Jacob Moroni Olson

Autonomy · Controls · Perception
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Experience

Fortem Technologies
Pleasant Grove, Utah

Senior Controls Engineer
Sep 2019 - Present

- Researching, developing, and implementing new autonomy and control algorithms for DroneHunter
- Collaborating on estimation, and tracking development
- Performing system dynamics analysis to improve capture performance
- Designing simulation, visualization, and analysis tools to speed development of new features
- Planning and leading hardware testing and data collections for DroneHunter
- Collaborating and planning development with DroneHunter software team and algorithms team

BYU MAGICC Lab
Provo, Utah

Research Assistant
Sep 2017 - Oct 2019

- 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 - August 2019

- Designed and implemented several test fixtures used in production and engineering
- Led a product design change to improve manufacturability and reliability
- 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
- Presented findings to 10+ managers and acting president

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