MIKE SUTHERLAND

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Education

University of California, Irvine   Irvine, CA
Mechanical Engineering BSc   *Expected May 2022*

Projects

Lead Programmer — UAV Forge | *Python, ROS, tensorflow*   Fall 2020 – Present
- Lead programmer for the UAV Forge student project, an unmanned aerial system that can fly autonomously, deliver packages, and search for objects on the ground
- Managed multiple software projects across two 3-5 person programming subteams
- Migrated software teams to unified, ROS-based system, to enable seamless communication and interoperability between the UAV, the ground station, and the competition server
- Spec and purchase of on-board computer/camera system for the UAV, capable of on-board object detection and recognition
- Integrated all development with git, and created hosted CI documentation system to ensure up-to-date & in-line documentation

Vision System — UAV Forge | *Python, tensorflow, openCV, Blender*   Spring 2020 – Spring 2021
- Custom deep-learning vision system for recognizing and localizing objects from the air
- Created custom dataset rendering pipeline using Blender to generate synthetic training data for the neural network
- Trained custom object detector capable of localizing and classifying ground objects using the synthetic dataset; model achieved accurate object detection, classification, and localization on real test images of objects
- Integrated ML model into image processing pipeline on embedded acceleration hardware

SURP Research Fellowship, Summer 2021 | *Python, cvxpy, ROS*   Summer 2021
- 10-Week Research Fellowship to develop a novel autonomous aerial vehicle path planner for 3-D spaces
- Developed novel method for generating optimal paths in 3-D space with obstacles with a hybrid algorithm based on Rapidly Exploring Random Trees (RRT)
- Created python software package hosted on PyPi with standard path planner implementations, with performance gains from C accelerated subroutines on critical code paths
- Submitted paper to 2022 IEEE Conference on Decision and Control, pending publication
- Implemented path planner routines on ROBOTIS TurtleBot platform, with re-planning on Simultaneous Localization and Mapping (SLAM) - generated occupancy grids

Work Experience

Firm Principal/Co-Owner   2016 2019
AJL Media, LLC   *San Diego, CA*
- Principal designer of effective trial opening and closing presentations with seamless presentation of video, image, and document evidence for legal clients
- Worked with small teams in trial to evaluate and eliminate weaknesses in trial strategy and case management
- Achieved profitability during the first year of operation and increased profitability every year following our acquisition of the company
- Performed all business/management related tasks – invoicing, accounting, client intake, scheduling, and marketing

Trial Consultant   2012 - 2016
AJL Media, Inc.   *San Diego, CA*
- Managed real-time presentation of evidence for attorneys in trial and arbitration
- Assisted legal teams with preparation of evidence, demonstratives, opening and closing statements
- Managed administration of rental trial laptops and firm computers/IT systems
- Performed setup, tear-down, and maintenance of courtroom audio/video equipment

Technical Skills

Languages: Python, C++, MATLAB, LaTeX, HTML/CSS
Software: SolidWorks; Adobe Photoshop, Premiere, AfterEffects; MS Office Excel, PowerPoint
Developer Tools: Bash/Terminal Scripting, Git/Github, CI (with Git workflows), Remote Deployment
Operating Systems: Linux / MacOS / Windows