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# Courses

Deep Reinforcement Learning CS294-112: DQN, A2C, PPO, GAE, Tensorflow

Convolutional Neural Networks CS231n: CNN Architectures, RNN, Generative Models, PyTorch

Autonomous Mobile Robots MTE544: State Estimation, Mapping, State-Space Control, Planning, ROS

Advanced Dynamics SYDE553: Dynamics of Rigid Bodies, 3D Transformations, Lagrangian Dynamics

# Research

Combining Deep Q-Learning and Advantage Actor-Critic for Continuous Control: Rae C. Jeong

## Projects

## Autonomous Indoor Aerial Robot

Fourth Year Design Project

May 2017 - Present

- Deep Learning: Collision avoidance in indoor environment by predicting the probability of collision with CNN.
- Deep Reinforcement Learning: A2C method for collision avoidance with real images and with real hardware.

## RaeboSchool

Personal Project Oct 2017

- Deep Reinforcement Learning: Implementing DeepRL algorithms for OpenAI's Roboschool environments.
- Robot Continuous Control: Focus on DeepRL algorithms suited for continuous control in state space.

## Robotic Arm Project

Personal Project May 2015 - Dec 2015

- Mechatronics: Low-cost 4 DOF modular actuator robotic arm from scratch.
- Controls: PID controls for individual joints for the robotic arm

# EXPERIENCE

# **Istuary Innovation**

Vancouver, BC

Robotics Engineering Intern

May 2017 - Aug 2017

- Robotic Arm Motion Planning: Flexible motion planning module for UR5 robotic arm using STOMP planner.
- Deep Reinforcement Learning: Research assistant for deep reinforcement learning research for robotic arms.

## **Fetch Robotics**

San Jose, CA

Robotics Engineering Intern

Jan 2016 - Dec 2016

- Robotic Arm Optimization: Increasing the robotic arm efficiency by optimizing the robot joint actuator.
- Mobile Robot: Designing electro-mechanical attachments for enabling capabilites for mobile robots.

#### Waterloo Autonomous Vehicles Lab

Waterloo, ON

Research Assistant

Sept 2015 - Dec 2015

- Camera Gimbal: Testing the camera gimbal for its accuracy and precision.
- Stereo Vision Camera: Modifying the PS4EYE camera to be used with ROS for stero vision research.

# MakeLab

Toronto, ON

Robotics Engineering Intern

May 2015 - Aug 2015

- Robotic Arm Design: Designing robotic arms to be used as versatile marketing event tool.
- Robotic Arm Software: Developing the software interface with ROS for ease of use.

# **EDUCATION**

## University of Waterloo

Waterloo, Ontario, Canada

Bachelor of Applied Science, Mechatronics Engineering, Honours

Sept. 2013 - Apr. 2018