Alex Meredith

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Education

Massachusetts Institute of Technology — **Cambridge, MA**
Master's of Science in Aerospace Engineering (GPA: 5.0/5.0) — **June 2021 – present**

Relevant Coursework: Satellite Engineering; Spacecraft and Aircraft Sensors & Instrumentation; Representation, Inference and Reasoning in AI; Underactuated Robotics

Massachusetts Institute of Technology — **Cambridge, MA**
Bachelor's of Science in Aerospace Engineering (GPA: 5.0/5.0) — **August 2017 – June 2021**

Experience

MIT STARLab — **Cambridge, MA**
NSF Graduate Research Fellow — **June 2021 – Present**

- Developing fast algorithms that exploit orbital symmetry for colocating satellite data from microwave soundings and radio occultations
- Designing convolutional neural networks (CNNs) that identify clouds in satellite images from visible-spectrum and long-wave infrared cameras
- Optimizing planning and trajectory optimization algorithms for underactuated CubeSats using magnetorquer-only control

Undergraduate Researcher — **June 2020 – June 2021**

- Developed physics-based sandbox environment for testing attitude determination and control algorithms

E-Space — **Beverly, MA**
Control Systems Engineering Intern — **June 2021 – August 2021**

- Developed Python simulation modeling orbital environment, disturbance torques, actuators, and attitude determination sensors to design & evaluate magnetorquer-only (underactuated) attitude control system
- Wrote, tested and speed-optimized nonlinear optimization algorithm for planning underactuated slews in C++
- Presented my work on E-Space's attitude control system to VCs who later invested $50M in the company

Analytical Graphics, Inc. — **Exton, PA**
Engineering Intern — **June 2020 – August 2020**

- Designed CubeSat power system, attitude control system, and optical communications payload and modeled these subsystems using Systems Tool Kit (STK) and STK partner products
- Worked with two other interns to design and model a CubeSat communications constellation for disaster relief
- Completed STK Grandmaster Certification & STK Master Integration Certification

Microsoft — **Redmond, WA**
Software Engineering Intern — **June 2019 – August 2019**

- Web-scraped Twitter and did machine learning on datasets of scraped tweets to identify cybersecurity threats in real-time using Python and TensorFlow
- Designed and implemented an internal website using .NET framework to display tweets representing cyberthreat and other cybersecurity-related data in an easy-to-use interface

Explorer Intern — **June 2018 – August 2018**

- Worked with two other interns to design and implement a data monitoring dashboard

Skills & Awards

Programming Languages: Python, MATLAB, C++, Java, C, JavaScript, HTML/CSS, SQL, RISC-V
Software & Frameworks: PyTorch, Tensorflow, Keras, STK, ODTK, BlueSpec
Fellowships & Scholarships: National Science Foundation Graduate Research Fellowship (2022), NASA Space technology Graduate Research Opportunities fellowship (declined) (2022), Wings Club Foundation Scholarship (2020)
Other Awards: Best presentation at IEEE RSDM-GeoSci workshop (2022), Henry Webb Salisbury Award for superior academic performance (2021), Intercollegiate Rowing Association All-Academic Team (2019)