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Summary

Engineer with a passion for designing autonomous robotic systems to advance scientific exploration. Experience working in the robotics industry for 2 years and currently pursuing an MS in Robotics, particularly interested in robot perception, learning and decision making in dynamic environments. Experienced in computational programming with Python and MATLAB, and robotics systems design with C++.

Experience

Field Robotics Group — Ann Arbor, MI

Graduate Researcher — *Aug '21 – Current*

- Formulating and researching methods for near-land autonomous surface vehicle (ASV) applications, primarily a machine learning framework for dynamic scene understanding and mapping.
- Developing and maintaining Gazebo-based simulation platform for testing navigation, vision and learning algorithms for autonomous surface and unmaned underwater vehicles.

iRobot Corporation — Bedford, MA

Test Engineer — *May '19 – May '21*

- Designed test plans and defining validation metrics for acoustic and optical sensors, path planning and reflexive behaviors of next-gen mobile floorcare robots.
- Lead the development of hardware failure mode classification using machine learning methods, decreasing the test time and resources for certain tests by up to 75%.
- Assisted in the development of an automation framework for test fixtures, developing applications for long term testing that helped reduce test time and engineering hours drastically.

Please refer to my Linkedin profile for the complete list of work experiences along with recommendations.

Education

University of Michigan — Ann Arbor, MI

MS in Robotics | GPA: 4.11/4.00 — *2021 – Current*

Courses Taken: Math for Robotics; Robotics Systems Lab; Statistical Inference, Estimation and Learning.

University of Rochester — Rochester, NY

BS in Mechanical Engineering; Minor in Computer Science | GPA: 3.59/4.00 — *2015 – 2019*

Projects (Engineering Portfolio)

Bayesian Methods for Contrast Maximization with Event Cameras — December 2021

- Formulated and implemented a computational framework to use Bayesian methods to estimate optical flow and motion parameters of event cameras.
- Estimates match ground truth value with batch estimation, and utilize informative priors across smaller batches of estimates to enable online estimation.

Autonomous Archeological Digsite Detection — May 2019

- Built a tethered robotic system and accompanying software to non-intrusively map the ground plane of archeological dig sites submerged under dense foliage through the use of an RP-LIDAR.
- Used morphological filters on 3D point clouds to complete ground plane segmentation of areas under dense foliage.

Skills and Certificates

Technical Skills: Proficient with Python, especially with libraries numpy, scikit. Experienced in system design and software development with C++. Extensive experience with ROS and LCM and applications such as Gazebo and RViz. Knowledge of ML and CV Python libraries: pytorch, tensorflow, and opencv. Experienced with C/MATLAB/C#

Certificates: Neural Networks and Deep Learning (Coursera), Robotics Sotware Engineering Nanodergree (Udacity)