Josh Bradshaw

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Experience

2016 **Medical Imaging Engineer**, *SickKids Hospital*, Toronto.

- Developed an embedded 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.
- Designed a digital filtering module for Doppler ultrasound probes.
- Built calibration and testing devices for MRI acquisitions.

2015 **Software Developer**, *Crowdlab at the University of Waterloo*.

- Developed an EEG analysis software suite used by neurologists for seizure detection and medical research.
- Built out a complete web application that allowed the lab to crowd-source time consuming data annotation tasks, reducing the process costs by 90%.

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 performance testing of cibc.ca
- Saved test analysts 20 minutes per test by creating a tool that automatically populated the internal performance testing report.

Projects

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

- Created a novel 3D printing process for bone graft production.
- Developed an embedded closed loop controller using an ARM Cortex MCU for the three motion actuators and the pneumatic extrusion system.
- Created a customized slicing software for printing bone grafts while controlling the microstructure created by the print process.
- Final functional printer prototype was used biomaterials lab for the development of osteoregenerative bone grafts.

2016 **MRI Compatible Blood Pressure Probe Amplifier**, *University of Waterloo*.

- Built a low-cost MRI compatible blood pressure probe amplifier.
- Provided SickKids hospital with four units, saving them $26,000.
- Amplifier worked inside the MRI scanner during operation, where EMI and EMC are fundamental problems.

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 under the water.
- Developed an embedded control system that received instructions over WIFI and actuated all of the motors and lighting.

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 Pattern Recognition

Awards

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**, *Canadian Imperial Bank of Commerce*.

Won a monetary prize as a co-op student that's usually reserved for full time staff. 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 founded my local communities slackline club, which has 40 active members.

I've played the saxophone in a few bands.