

# Makenzie Brian

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## EDUCATION: OREGON STATE UNIVERSITY

MSc Robotics  
2018 – 2019

Classes: Robotic Perception, Linear Multivariate Control Systems, Social Robots, Software Development for Engineering Research, Sequential Decision Making for Robotics, and Ethics and Philosophy of Robotics  
Advisor Dr. William Smart; Researching Human-Robot Interaction  
“Patient Compliance Effects on Simulated Ebola Medical Care Delivery with a Telepresence Robot”

Honors B.S. Electrical Engineering  
2014 – 2017  
Magna Cum Laude

Classes: Electronics (I&II), Microcontroller System Design, Power Electronics, Intelligent Robots, System Dynamics and Control, and Applied Robotics  
Honor Thesis Advisor Dr. William Smart; “Design and Implementation of a Ride-On Car with Data Tracking for Use by Young Children with Developmental Differences”

## WORK EXPERIENCE

**Graduate Research Assistant**, OSU Personal Robotics Group, Corvallis, OR

January 2018 – June 2019

- Engineered solutions for manufacturing robotics for Precision Castparts Corp.
- Conducted a study that explores patient compliance differences when instructed by a telepresence robot vs. a human in Ebola-style protective equipment
- Collaborated with students to develop a new Robot Operating System (ROS) Wiki framework through analysis of the previous Wiki and documentation
- Aided in detailing issues with current smart-wheelchair research to compose a workshop paper, which facilitated discussion within the community on how to better aim research toward user-centered design

**Graduate Teaching Assistant**, ME 451: Instrumentation and Measurements, Corvallis, OR

January 2018 – March 2018

- Taught electrical fundamentals, Arduino programming, and sensor integration to mechanical engineering students
- Coordinated and graded 38 unique group final projects for a class of 126 students
- Mentored students to assist in design development and appropriate scoping of projects

**Robotics Engineering for Manufacturing Intern**, ESCO Group LLC, Portland, OR

June 2017 – September 2017

- Developed small part inspection process that looked for shrinkage defects, parting line flashing, and incorrect riser height
- Established a set of work instructions detailing the maintenance procedures, safety policy, normal operating protocols, and troubleshooting guide for the Fanuc robotic arm and surrounding cell
- Improved riser removal process by removing excess material and providing operating instructions for inspectors
- Communicated with expert inspectors in order to improve parts inspection and adapt in accordance with robotic limitations such as those present in dexterity and sensing at the level a human inspector would be able to perform

**Undergraduate Research Assistant**, OSU Personal Robotics Group, Corvallis, OR

September 2016 – December 2017

- Developed, built, and evaluated a data collection system that tracked use of a modified commercial Ride-On Car for children with developmental hindrances
- System can be used to relate frequency and duration of use with good developmental outcomes for these children
- Design information enfolded into a Honors College Thesis

**Undergraduate Research Assistant**, CreateIT Collaboratory, Corvallis, OR

September 2015 – September 2016

- Collaborated with other undergraduates on a variety of projects in Electrical and Computer Engineering
- Debugged system hardware for a wireless water level sensor that can alert Corvallis residents to possible flooding in the Mary's Peak Watershed Area
- Rewrote Tekbot building manuals for use in freshman level course at Oregon State University and other universities overseas
- Researched and developed course projects for two new design classes to encompass vital engineering, communication, and teamwork skills for junior year students; these projects included a persistence-of-vision wand, a serial to MATLAB input for data acquisition, and a music visualizer
- Communicated through written reports and active participation in meetings with project team

## SKILLS

- Computer Programming: Robot Operating System (ROS), Python, C, C++, L<sup>A</sup>T<sub>E</sub>X, Arduino, and System Verilog
- Software: Git, MATLAB, PSpice, and LTSpice
- Experience with Solidworks, OpenSCAD, Eagle CAD, Linux, and Assembly

## INVOLVEMENT

- Robotics Graduate Student Association** Logistics Chair December 2017 – June 2019
- Coordinated event needs with vendor both inside and outside the university
  - Supervised bi-weekly meetings to focus discussion, took notes, and assigned tasks to all officers
  - Hosted social and ethical issues in robotics reading and discussion group
- Eta Kappa Nu - IEEE Honors Society** Webmaster January 2016 – June 2019
- Managed website as hosted on Oregon State University domain using Drupal
  - Updated web page as hosted on nation Eta Kappa Nu website
- Ellen Momsen's Research Program** Research Mentor March 2016 – June 2016
- Instructed freshman in various aspects of electrical engineering research including hardware design and assembly, system testing, and debugging
- Phi Sigma Rho Engineering Sorority** Active Member September 2015 – December 2017
- Co-Sisterhood Chair, March 2016 – December 2017
  - Planned and managed events for seventy women including food and housing for a weekend retreat
  - Organized a committee to help make decorations and prepare other necessary materials for events
- SWEsters Mentor Program** Mentor September 2015 – June 2016
- Provided guidance to two women engineers on assimilating to college life, engineering opportunities, and managing workload
- Society of Women Engineers** October 2014 – Present
- Networked with other women in engineering and participated in events to foster a sense of community
- Early Orientation Program for Women in Engineering** Mentor September 2015
- Introduced freshman women in engineering to Oregon State University with a rafting trip on the McKenzie River
- Institute of Electrical and Electronics Engineers(IEEE)** Professional Member January 2019 – Present
- Hardware Build Weekend** Participant May 2015, October 2016

## ACHIEVEMENTS

- Tektronix Commercialization Award, Senior Capstone, 2017
- Grand Team Challenge for Student Scholars, Water Level Project, 2016

## PUBLICATIONS

- J. Dawes, M. Brian, H. Bialek, and M. L. Johnston, "Wireless smartphone control using electromyography and automated gesture recognition," vol. 2018. IEEE, Engineering in Medicine and Biology, 2018, pp. 5390–5393
- B. Narin, M. Brian, and W. Smart, "A critical look at smart wheelchairs," *International Conference on Intelligent Robots and Systems (iROS)*, 2018