Ethan J. Park

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Education

Master of Science in Robotics, *Northwestern University, Evanston, IL* 2018 – Dec. 2019 (Expected)

Bachelor of Science in Computer Science, *Northwestern University, Evanston, IL* 2014 – 2018

Skills

Languages: Python, C/C++, MATLAB, HTML, CSS, Javascript, PHP
Software and Tools: ROS, Ubuntu/Linux, Git, Mathematica
Robotics: Rigid Body Kinematics, Lagrangian Dynamics, Underwater Vehicle Dynamics, Swarm and Multi-Vehicle Systems, Mechatronics, Microcontrollers
Computer Science: Machine Learning, Artificial Intelligence, Natural Language Processing, Algorithms

Projects

Portfolio: https://ethanjpark.github.io

- **Feedback Control of Underwater Robot** – Mounting and incorporating a custom environmental sensor into a Blue Robotics BlueROV2, using its data to autonomously control the robot with ROS.
- **Simulation of Behavior-Based Plume Tracing in ROS** – Used the Unmanned Underwater Vehicle Simulator (UUV Sim) and UUV Plume Simulator packages for ROS to implement an algorithm for a robot to trace an underwater particle plume and find the source.
- **Sawyer Pong** – Programmed a Rethink Robotics Sawyer robot arm to position the ball for a live game of pong. Used ultrasonic sensors with an Arduino Uno to determine paddle positions, and ROS to run Sawyer, including live inverse kinematics based on the trajectory of the pong ball.
- **Text Generation using Neural Nets** – Used recurrent neural nets via Keras running on Theano, to train a word-based and character-based text generation model to generate text mimicking famous authors.
- **Northwestern Solar Car Team Driver Controls** – Programmed an Arduino Due to monitor CAN data and digital pin inputs from battery management system, battery temperature sensors, motor controller, and driver dashboard and control the vehicle state or trigger the various failsafes as necessary.

Experience

Intern, *Monterey Bay Aquarium Research Institute* June 2019 – August 2019

- Implemented Long Range Autonomous Underwater Vehicle communication scheme, behaviors, and sampling algorithms from ongoing experiments into multi-vehicle ROS simulations, in Python.
- Modified hydrostatic and drag parameters inside vehicle URDF to accurately represent LRAUV dynamics.

Software Developer Intern, *Skive It, Inc* May 2017 – August 2017

- Implemented user/device data telemetry for website and mobile app in JS and PHP.
- Modified video-processing Python engine to show real-time style and mood in video.
- Tested Bluetooth communications and robot functions on Sphero robot.

Undergraduate Research Assistant, *Northwestern University: Argallab* March 2015 – May 2015

- Ran Gazebo simulations in ROS for semi-autonomous wheelchair.
- Debugged wheelchair doorway detection C++ code.