

# Blake McHale

ROBOTICS SOFTWARE ENGINEER

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## Education

### Northeastern University

Boston, MA

CANDIDATE FOR BACHELOR AND MASTER OF SCIENCE IN COMPUTER ENGINEERING, GPA: 3.85

Expected May 2022

- **Relevant Courses:** Mobile Robotics | Artificial Intelligence | Computer Vision | GNSS Signals | Robotics Sensing & Navigation | Machine Learning | Parallel Processing | Statistics & Stochastic Processes | Object Oriented Design
- **Activities:** Northeastern Unmanned Aerial Vehicles (Founding Member) | AerospaceNU
- **Awards:** Honors Program, Eta Kappa Nu, Eagle Scout, Dean's Scholarship, Dean's List, NASA International Space Apps Challenge Boston (1st place)

## Experience

### NASA Jet Propulsion Laboratory

Pasadena, CA

SOFTWARE ENGINEERING CO-OP | C, C++, PYTHON

Jan. 2021 - June 2021

- Developed software for Surface Simulation (Ssim), a simulator used by rover planners for validating command sequences on the Mars rover
- Improved current Ssim project by adding support for more features related to terrain processing
- Extended web interface to Ssim using Robot Framework

### MITRE

Bedford, MA

PNT PLATFORM SOFTWARE INTERN | PYTHON

June 2020 - Aug. 2020

- Added continuous integration and online documentation for signal propagation simulation python package
- Implemented path loss models that utilized terrain maps and supported various positioning methods

### Naval Submarine Medical Research Laboratory

Groton, CT

NREIP SOFTWARE INTERN | PYTHON

June 2019 - Aug. 2019

- Worked on using machine learning to predict reaction time in sleep deprived individuals
- Utilized TensorFlow to construct a neural network framework for analyzing model performance

### Scientific Systems Company Incorporated

Woburn, MA

SIMULATIONS ENGINEERING CO-OP (ACTIVE PERCEPTION GROUP) | C++, PYTHON, JAVASCRIPT

Jan. 2019 - June 2019

- Built environments with artificially intelligent characters in Unreal Engine
- Designed software for testing and simulating UAVs actions with AirSim
- Tested and developed control systems for multiple drones/rovers within subterranean environments in Gazebo
- Constructed base station interface for interacting with robot through ROS for subterranean competition

## Skills

**Computer Applications** ROS/ROS2, Gazebo, Ignition, PX4/RTPS, Unreal Engine, Unity

**Languages** C++, Python, MATLAB, Java, Javascript | Familiar with VBA, HTML, CSS, SQL, C#

## Projects

### AerospaceNU - NUAV Software

PROJECT LEAD | C++, PYTHON

June 2019 - Present

- Created behavior tree library for performing missions with ROS
- Teach new members and students how to use ROS/ROS2 to control rover and drone autonomously
- Design software platform for a swarm of drones that can search area and precisely land on ArUco markers
- Working with PX4 developers to improve RTPS and ROS2 communication
- Competed in AlphaPilot competition to autonomously race drones using YOLO

### CS4100 - Deep Flight

PYTHON

Sept. 2020 - Dec. 2020

- Created double DQN to train UAV to fly through obstacle course using depth images
- Designed reinforcement learning environment in AirSim with OpenAI Gym and TensorFlow