ANTHONY LIANG

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EDUCATION

University of Michigan, Ann Arbor (Frederick J. Leonberger Scholar $23,000/year) *May 2020*
Bachelor of Science in Engineering, Minor in Mathematics GPA: 3.594/4.000

Relevant Coursework: Deep Learning, Machine Learning, Autonomous Robotics, Artificial Intelligence, Computer Vision, Self Driving Cars, Probability Theory, TechLab MCity, Operating Systems, Information Retrieval, Linear Algebra

RESEARCH EXPERIENCE

Professor Honglak Lee's Research Group January 2019 - Present
Undergraduate Research Assistant

- Developed self-supervised reinforcement learning agent that learns view-invariant object representations to guide efficient exploration and perform sophisticated hierarchical tasks in a complex 3D virtual environment called AI2THOR
- Assisted in an ablation study which demonstrated that our learned object representations achieve ∼20% performance improvement in top-1 retrieval precision over other state-of-the-art representation learning methods

INDUSTRY EXPERIENCE

Google - Ads Quality May 2019 - August 2019
Software Engineering Intern *Mountain View, CA*

- Designed and implemented end-to-end data pipeline for integrating scalable nearest neighbor matching (ScaM) into Google's deep learning retrieval model, built a prototype service that uses ScaM as the backend for providing query suggestions
- Collaborated with Chrome and Brain team to build an API service to group browser tabs into categorical clusters and improve user's mobile browsing experience, organized and monitored a user study with over 60 participants

EECS 280: Programming and Data Structures September 2018 - Present
Instructional Aide (3 semesters)

- Organize PowerPoint presentations and lead weekly discussion section on topics ranging from polymorphism to recursion
- Answer student questions on projects and homework at office hours and on public discussion forum (Piazza)

Luminar Technologies May 2018 - August 2018
AI Engineering Intern *Palo Alto, CA*

- Designed a prelabeling and quality assurance pipeline to expedite and monitor the sensor data collection processing
- Worked with deep learning models for 2D and 3D object detection, lane detection, and road segmentation
- Implemented a sensor calibration/fusion tool in the pointcloud editor to help better visualize low density clouds

PROJECT EXPERIENCE

MRover Robotic Arm — Autonomous Robotics Major Design Experience April 2019

- Implemented an extensive software library for MRover's 6 DOF robotic arm including forward / inverse kinematics, high dimensional path planning, self/world collision avoidance, perception for object detection, and motion control
- Integrated robotic arm into a 3D simulator that is used for testing and as a interface for controlling the arm's movements

Stock Market Forecasting Agent — Deep Learning December 2018

- Proposed to adopt a Multi-Output forecasting method for predicting glucose levels to stock trading agent by using price forecasts as feedback to the agent to enable it to make a more informed trading decision
- Designed a reinforcement learning (RL) environment to simulate the stock market, experimented with a host of RL algorithms (DQN, A3C, PPO, etc) and integrated various stock market indicators as additional features into the model

PUBLICATIONS

- In preparation: Wilka Carvalho, Kimin Lee, **Anthony Liang**, Ryan Krueger, Richard L. Lewis, Satinder Singh, Honglak Lee. *"Continually Learning to Perform New Tasks with New Objects through Visual Instruction."*
- Wilka Carvalho, Kimin Lee, **Anthony Liang**, Ryan Krueger, Richard L. Lewis, Satinder Singh, Honglak Lee. *"Efficiently Learning to Perform Household Task with Object-oriented Exploration."* In Neural Information Processing Systems Black In AI Workshop (Neurips BAI), 2019 (Oral)

TECHNICAL SKILLS

Languages: C++, Python, Javascript
Frameworks / Tools: PyTorch, Tensorflow, NumPy, OpenCV, Pandas, Matplotlib, ROS, PCL, ReactJS, GCP, AWS