Josh Bradshaw

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⌨ *www.joshbradshaw.ca*

Experience

Research Student in Medical Imaging, *SickKids Hospital*, Jan–Apr 2015, Toronto.
- Designed an instrument which synchronizes MRI data acquisition with fetal heart motion. It is now being used by cardiac MRI researchers to capture 3D video of blood flow through the fetal heart. The circuit schematics, pcb layout, micro-controller program, and monitoring software are open-source, and available at joshbradshaw.ca
- Prototyped an MRI compatible amplifier for invasive blood pressure transducers.
- Designed and 3D-printed anatomy models of the carotid arteries and the aortic arch, complete with simulated blood flow, for the validation of cardiac MRI scanning protocols.

Research Automation Developer, *Watrhub Inc. (Surge Accelerator Startup)*, Sept 2013–Aug 2014, Toronto.
- Implemented web crawlers to download municipal planning documents, historical permits and GIS information about the wastewater treatment systems of several major cities.
- Implemented a machine learning classification system to categorize the documents collected by the web crawlers, and through freedom of information act requests.
- Built an internal search engine with nested category selection, auto-correct, fuzzy matching, and result highlighting to help the research analysts find documents in the internal database.

Performance Test Automation Developer, *CIBC*, Jan–May 2013, Toronto.
- Initiated and implemented a tool which automatically populates the internal performance testing reports with all of the required data, saving each test analyst 45 minutes of tedious manual effort every day.
- Executed performance tests on www.pcfinancial.ca and helped developers and system administrators identify and fix performance problems.

Projects

ECG Recorder, *Personal Project*.
- Designed an ECG measurement system which transmits the ECG data over bluetooth in real time.
- Wrote an application to plot the ECG waveform, and detect heart rate.
- This project is still ongoing, current schematics and source code available at joshbradshaw.ca

Cube Satellite Communication System, *WatSat Student Design Team*.
- Designed the interface between motherboard and radio transceiver; facilitating data transfer to and from the satellite while its orbit places it above North America. See watsat.ca for details.
- Created test plans for the power management and telemetry systems.

Ski-Bracing Device for Children with Down's Syndrome, *Design Project Course*.
- Designed a bracing device which enforced correct ski alignment, and allowed the instructor to steer and stop the student when required.
- Held design consultations with parents of disabled parents, and several Canadian Association for Disable Skiing instructors to ensure that the device was practical and safe.
- After project completion, a major mechanical engineering company expressed interest in manufacturing and testing the device.

Education

Candidate for B.A.Sc. in Systems Design Engineering, *University of Waterloo*, 2012–2017 (expected).

- ○ Analog Design: Studied amplifier and filter design through an intensive series of circuit design labs.
- ○ Algorithm Design: Learned to analyze big-O complexity of algorithms, implemented RSA, and designed a variety of sorting and searching algorithms.

Awards

Engineering Co-op Student of the Year, *University of Waterloo*, 2014.
Only first year student ever to win. Granted in recognition of achievements at Watrhub Inc.

Technology Co-op Achievement Award + Impact Award, *CIBC*, 2013.
Granted in recognition of time saving improvements that I made to the server testing process

Community Involvement Scholarship, *P.E.O.*, Hamilton-Burlington Chapter, 2012.
Granted in recognition of my volunteer work at a community day camp.

Engineering Entrance Award + President's Scholarship, *University of Waterloo*, 2012.

Third Place, *Physics@Mac Competition*, McMaster University, 2012.

Activities

- ○ I'm an avid slackliner (a fringe sport similar to tight rope walking). I'm able to walk slacklines up to 50m in length, and I recently founded the University of Waterloo slackline club.
- ○ I play the saxophone, and I frequently perform at local jam sessions.
- ○ I'm involved in the engineering society. I've been an orientation week leader, winter fun director, quidditch director, and a performer at several talent shows.