

## Biography

I'm an electrical engineer interested in finding applications for deep learning in computer-science and engineering fields. I enjoy working with embedded systems and playing with microcontrollers. Eventually, I want to bridge the gap between humans, machines, and AI, and find ways to combine them to make something greater than the sum of its parts. In my off-time, I follow my interests through online courses such as those offered by Coursera or edX.

## Skill Summary

### Programming

C  
Python  
Matlab  
L<sup>A</sup>T<sub>E</sub>X  
Git

### Tools

Ngspice  
Altium  
NI LabView  
GNURadio  
AutoCAD

### Competencies

Schematic Capture  
PCB Fabrication  
Embedded Systems  
Firmware Development  
Analog/Digital Design

### Machine Learning

Pattern Recognition  
Deep Learning  
Neural Networks  
Medical Image Processing

## Experience

### Research Intern - Department of Neuroinformatics

#### Advanced Telecommunications Research Institute International

Kyoto, Japan  
*June 2013 - August 2013*

- Researched application of deep learning to fMRI for decoding object representations in the brain.
- Implemented a stacked denoising autoencoder using Theano, a Python module for symbolic optimization of multi-dimensional math.
- Applied denoising autoencoder to generic object decoding in preparation for further experiments.

### Research Intern - Department of Cognitive Neuroscience

#### Advanced Telecommunications Research Institute International

Kyoto, Japan  
*July 2012 - April 2013*

- Developed visual attention and neuroplasticity experiments using MATLAB, psychophysical stimulus generators, and EEG data capture software.
- Preprocessed fMRI data to allow longitudinal and cross-sectional analysis of data.
- Extracted patterns from fMRI, EEG, MEG, and behavioural experiment data.
- Built classifiers from experimental data to predict spatial attention.

### Lab Supervisor

#### Southern Alberta Institute of Technology

Calgary, Alberta  
*September 2010 - May 2011*

- Supervised Electrical Engineering Technology lab during open lab hours
- Helped first-year students with unfinished labwork.

## Education

### B.Eng in Electrical Engineering

*2012 - August 2014*

University of Victoria

### Diploma in Electronics Engineering Technology

*2009 - 2011*

Southern Alberta Institute of Technology

- Graduated in the Dean's List

### Massive Open Online Courses

- Web Intelligence and Big Data
- The Brain and Space

## **Projects**

- Designed a portable USB battery pack as a capstone project at the University of Victoria.
- Designed a 20 MHz arbitrary signal generator as a capstone project at SAIT.
- Implemented an unsupervised image segmentation algorithm by Deng and Clausi using Markov Random Fields.
- Developed a software-defined PSK31 transceiver using GNU Radio.
- Planned a satellite tracking and communication ground station with UVic ECOSat team as part of the Canadian Satellite Design Competition.

## **Extracurricular Activities**

### **ATR Machine Learning Club**

- Read journal articles about recent developments in the machine learning field.
- Present recent journal articles to colleagues at ATR (Advanced Telecommunications Research Institute International).

### **Microprocessor Group**

- Build Engenuics embedded microcontroller kit.
- Develop hardware drivers for peripherals.

### **Language Learning**

- Received private lessons in Japanese for one year.
- Self-directed study in Mandarin Chinese.

## **Affiliations**

- ASET (Past Member)