Milo Knowles

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github.com/milokhl

WORK EXPERIENCE

Optimus Ride, Boston MA — *Perception Software Intern*

June 2018 - August 2018

Designed and built software in C++ to autogenerate maps from LiDAR, point cloud, and camera datasets. Also integrated mapping tools into a Qt application.

Kespry Inc., Menlo Park CA — *Software Engineering Intern*

May 2017 - August 2017

Built a Node.js web application that allows users to annotate training data for image classification models and analyze the performance of models. Trained a CNN to estimate the size of hail damage on rooftops for insurance customers.

Robust Robotics Lab, CSAIL — *Research Assistant*

August 2016 - Present

Wrote a Kanade-Lucas optical flow module for a vision-based state estimator. Wrote ROS bindings to allow offline testing with EuRoC MAV and TUM vision datasets. Tested and analyzed the performance of other open-source visual-inertial odometry packages in ROS.

EDUCATION

Massachusetts Institute of Technology - 2019

Computer Science (6-3) - 4.7/5 GPA

PROJECTS

6.141: Robotics Science and Systems
Wrote software modules for an utonomous racecar using C++, Python, and ROS. Algorithmic work included Monte Carlo localization, lane following, RRT*, Closed-Loop RRT, Motion Primitive Planning, and a pure pursuit controller.

MIT Mobile Autonomous Systems Lab 2017 — *1st Place*

Designed, built, and programmed an autonomous robot to navigate through an unknown environment, collect, sort, and stack blocks. Used ROS and OpenCV with nodes in Python and C++.

Algorithmic Trading

Trained a deep neural network to classify news article sentiment and predict stock price trends. Implemented a model that used Kalman filtering to track polynomial coefficients of price trends, and a deep Q-network that learned trading policies through reinforcement.

LANGUAGES & FRAMEWORKS

Languages: C++, Python, MATLAB, Javascript, HTML, CSS, R, Bash

Robotics: ROS, OpenCV, PCL, LCM, Mavlink

Machine Learning: PyTorch Tensorflow, Keras

CLASSES

Current
-Robot Manipulation
-Intro to Inference
-Linear Algebra

Past
-Underactuated Robotics
-Robotics: Science and Systems
-Machine Learning and Data Science in Politics
-Computer System Design
-Advances in Computer Vision
-Principles of Autonomy and Decision Making
-Applied Machine Learning
-Intermediate Algorithms
-Introduction to Algorithms
-Computation Structures
-Signals and Systems
-Materials and Structures
-Fluids
-Thermodynamics
-Introduction to Astronomy
-Physics I & II
-Calculus I & II
-Differential Equations