Jacob Moroni Olson

Perception · Controls · Autonomy · Mechanical Engineer

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Education

Brigham Young University — *Provo, Utah*

Masters in Mechanical Engineering — *December 2019*

- 3.93 GPA
- Thesis: Collaborative UAV Planning, Mapping, and Exploration in GPS-Denied Environments

Brigham Young University — *Provo, Utah*

B.S. in Mechanical Engineering · Minor in Business Management — *Apr 2017*

- 3.81 GPA
- Four-year Academic Scholarship - half tuition

Coursework

- Autonomous Systems · SLAM, Kalman Filters, Particle Filters, Markov Decision Processes
- Flight Dynamics and Control · Develop autopilot flight stack for fixed wing and multirotor UAVs
- Deep Learning · (Develop and implement several deep neural network architectures and techniques)
- Robotic Vision · Object tracking, structure from motion, visual odometry, obstacle avoidance
- Robotics and Controls · PID, state space control, loopshaping, and kinematics of manipulators
- Optimization · Modeling and design of several optimization techniques
- C++ GUI Design · Object Oriented Programming and GUI design using Qt and OSG
- Linear & Nonlinear System Theory · Stability analysis and controller design

Work Experience

Magicc Lab — *Provo, Utah*

Research Assistant — *Sep 2017 - Present*

- Software algorithm and GUI development in Python and C++ with ROS
- Development and testing in a simulation environment using ROS Gazebo
- Implemented research software on multirotor hardware
- Integrated perception sensors such as RGB-D cameras, LIDAR sensors, and ultrasonic sonar sensors
- Gained in-depth understanding of 3D mapping, perception, and localization techniques
- Version control using git

Lockheed Martin Procerus Technologies — *Vineyard, Utah*

Engineering Intern — *May 2017 - Present*

- Designed and implemented several test fixtures used in production and engineering
- Wrote and implemented robust software for test fixtures used in production
- Assisted with debugging and building production software
- Wrote documentation and build documents for products

Brigham Young University — *Provo, Utah*

BYU Capstone — *Sep 2016 - Apr 2017*

- Worked with a team of five to design and build a production-ready handheld dusting vacuum
- Learned effective design process implementation and functional prototyping procedures
- Surface and solid modeling using CAD software

BYU Robotics and Dynamics Lab — *Provo, Utah*

Undergrad Research Assistant — *Sep 2016 - Apr 2017*

- Applied for and received a grant (ORCA) to fund research
- Calibration and integration of several sensors using Python with ROS
- Mechatronic design using Eagle and data sheets
- Gained in-depth understanding of robotics platforms including compliant and soft robotics

Autoliv — *Ogden, Utah*

Mechanical Engineering Intern — *May 2016 - Aug 2016*

- Member of research and development team for frontal airbag modules
- Worked independently and with teams to model and build various test fixtures
- Modeled a variety of complex parts using solid and surface modeling in Solidworks
- Analyzed and organized test data using EDAPT and Excel
- Presented findings to 10+ managers and acting president

AUVSI-SUAS Competition Team — *Provo, Utah*

Mechanical Engineering Design — *Sep 2015 - Apr 2016*

- Worked with a team of 5 to design autonomous fixed wing airframe using NX
- Designed and built custom camera gimbal to use on aircraft