

WORK EXPERIENCE**Software Engineer**, Eonite Perception — August 2016 - December 2017

- Developed visual SLAM + odometry system for head tracking in virtual/augmented reality devices
- Created VR mapping application in Unity3D for reconstructing a user's environment using depth sensors

Member of Technical Staff, Cisco Meraki — July 2014 - July 2016

- Full stack engineer on the MX security appliance team
- Designed and implemented performance routing capable of optimizing traffic flow based on network health
- Four patents pending based on my work on performance routing (also known as SD-WAN) and Auto VPN

Robotics Engineering Intern, Astrobotic Technology, Inc — April 2013 - June 2014

- Created visual odometry software application for motion estimation of lunar lander in C++ from the ground up.
- The system takes in stereo camera image pairs, detects feature points in the current frame, and finds corresponding point locations in the subsequent frames using computer vision algorithms all in real-time at 10+ FPS.
- Worked on FPGA implementation of this system to be used on board the lunar lander that will compete in the \$30 million Google Lunar X-Prize.

Structure and Design of Digital Systems 18-240 TA, Carnegie Mellon University — Spring 2013**Engineering Intern**, OMNIlife Science; Manhattan, NY — Summer 2011

- Designed and implemented a software system (Python) and hardware rig (SolidWorks) for measuring forces within a human knee intra-operatively. Please see <http://tinyurl.com/kneesim> for a brief video demonstration.
- Wrote software to analyze data acquired by the system. Features include pin pointing the center of force on the tibia, calculating medial and lateral antero-posterior force balance, and plotting force data all in realtime.

Research Intern, Hospital for Special Surgery's Computer Assisted Surgery Lab; Manhattan, NY — Summer 2011

- Designed femur and tibia housings used to secure cadaver specimens to knee simulator, for published study

PROJECTS**Sleep Monitor**, Undergraduate Research Project — 2011 - 2012 (<http://imgur.com/a/R8iPK> - images of final device)

- Designed, prototyped, iterated, and finalized inexpensive hardware method used to measure a user's sleep motion.
- Attained IRB approval to conduct a study to assess the quality of the device.

Effortless I/O, Undergraduate Research Project — 2012 - 2013

- Winner of four Carnegie Mellon Meeting of the Minds awards, the most awards for one team in history:
 - Boeing Blue Skies: Game Changer, IBM Smarter Planet, Toyota Environmental Research, Johnson & Johnson Undergraduate Research Award (2nd place)
- Aided in the implementation of a system based around the ATMega microcontroller which allows a user to easily add internet connectivity and hardware communication to AVR microcontrollers using a Javascript library.

Mobot, Annual Mobile Robot Competition — 2011 (<http://imgur.com/a/tomCc> - images of final device)

- Competed with 2 peers in order to create a robot capable of autonomously navigating a race track.

ACTIVITIES AND AFFILIATIONS**Farmers Market Volunteer**, CUESA — 2017 - Present**Robotics Club**, Carnegie Mellon University — 2010 - 2014**Astronomy Club**, Carnegie Mellon University — 2010 - 2011**ACADEMIC HONORS****Dean's List**, Carnegie Mellon University, Carnegie Institute of Technology — Fall 2013**EDUCATION****Carnegie Mellon University; Pittsburgh, PA**

- Bachelor of Science in Electrical and Computer Engineering with Minor in Robotics, May 2014 — QPA: 3.35

RELEVANT COURSES AND SKILLS

- Distributed Systems 15-440 | Advanced Digital Design 18-545 | Advanced Mobile Robot Development 16-865 | Embedded Real-Time Systems 18-349 | Robot Kinematics 16-384 | Fundamentals of Control 18-370 | Logic Design Techniques 18-341 | Computer Systems 18-213 | Electronic Devices and Analog Circuits 18-220 | Computational Photography 15-463 | Principles of Imperative Computation 15-122 | 3D Calculus 21-259
- Proficient with C++ 11/14, C, Go, OpenCV, SystemVerilog, Python, MATLAB, SolidWorks, Git, Linux/UNIX, Javascript, React, HTML/CSS
- Familiarity with Swift/Objective-C/Xcode for iOS development, Scala, OpenGL, OpenVR, ROS, Rust, ARM/Intel Assembly, LaTeX, AVR/Arduino programming/circuitry