function as a prosthesis

Music-synced Light up Gramophone (C) *Oct 2017 - Jan 2018*

- Facilitated design of low pass filter, to sync flashing of NeoPixel LED light strips with bass of a song being played, for high school arts festival

Don't Give Up (Processing) *Oct 2015 – Dec 2015*

- Co-created 2D platformer game and physics engine with collision detection, using object-oriented programming concepts

Extra-Curriculars

UW Alternative Fuels Team *Sep 2018 - Current*

- Learning basics of MATLAB for vehicle automation and object detection purposes, as part of the software sub-team
- Currently co-designing a CAN interface PCB for vehicle communication

MIT's Battlecode Competition *Jan 2017*

- Designed an AI bot in Java to compete in MIT's Battlecode competition

Junior Achievement's Company Program *Nov 2015 - May 2016*

- Co-founded a company as Vice-President of Finance, prepared financial statements, and won Best VP of Finance Award

Other Experience

Cashier | Walmart *Sep 2017 – Aug 2018*

- Followed protocol to safely scan and package goods for customers

Supervisor of Senior Robotics | Brickworks Academy *Jul 2015 – Aug 2015*

- Mentored 6 - 14-year-old participants in the Senior Robotics program to design and program LEGO Mindstorms Robots, as a volunteer