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 | Assistive Robotics | Robtics Sensing & Navigation | Machine Learning | Parallel Processing | Statistics & Stochastic Processes | Object Oriented Design
- **Activities:** Northeastern Unmanned Aerial Vehicles (Founding Member) | Colleges Against Cancer
- **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*

- Develeoped 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
- Extended positioning methods to support various earth models

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 managing multiple drones/rovers within subterranean environments in the Gazebo simulation environment
- Constructed base station interface for interacting with robot through ROS for subterranean competition

Skills

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

Languages C++, Python, MATLAB, Java, Javascript | Familar 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 competiton 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