# mackenzie wilson

2B Biomedical Engineering

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## skills

**Hardware:**

CAD (SolidWorks)
Machining
3D printing
Basic circuit design/testing
System test design
Optical lens/camera testing
PCB design

**Software:**

C#, C++
Node.js, Javascript
HTML, CSS
Matlab
Arduino
Basic signal processing

**Other:**

Biology/biomechanics
Statistics (and R)

## publications

M. Wilson, et al.
"Co-integrating thermal and hemodynamic imaging for physiological monitoring,"
Journal of Computational Vision and Imaging Systems, 2016/09/02.

## interests

Varsity Softball team
Camping, canoeing, portaging
Rugby, volleyball, hockey, Frisbee
Self-taught guitar, ukulele
Furniture refurbishing and design

## experience

### Optical Systems Engineer
Jan.–Apr. 2017

**Synaptive Medical, Inc.**

Tested optical components and developed requirements and recommendations for a surface detection algorithm through a series of experiments and data analysis using R, to optimize system performance.

### Research Assistant
May–Dec. 2016

**Vision and Image Processing Research Group**

Redesigned mechanical, electrical and optical subsystems of a non-contact hemodynamic imaging system using basic circuit theory, Matlab, microcontrollers, SolidWorks, 3D printing and PCB design.

Integrated thermal imaging into the system for metabolic monitoring, resulting in a published academic paper and conference presentation.

### Co-Founder and Developer
Nov. 2016–Present

**"NatalNet" for Plan International Canada, Inc.**

Integrated front and back end using HTML, Node.js, and several APIs to develop a mobile web app that interacts with SMS in real time.

Connects mothers in rural Bangladesh with a maternal health information database and trained healthcare providers..

## projects

### Cybathlon Powered Arm Team
Jan. 2016–Present

**Biomechatronics Club, University of Waterloo**

Oversaw the 3D printing of first iteration housing for a user-controlled, powered prosthetic hand as part of the Mechanical sub team.

Contributed designs and CAD for the second iteration of the prototype's housing and movement mechanism.

### 1st place solution "NatalNet"
Nov. 2016

**<Br/>eak Inequality Hackathon for Social Impact Apps**

Developed front and back end code for an app connecting new mothers in rural Bangladesh to the healthcare information and access they need. .

### Correction of Freezing of Gait
Sep.–Dec. 2016

**University of Waterloo**

Implemented circuit design, Arduino, Matlab, and signal processing skills to design, test and implement a system to detect onset of Parkinson's freezing of gait and apply directed stimulus to restart normal walking.