

Zach Duguid

MIT-WHOI Joint Program
Graduate Student

zach.duguid@gmail.com
zduguid.github.io
978-998-9348

EDUCATION

Massachusetts Institute of Technology

Cambridge, MA

Candidate for Master of Science in Mechanical Engineering

Sep 2018 – Jun 2020

– **Advisers:** Pierre Lermusiaux and Richard Camilli

– **GPA:** 5.0/5.0

– **Courses:** Marine Autonomy Cognitive Robotics Feedback Control Machine Vision
Num Method for PDEs 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 (proficient): Python, C++, Java, Matlab, ROS, MOOS-IvP, Photoshop, 3D Printing, L^AT_EX

Skills (familiar): Julia, Lisp, C, Keras, Simulink, Mathematica, CAD (Fusion360), User Interface Design

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

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