Zach Duguid

MIT-WHOI Joint Program
Graduate Student

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Education

Massachusetts Institute of Technology — **Cambridge, MA**
Candidate for Master of Science in Mechanical Engineering — *Sep 2018 – Jun 2020*

- **Adviser:** Richard Camilli
- **GPA:** 5.0/5.0
- **Courses:** Marine Autonomy, Cognitive Robotics, Feedback Control, Machine Vision, Numerical Methods, Computational Eng

Massachusetts Institute of Technology — **Cambridge, MA**
Bachelor of Science in Aerospace Engineering and Minor in Computer Science — *Sep 2014 – Jun 2018*

- **GPA:** 4.9/5.0
- **Courses:** Machine Learning, Algorithms, Discrete Math, Probability, Autonomous Systems, Software Construction, Classical Control, Dynamics, Robotic Systems, Differential Equations, Human Factors Eng, Aerodynamics

Experience

Australian Centre for Field Robotics — **Sydney, NSW**
Visiting Researcher — *Jun 2018 – Aug 2018*

- Implemented a Generative Adversarial Network (GAN) machine learning architecture to make bathymetry predictions given sparse sonar readings, a prediction problem similar to image inpainting
- Generated large sets of training data by simulating vehicle dynamics and sonar measurements

Computer Science & Artificial Intelligence Laboratory — **Cambridge, MA**
Undergraduate Researcher — *Sep 2017 – May 2018*

- Deployed an array of AUVs near the Hawaiian Islands to demonstrate human-robot interaction, multi-agent execution, and adaptive sampling techniques in a challenging ocean environment
- Developed energy-optimized path planning capabilities for AUVs using a risk-aware MDP approach
- Implemented a novel method for modeling obstacles to increase path planning efficiency

Woods Hole Oceanographic Institution — **Woods Hole, MA**
Summer Fellow — *May 2017 – Aug 2017*

- Created a graphical user interface to monitor the battery state of the Slocum Glider vehicle
- Performed vehicle range analysis for different power mode scenarios and ocean current conditions
- Designed and built the internal battery pack chassis to maximize strength and minimize weight

Northrop Grumman — **San Diego, CA**
Systems Integration, Test, and Evaluation Engineer — *Jun 2016 – Aug 2016*

- Programmed a Google Earth visualization tool that displays flight data from the Global Hawk aircraft by assimilating and synchronizing state variables across multiple data files
- Operated software and hardware components of the Global Hawk in order to conduct system and subsystem level testing for segment integration and work orders

Man Vehicle Laboratory — **Cambridge, MA**
Undergraduate Researcher — *Feb 2016 – May 2016*

- Assessed the accuracy of the Enhanced Dynamic Load Sensor for the International Space Station (EDLS-ISS), which is used for strength training in microgravity environments
- Extracted motion data from test subjects performing various weightlifting movements while experiencing microgravity via NASA's parabolic flight program to develop a musculoskeletal model

Personal

Skills, Technical: Python, C++, Java, Matlab, Julia, Lisp, ROS, MOOS-IvP, Photoshop, LaTeX

Skills, Interpersonal: Collaboration, Organization, Flexibility, Public Speaking, Emotional Intelligence

Leadership: Boston Marathon Volunteer, MIT Football, MIT Women's Basketball, Fraternity President

Extracurricular: Skiing, Climbing, Traveling, Reading, Photography, Digital Imaging, Pirate Activities