

## Education

Class of 2016	Bachelor of Science: Electrical Engineering, minor: Computer Science University of Florida - GPA: 3.6/4.0	Gainesville, FL
	<ul style="list-style-type: none"> <li>UF University Scholar (University Scholars Program)</li> <li>National Merit Scholar</li> </ul>	

## Skills

- Languages:** Python, MATLAB, C++, C, VBA, Lua
- Tools:** Linux, OpenCV, PCL, ROS, CVXGEN, OpenGL, Gazebo, V-Rep, Boost, Numpy, Eigen, etc
- Motion Planning, Perception, Model-Predictive Control, Convex Optimization, Underactuated Robotics

## Work Experience

05/14 – 08/14, 05/15 – Present	<b>Avionics - Systems Integration Intern</b> <i>SpaceX (Space Exploration Technologies)</i>	Hawthorne, CA
	<ul style="list-style-type: none"> <li>Implemented Kalman filter based state and state-uncertainty propagation for Dragon crewed operations</li> <li>Developed (in Python) configuration automation software for Dragon and Falcon vehicles</li> <li>Developed device drivers for crew manual controls on Dragon V2</li> </ul>	
09/13 – Present	<b>Computer Vision Software Engineer</b> <i>Oculus - Undergraduate Research, University of Florida under Dr. Dan Dickrell</i>	Gainesville, FL
	<ul style="list-style-type: none"> <li>Developed retinal blood vessel segmentation methods using MATLAB/Python (See patents)</li> <li>Leading computer vision and segmentation efforts and undergraduate hiring</li> </ul>	
05/13 – 08/13	<b>Instrumentation Engineering Intern</b> <i>Sikorsky Aircraft Corporation</i>	West Palm Beach, FL
	<ul style="list-style-type: none"> <li>Resolved instrumentation dispute between NAVAIR and Sikorsky by writing an instrumentation analysis tool</li> <li>Lead a team of interns to create an automated phone system for informing test crews of flight status</li> <li>Performed 20+ hours weekly of hands-on instrumentation work on experimental aircraft</li> </ul>	

## Projects

05/15	<b>Perception Lead, Amazon Picking Challenge, Team Georgia Tech</b>	Atlanta, GA
	<ul style="list-style-type: none"> <li>Designed and implemented full perception stack in three weeks, integrating code in Python, C++ and MATLAB using ROS</li> <li>Used 2D RGB histogram similarity for 2D object segmentation, and PCL pre-rejective sample consensus for object registration</li> <li>Placed 10<sup>th</sup> in the world (out of ~50 qualifying teams, 28 of whom attended the conference) at ICRA 2015 in Seattle</li> </ul>	
09/13 – Present	<b>Student Engineer – UF Machine Intelligence Lab AUVSI Team</b>	Gainesville, FL
	<ul style="list-style-type: none"> <li>Implemented constrained nonlinear control allocation for the pair of azimuth thrusters for the Propagator ASV with CVXGEN</li> <li>Implemented RRT-based motion planner and direct-transcription optimal motion planner for steering function generation</li> <li>Implemented GPU simulated LIDAR and depth-imaging using OpenGL</li> <li>Leading the “Better Planning Initiative” to apply modern kinodynamic motion planning techniques to our existing robots</li> <li>Spearheading development of “ROS-Boat” the first open-source tool of its kind for the control of large autonomous water vessels</li> </ul>	
05/14 – 05/15	<b>Team Lead, Machine Intelligence Lab 2015 IEEE Robotics Team</b>	Gainesville, FL
	<ul style="list-style-type: none"> <li>Recruited and lead forty member robot team to build an autonomous robot for competition in IEEE Southeastcon 2015</li> <li>Implemented monocular camera simultaneous localization and mapping (SLAM)</li> <li>Developed device drivers for drive motor, servo and solenoid control</li> </ul>	
09/14 – 05/15	<b>VisAR – Augmented Reality using an Oculus Rift</b>	Gainesville, FL
	<ul style="list-style-type: none"> <li>An augmented reality headset, using stereo cameras, undistorted using an FPGA, and augmented using an Nvidia Jetson TK1</li> <li>Implemented full stereo AR rendering engine using OpenGL, designed for presenting an unobtrusive heads-up-display to the user</li> </ul>	
04/14	<b>Competitor, Hello World Open</b>	Gainesville, FL
	<ul style="list-style-type: none"> <li>Wrote simple AI for a simulated toy racecar, accounting for drift and lane-changes, placed 4<sup>th</sup> in United States</li> </ul>	
01/14 – 04/14	<b>Computer Vision Specialist, 2014 IEEE Robotics Team</b>	Gainesville, FL
	<ul style="list-style-type: none"> <li>Designed an algorithm for determining the 3-D position of an object in the robot camera’s field of view</li> <li>Designed a vision algorithm for reliably aiming a 3-DOF turret at a target</li> </ul>	
08/12 – 05/13	<b>Mentor, MIT Zero Robotics</b>	Low Earth Orbit
	<ul style="list-style-type: none"> <li>Mentored team of high school students for MIT’s worldwide Zero Robotics competition</li> <li>Earned third place, our code was executed on the experimental SPHERES robots aboard the International Space Station</li> </ul>	
06/12 – 09/12	<b>Leader, EFTP Bumper Bots</b>	Gainesville, FL
	<ul style="list-style-type: none"> <li>Designed, built and programmed bumper-car robots for children at UF Shands Hospital</li> <li>Designed and wrote Bluetooth communications protocol for remote control of robots</li> </ul>	

## Patents

8/14 (Provisional)	<b>“Method for the Autonomous Image Segmentation of Flow Systems”</b>	
	<ul style="list-style-type: none"> <li>First Inventor, developed for Sentinel Diagnostic Imaging for the Oculus technology</li> <li>Leverages artificial neural networks, 2-D wavelet analysis, and computational geometry to autonomously isolate blood vessels in an RGB image of the retinal fundus</li> </ul>	