

# Brady G. Moon

ROBOTICIST · ELECTRICAL ENGINEER

Pittsburgh, Pennsylvania

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## Education

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### Carnegie Mellon University

M.S. IN ROBOTICS

Pittsburgh, Pennsylvania

August 2019 - Present

### Brigham Young University

B.S. IN ELECTRICAL ENGINEERING

- Graduated *summa cum laude* (4.0 GPA)
- Emphasis in Signals and Systems

Provo, Utah

August 2015 - April 2019

## Academic Employment

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### DOE Delivery Energy Productivity Project

AIR LAB RESEARCH ASSISTANT

- Creating a neural network to select motion primitives for a UAV to fly in windy urban environments
- Building and validating an energy model for autonomous unmanned ground vehicles
- Developing a path-planning algorithm which factors in risk, energy consumption, and wind

Pittsburgh, Pennsylvania

August 2019 - Present

### UAV Gesture Commands Project

MAGICC LAB RESEARCH ASSISTANT

- Designed and trained a model to classify ten gestures with an accuracy of 95% using accelerator and gyroscope measurements .
- Presented the research at the ICUAS 2019 conference
- Designed and tested intuitive gestures and behaviors for natural directing of a fleet of UAVs
- Submitted article to the Journal of Intelligent & Robotics Systems

Provo, Utah

September 2018 - April 2019

### Utah Underwater Robotics

EXECUTIVE DIRECTOR

- Directed a statewide STEM outreach program, impacting over 800 K-12 students annually
- Designed and organized the annual competition
- Worked closely with local companies to fund and promote the program

Provo, Utah

January 2016 - April 2019

### Multi-Mission Project

MAGICC LAB RESEARCH ASSISTANT

- Developed a search algorithm for cooperating UAVs which maximizes area knowledge and the number of tracked targets using Gaussian process regressions
- Presented the research at the ICUAS 2018 conference
- Implemented a Gaussian Mixture Model-based Kalman filter for more accurate target tracking with heterogeneous sensors

Provo, Utah

March 2017 - April 2019

### BYU Mathematics

TEACHER ASSISTANT

- Taught lectures on calculus twice per week
- Graded assignments and held office hours for all math sections where I taught one-on-one and in small groups to help students master the subject

Provo, Utah

August 2015 - December 2015

## Professional Employment

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### Near Earth Autonomy

ROBOTICS ENGINEERING INTERN

Pittsburgh, Pennsylvania

May 2019 - August 2019

### Scalar Analytics

SOFTWARE DEVELOPMENT INTERN

- Worked directly with the director of operations in building a new and efficient customer relationship management program
- Created scripts to automate the workflow of employees, saving hours of time each day

Draper, Utah

June 2016 - July 2016

## Publications

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John Akagi, Brady G. Moon, Xingguang Chen, Cameron K. Peterson, "Gesture Commands for Controlling High-Level UAV Behavior," *2019 International Conference on Unmanned Aircraft Systems*.

Brady G. Moon, Cameron K. Peterson, "Learned Search Parameters For Cooperating Vehicles using Gaussian Process Regressions," *2018 International Conference on Unmanned Aircraft Systems*.

John Akagi, Timothy Devon Morris, Brady G. Moon, Xingguang Chen, Cameron K. Peterson, "Gesture Commands for Controlling High-Level UAV Behavior," *Journal of Intelligent & Robotic Systems* (Submitted To).

## Volunteer and Leadership Experience

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**Kiri** Salt Lake City, Utah  
VICE PRESIDENT January 2018 - June 2019

- Founded an educational screenless smart toy start-up as part of a selective interdisciplinary fellowship program
- Won three business model competitions and was successfully funded on Kickstarter
- Mentored by industry leaders from Microsoft, Tinder, and Chrysler

**Self-Help Homes** Provo, Utah  
EXECUTIVE DIRECTOR August 2015 - April 2019

- Directed and instructed up to 70 volunteers weekly in assisting low-income families build their own homes
- Personally helped construct over 100 homes

