Ted Kern

tkern@arnatious.com • (702) 539-2661

EDUCATION

Carnegie Mellon University, Pittsburgh, PA
Master of Science in Electrical and Computer Engineering — Expected Dec 2018
- GPA: 4.00 / 4.00

Bachelor of Science in Electrical and Computer Engineering — May 2018
- GPA: 3.15 / 4.00

EXPERIENCE

347C Extreme Environment Robotics, NASA Jet Propulsion Laboratory — Pasadena, CA
JPL Summer Internship Program, ISEE Perception Intern — Jun – Aug 2018
- Researched composition and visible characteristics of planetary ice, discovering methods to replicate natural processes
- Crafted C++ test suite for evaluating performance of different mapping methods on ice walls using PCL

JPL Summer Internship Program, LEMUR Perception and Navigation Intern — Jun – Aug 2017
- Refactored and standardized ROS C++/Python codebase and build tooling of robot control, perception, and planning software, affording faster compile times and uniform style
- Investigated cause of artifacts in 3D terrain scans and implemented filtering to reduce false surfaces
- Extended collision detection routines using Bullet Physics to allow for robust planning with concave obstacles

JPL Summer Internship Program, LEMUR Perception and Navigation Intern — May – Aug 2016
- Planned and implemented limb-based perception subsystems and relevant simulation code for LEMUR rover
- Implemented a library for allowing the Intel Realsense depth camera to communicate with ROS
- Created sensor configuration/filtering simulations to optimize LEMUR sensor accuracy

Pololu Robotics and Electronics — Las Vegas, NV
Electrical Engineering Intern — Jun – Aug 2014
- Designed, documented, and brought to market a commercial motor controller shield for Arduino using Altium
- Constructed and documented accompanying firmware libraries and example code for the above product

RESEARCH EXPERIENCE

Biorobotics Laboratory, Carnegie Mellon University — Pittsburgh, PA
Undergraduate Researcher, Modsnake — Aug 2014 – May 2016
- Designed a small footprint brushless DC motor driver for a high power, gearless robot leg
- Devised electrical and communication systems for jumping robot with gecko-styled reorientation mechanism
- Managed lab infrastructure including project repos, wikis, interviewing and matching applicants with research
- Migrated several projects from Redmine/SVN to Github and off-site backup services
- Consulted as circuit designer for lab projects, offering guidance and verifying designs before fabrication

Planetary Robotics Lab, Carnegie Mellon University — Pittsburgh, PA
Undergraduate Researcher, Andy Rover — Aug 2014 – Jul 2015
- Produced power conversion and distribution modules for Lunar Rover using space capable materials
- Conducted feasibility review for different multi-camera designs for lunar image gathering
- Investigated performance of image processing on a space grade FPGA versus dedicated graphics hardware

SKILLS

Software: ROS, Unix, CMake, OpenCV, Qt, Altium, Solidworks, Simulink, Labview
Programming Languages: C, C++, C#, Matlab, Python, Java, LaTeX, SystemVerilog
Spoken Languages: English (Native), Portuguese (Fluent), French (Conversational)

SELECTED PROJECTS

Augmented Virtual Reality using Depth Imaging and HTC Vive, *ECE Capstone, Team*
- Fused sensor data from a depth camera and VR tracker beacon to perform 3D object scans
- Adapted teammate's OpenGL viewer code to render in VR, allowing for mixed reality perception

Biopattern Visual Pattern Extraction (with JPL PEARL), *Pattern Recognition Theory (Graduate)*
- Investigated set of geological images using Matlab, discovering underlying discriminant for biological origins
- Synthesized a reference image from classifier that depicted useful markers for identifying biological patterns

LEMUR Graspability Model (with JPL LEMUR), *Math Fundamentals for Robotics (Graduate)*
- Designed mathematical model for graspable surfaces based on Solidworks model of robot manipulator
- Implemented tool to visualize and label graspable areas on point cloud scans of real world terrain in Matlab

ADDITIONAL EXPERIENCE

Carnegie Mellon University School of Computer Science — Pittsburgh, PA
Teaching Assistant, 15–294/15–394 Rapid Prototyping Technologies — Aug 2018 – Present
Teaching Assistant, 15-122 Principles of Imperative Computation — Aug – Dec 2015