Jason Bens

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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/C++	ARM Assembly
Python	Git
Matlab/Octave	Bash
LaTeX	MySQL

Tools

Altium	Micro-Cap
NI LabView	GNURadio
Ngspice	Linux/Mac/Windows
AutoCAD	Eclipse/Emacs

Technologies

I^2C
SPI
ARM
GPIB

Competencies

Schematic Capture	GPIB Test Automation	Low Power Design	Machine Learning
PCB Layout	Embedded System Design	Battery Management	Pattern Recognition
Footprint Definition	Firmware Development	Battery Charging	Deep Learning
PCB Fabrication	Analog Design	Lab Instrumentation	Neural Networks
Soldering and Rework	Digital Design	DSP	Medical Image Processing

Experience

Research Intern - Department of Neuroinformatics Kyoto, Japan
Advanced Telecommunications Research Institute International *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 Kyoto, Japan
Advanced Telecommunications Research Institute International *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 Calgary, Alberta
Southern Alberta Institute of Technology *September 2010 - May 2011*

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

Communications Technician Rocky Mountain House, Alberta
Oras Communications *June 2006 - August 2009*

- Installed 2-way radios, cellular handsfree kits, and other communication equipment into vehicles
- Diagnosed and maintained vehicle-mounted communication and safety equipment.

Education

Bachelor of Engineering in Electrical Engineering University of Victoria
GPA: 7.58/9.00 *Graduating August 2014*

- Specialization in Computational Intelligence
- Specialization in Electromagnetics and Photonics

Diploma in Electronics Engineering Technology Southern Alberta Institute of Technology
GPA: 3.82/4.00 *Graduated 2011*

- Graduated with Honours.

Massively Open Online Courses
- Web Intelligence and Big Data
- The Brain and Space
- Machine Learning

Projects

Portable USB Battery Pack
- Designed a USB-charged battery pack to recharge USB devices.
- Used 3000 mAh lithium-polymer cells.
- 5-volt, 2-amp USB output.

Arbitrary Signal Generator
- Designed a 20 MHz arbitrary signal generator.
- Output signal controlled by an ARM microcontroller.

Simple MRF Image Segmentation
- Implemented an unsupervised image segmentation algorithm by Deng and Clausi using Markov Random Fields.

Software-Defined PSK31 Transceiver
- Developed a software-defined PSK31 transceiver using GNU Radio.
- Constructed Softrock transceiver frontend.
- Successfully made contact at 20-meter band.

ECOsat
- Joined University of Victoria's ECOsat team to take part in the Canadian Satellite Design Competition.
- Planned a satellite tracking and communication ground station.

Extracurricular Activities

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

Engenuics Microprocessor Group
- Developed hardware drivers for peripherals.
- Developed simple pong game using a barebones real-time OS.

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

Certifications

Canadian Amateur Radio Operator Certificate *VE7SBX*
- Basic with Honours.
- Advanced.

Affiliations

- APEGBC
- IEEE
- ASET (Past Member)