**IEEE and BYU Mechatronics** Provo, Utah  
CLUB PRESIDENCIES January 2017 - April 2019

- Led as vice chair in IEEE and vice president in the BYU Mechatronics club
- Designed and planned projects to help students further their knowledge and skills, such as maze-solving robots, Bluetooth RC cars, binary clocks, and ROVs

## Scholarships & Grants

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- 2019 **NSF Graduate Research Fellowship**, Three-year stipend and educational allowance
- 2019 **Warren Rollins and Murdell Hull Scholarship**, Received for graduating from BYU with a 4.0 GPA
- 2018 **NSF Research Experiences for Undergraduates Supplement**, Supplemental funding for work on cooperative control of UAVs
- 2018 **Crocker Innovation Fellowship**, Year-long interdisciplinary innovation experience and fellowship stipend
- 2018 **Tau Beta Pi Scholarship**, For academic achievement, extracurricular activity, and high potential for contributions in engineering
- 2018 **Edwin S. Hinckley Scholarship**, Two semesters tuition and stipend for exemplary service contributions and academic standards
- 2017 **BYU ORCA Research Grant**, Research grant awarded to build a gesture controller for UAVs
- 2017 **Sallie Mae Bank Scholarship (2x)**, Twice received this \$5000 scholarship from Sallie Mae Bank for excellence in engineering
- 2013 **Heritage Scholarship**, Four-year full tuition university scholarship
- 2012 **Nordstrom Scholar**, National four-year scholarship and was one of 40 selected out of 12,000 applicants

## Honors & Awards

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- 2019 **Summa Cum Laude**, Brigham Young University
- 2019 **President's Volunteer Service Award (4x)**, National recognition for 150-250 hours of volunteer service each year
- 2019 **1st Place Miller Business Model Competition**, \$5000 prize for Kiri, the screenless smart toy, and received Crowd Favorite award
- 2019 **1st Place BYU Social Venture Academy Best Product**, \$2000 prize for Kiri
- 2019 **1st Place BYU Department of Technology IoT Competition**, \$500 prize for Kiri
- 2019 **2nd Place Opportunity Quest Business Model Competition**, \$2000 prize for Kiri
- 2019 **3rd Place BYU Student Innovator of the Year**, \$2000 prize for Kiri
- 2018 **Gold Medal Congressional Award**, National award for public service, personal development, physical fitness, and exploration
- 2018 **Goldwater Honorable Mention**, Scholarship aiming to identify "this Nation's next generation of research leaders"
- 2008 **Eagle Scout**, Highest achievement in the Boy Scouts of America

## Technical Skills

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**Programming** C++, C, Python, Matlab, LaTeX  
**Technologies** ROS, Gazebo, Git, Pytorch, OpenCV

## Projects

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**AUVSI Student Unmanned Aerial Systems Competition** Developed a robust RRT path planner for the AUVSI SUAS competition. This planner avoided obstacles while minimizing the waypoint capture error through ensuring long straight paths through waypoints. Also fabricated and repaired many fixed-wing UAVs, created an image distortion correction program for letter and shape recognition, and many other tasks over the three years on the team.

**Autopilot Implementation** Implemented the autopilot from *Small Unmanned Aircraft: Theory and Practice* in Python. This includes an implementation of the controller, estimator, path planner, and path manager.

## Society Memberships

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**Tau Beta Pi**

**IEEE-Eta Kappa Nu**

**Golden Key International Honors Society**

## Extracurricular Activities

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**BYU Mechatronics Club**

Vice President, reinstated the club, planned and carried many mechatronics projects

**BYU Triathlon Club**

6:00 AM workouts and competing in triathlons

**BYU Irish Band**

Pianist, performed for many events

**IEEE BYU Student Branch**

Vice Chair, coordinated many electronics projects, connected students with recruitment opportunities

**ACM BYU Chapter**

Participated in many coding competitions and hackathons, winning 1st place in one competition

**Y-Serve**

Service in various volunteer groups building homes, playing with special-needs children, and assisting refugees

**A Cappella**

Joined a group called "In Tune", recorded multiple albums, and performed in four venues

**Photography & Videography**

Various hired and self-motivated projects, toured across Europe with a BYU dance team as media specialist