

## Experience

**Robot Simulation Software Intern, Bedrock Ocean Exploration, PBC** June 2020 – Oct 2020

- Implemented AUV navigation, controller, actuation, sensor, and communication modules into ROS simulation through UUV Simulator.
- Created and tested custom Gazebo robot model for accurate hydrodynamics.
- Integrated AUV system monitoring software into simulation for SITL testing.

**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.
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## Skills

**Languages:** Python, C/C++, MATLAB

**Software and Tools:** ROS, Ubuntu/Linux, Git, Embedded Systems

**Robotics:** AUV/UUVs, Swarms & Multi-Vehicle Systems, Robotic Manipulation, Quadrotors

**Computer Science:** Machine Learning, Artificial Intelligence, Natural Language Processing, Algorithms

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## Projects

Portfolio: <https://ethanjpark.github.io>

- **Underwater Robot Platform for Feedback Control** – Wrote Python scripts for a Raspberry Pi to send custom data via TCP from a BlueROV2 to a tethered computer, while also actuating the robot via 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.
  - **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.
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## Education

**Master of Science in Robotics, Northwestern University, Evanston, IL** Graduated Dec. 2019

**Bachelor of Science in Computer Science, Northwestern University, Evanston, IL** Graduated June 2018