Josh Bradshaw

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Experience

2015–2016 **Research Engineer in Medical Imaging**, *SickKids Hospital*, Toronto.

- Developed a system for synchronizing MRI acquisition with cardiac motion, using surgically implanted arterial pressure probes. The system facilitated a series of animal experiments involving cardiac and lung imaging.
- Created a software application that enabled radiologists to perform customized data analysis during MRI clinical trials. Reduced the time required to perform the image analysis by 90%.
- Designed a digital filtering module for Doppler ultrasound probes to troubleshoot problems encountered during an ultrasound clinical trial.
- Built calibration and testing devices for MRI acquisitions, such as flow phantoms.

2015–2016 **EEG Analysis Software Developer**, *University of Waterloo*.

- Developed an EEG analysis interface that has been used in two published studies. Interface is open-source and live at crowdEEG.ca.
- Investigated the extent to which neurologists agree with one another about ambiguous EEG feature identifications.

2013–2014 **Automation Engineer**, *Watrhub*, Toronto.

- Developed and deployed a customized internal system to help research analysts find important documents regarding wastewater treatment systems of major cities.
- Developed web crawlers to populate the internal system's database.
- Implemented a machine learning classification system to categorize and sort documents collected for the database.

2012–2013 **Test Automation Engineer**, *Canadian Imperial Bank of Commerce*, Toronto.

- Developed tools in python to automate the performance testing of cibc.ca
- Saved test analysts 20 minutes per test by creating a tool that automatically populated the internal performance testing report.

Education

2012–2017 **BASc in Systems Design Engineering**, *University of Waterloo*.

Relevant courses include: Biomedical Measurement and Signal Processing, Optimization and Numerical Methods, Algorithm Design and Analysis, Image Processing, Control Systems and Simulating Neurobiological Systems

Projects

2016–2017 **Skeleprint**, *University of Waterloo*.

- Created a novel 3D printing process for bone graft production.
- Process involved printing with a biocompatible putty.
- Printed onto a rotating mandrel using high pressure pneumatic extrusion and cured in place with UV lasers.
- Final prototype was purchased by a biomaterials lab and is currently in use for bone graft prototyping.

2016 **MRI Compatible Blood Pressure Probe Amplifier**, *University of Waterloo*.
- Created a $200 replacement for a $13,500 MRI compatible blood pressure probe amplifier.
- SickKids Hospital purchased five of my instruments.
- These instruments were used in animal studies that have been submitted for publication.

2016 **SMRT WATR Interactive Fountain**, *University of Waterloo*.
- Designed and built a robotic water fountain that was connected to an online quiz game.
- The fountain had five water jets with two axis of motion and 200 ultra-bright LED pixels that displayed animations.

2013 **Ski-Bracing Device for Children with Developmental Disabilities**.
- Worked closely with the Canadian Association for Disabled Skiing to resolve a problem they were having with their equipment.
- Revised a widely used ski-bracing device to make the installation and removal process easier, while improving ski-retention and safety.

Awards and Grants

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

2017 **Engineer of the Future Trust**, *University of Waterloo*.
$4500 in project funding that paid for the materials used in the Skeleprint project.

2016 **Third Year Design Symposium Winner**, *uWaterloo Systems Design Eng. Dept.*
Granted in recognition of the MRI compatible blood pressure probe project.

2015 **Undergraduate Research Award**, *University of Waterloo*.
Granted in recognition of research accomplishments at SickKids.

2015 **Second Year Design Symposium Winner**, *uWaterloo Systems Design Eng. Dept.*
Granted in recognition of the SMRT WATR Interactive Fountain.

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

2013 **Impact Award**, *CIBC*.
Won a monetary prize as a co-op student that's usually reserved for full time staff. Award granted in recognition of improvements made to the performance testing process.

2012 **Community Involvement Award**, *Professional Engineers of Ontario*.
Granted in recognition of volunteer music teaching and tutoring.

Hobbies

I make scientific instruments, software and electronic art in my free time.

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've played the saxophone in a few bands.