

# EMMA XIE

2B MECHATRONICS ENGINEERING

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## SKILLS & TOOLS

### Hardware

Soldering, PCB Layout, Arduino, Raspberry Pi, Fritzing, EagleCAD

### Software

Python, C#, C++, Unity3D, JavaScript, Node.js, Tensorflow, WebRTC, Git, Docker, Flask, Django, Qt4

### Mechanical

Solidworks, Fusion360, AutoCAD, 3D Printing, Laser Cutting, EGAD, CNC machining

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## PROJECTS

### VR Camera Simulator

CANON INNOVATION LAB. NOV - DEC 2016

- Developed main features to support the Oculus Rift Touch Controllers in place of gamepad using Unity 3D (**C#**)
- Simulated realistic interaction physics (collision and grip) of the Touch Controllers
- Calibrated camera exposure and optic physics
- 3D modelled multiple replicas of Canon lenses as game objects in **Fusion 360**

### Dryerase Stocks. Bostonhacks

BOSTON UNIVERSITY. OCT 2016

- Used an **Arduino Uno**, a **Raspberry Pi 2**, and two stepper motors to plot stock market or bank account data on a dry erase board
- Designed and built mechanical assembly, calculated coordinate math
- Set up Raspberry Pi-to-Arduino data transfer
- Project was presented with the Capital One API award at BostonHacks

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## INTERESTS

Student conferences, photography, cybernetics, interactive art, graphic design, architecture, films, escape rooms

## EXPERIENCE

### Embedded Design Engineer. Evertz Microsystems

BURLINGTON. JUN 2017-AUG 2017

- Pioneered the development of a real-time media broadcasting over IP solution for live captioning using WebRTC (**JavaScript**) and Janus Gateway
- Developed firmware for audio encoding cards and controller panels, utilizing low-level serial (RS-422), **IP network communications** and real time system concepts

### Rapid Prototype Developer. Canon Innovation Lab

KITCHENER. SEP 2016-DEC 2016

- Conceptualized and executed various integrated electromechanical and software solutions as proof of concepts
- Developed on platforms including embedded systems (**Arduino**, **Raspberry Pi**), the web, **VR**, **iOS**, and various Canon products
- Modelled and 3D printed multiple solutions during prototyping process
- Demoed new projects biweekly to team and Canon America executives

### Innovation Specialist. Scotiabank Digital Factory

TORONTO. JAN 2016-APR 2016

- Researched and applied deep learning methodologies of reinforcement and unsupervised learning to financial applications in **Python** using Tensorflow
- Scanned and reported on the FinTech ecosystem to executives

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## ACTIVITIES

### Dyno Harness Lead - Electrical System.

#### UW Formula Motorsports (FSAE)

WATERLOO. SEP 2016-FEB 2017

- Redesigned the power distribution of the fusebox and signal transmission of the engine control unit
- Analysed sensor readings with custom data logger to optimize engine performance during tuning, driver performance during testing, and for design validation
- Assisted in building and debugging the pneumatic shifter board and vehical harnesses
- Designed multiple electrical housing units and suspension components in Solidworks

### Media & Marketing Commissioner.

#### Canadian Federation of Engineering Students (CFES)

NOV 2016-PRESENT

- Integral member of a 17 student national team, which indirectly represents and supports the 81,000 undergraduate engineering students in Canada
- Championed the redesign and development of the website: [www.cfes.ca](http://www.cfes.ca)
- Represent the University of Waterloo at national student conferences where topics of diversity, leadership, academic advocacy are discussed
- Represented CFES as Canadian representative at a technology education student conference (BEST Event on Education 2017) in Porto, Portugal