Josh Bradshaw

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Experience

Research Engineer in Medical Imaging, *SickKids Translational Medicine Research*, May–Sep 2016, Toronto.

- Facilitated a series of animal experiments involving cardiac and lung imaging in MRI by developing a system for synchronizing MRI acquisition with cardiac motion using surgically implanted arterial pressure probes.
- Enabled the radiology team to perform their own data analysis during a fetal MRI clinical trial by creating a software application that integrated the image processing and statistical analysis tasks.
- Troubleshooted problems encountered during an ultrasound clinical trial by building a digital filtering module for Doppler ultrasound probes.
- Built several devices related to the calibration and testing of MRI acquisitions, including flow phantoms.

EEG Analysis Researcher, *University of Waterloo: Supervised by Edith Law*, Sept 2015–Apr 2016, Waterloo.

- Developed an open-source EEG analysis interface, live at crowdEEG.ca, which has been used in two published studies.
- Crowdsourced EEG analysis tasks on Amazon's Mechanical Turk.
- Investigated the extent to which neurologists agree with one another about potentially ambiguous EEG feature identifications by running online experiments in which several neurologists were asked to classify the same EEG windows.

Automation Engineer, *Watrhub Inc.*, Sept 2013–Aug 2014, Toronto.

- Developed 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 and sort the documents collected by the web crawlers, and through freedom of information act requests.
- Deployed and customized an internal search engine to help the research analysts find documents in the internal database.

Test Automation Engineer, *CIBC*, Sept 2013–Dec 2013, Toronto.

- Developed tools in python to automate the performance testing of pcfinancial.ca and cibc.ca
- Created a tool to automatically populate most of the the internal performance testing report, saving each test analyst 15-20 minutes per test report.

Projects

Skeleprint, *Fourth Year Design Project*, University of Waterloo, 2017.

We created a novel 3D printing process for bone graft production. The process involved printing with a biocompatible putty, which was deposited onto a rotating mandrel using high pressure pneumatic extrusion and cured in place with UV lasers. Our final prototype was purchased by an biomaterials lab, which is using it for bone graft prototyping.

MRI Compatible Blood Pressure Probe Amplifier, *Third Year Design Project*, University of Waterloo.

As an academic project, I created a $200 replacement for a $13,500 blood pressure probe amplifier that I had previously used while working at SickKids hospital. SickKids purchased three of my instruments and they were used in several animal studies.

SMRT WATR Interactive Fountain, *Second Year Group Design Project*.

Our team built an interactive fountain which users interact with by playing an online quiz game. My role was designing all of the electronics, and the control system.

Ski-Bracing Device for Children with Developmental Disabilities, *First Year Design Project*.
We worked with several instructors from the Canadian Association for Disable Skiing to design an mechanism that enforces correct ski alignment, and allows the instructor to steer and stop their student as required.

Education

B.A.Sc. in Systems Design Engineering, *University of Waterloo*, 2017.
Relevant courses include: Biomedical Measurement and Signal Processing, Simulating Neurobiological Systems, Optimization and Numerical Methods, Algorithm Design and Analysis, Image Processing, and Control Systems

Awards and Grants

Capstone Design Award, *Baylis Medical*, 2017.
$5000 prize granted in recognition of the Skeleprint design project's success

Engineer of the Future Trust, *University of Waterloo*, 2017.
$4500 prize granted to fund the Skeleprint design project

Undergraduate Research Award, *NSERC*, 2015.
Granted in recognition of my research accomplishments at SickKids.

Third Year Design Symposium Winner, *uWaterloo Department of Systems Design Engineering*, 2016.

Second Year Design Symposium Winner, *uWaterloo Department of Systems Design Engineering*, 2015.

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.

Community Involvement Scholarship, *P.E.O.*, Hamilton-Burlington Chapter, 2012.

Activities

- I'm an ultra-long distance hiker, and I hiked the Pacific Crest Trail in 2017.
- I run my local communities slackline club, which currently has 40 active members.
- I'm an amateur saxophone player.