Brady G. **Moon**

Roboticist · Electrical Engineer

3953 Murray Ave Flr 2, Pittsburgh, Pennsylvania 15217

(435)-828-5858 | bradygmoon@gmail.com | bradygm | bradygmoon

Education

Carnegie Mellon University
Pittsburgh, Pennsylvania

M.S. in Robotics — *August 2019 - Present*

Brigham Young University
Provo, Utah

B.S. in Electrical Engineering — *August 2015 - April 2019*

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

Academic Employment

DOE Delivery Energy Productivity Project
Pittsburgh, Pennsylvania

Research Assistant — *August 2019 - Present*

- 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

UAV Gesture Commands Project
Provo, Utah

Research Assistant — *September 2018 - April 2019*

- Designed and trained a model to classify ten gestures using accelerator and gyroscope measurements with an accuracy of 95%.
- 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

Utah Underwater Robotics
Provo, Utah

Executive Director — *January 2016 - April 2019*

- 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

Multi-Mission Project
Provo, Utah

Research Assistant — *March 2017 - April 2019*

- 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

BYU Mathematics
Provo, Utah

Teacher Assistant — *August 2015 - December 2015*

- 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

Professional Employment

Near Earth Autonomy
Pittsburgh, Pennsylvania

Robotics Engineering Intern — *May 2019 - August 2019*

Scalar Analytics
Sandy, Utah

Software Development Inter — *June 2016 - July 2016*

- 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

Publications

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

Kiri — *Sandy, Utah*

Vice President — *January 2018 - June 2019*

- Founded an educational toy start-up as part of a selective interdisciplinary fellowship program
- Product successfully funded on Kickstarter
- Won 3 business model and design competitions
- 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 50 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

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**, Eight semester full tuition scholarship through Brigham Young University
2012 **Nordstrom Scholar**, National four-year scholarship and was one of 40 selected out of 12,000 applicants

Honors & Awards

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 also won Crowd Favorite
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

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

Projects

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

Tau Beta Pi
IEEE-Eta Kappa Nu
Golden Key International Honors Society

Extracurricular Activities

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 groups such to build homes, play with children, and assist refugess
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