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++, LaTeX, 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