Jacob Moroni Olson

Autonomy · Perception · Controls · Mechanical Engineer

1120 East 300 North, Pleasant Grove, Utah 84062

714.598.5938 | jacobmoroniolson@gmail.com | JacobMoroni | JacobMoroni

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

BYU 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