

# James Usevitch

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## Education

### University of Michigan

Ph.D. Candidate, Aerospace Controls

GPA: 3.776/4.0

Dissertation topic: *Control strategies for secure and resilient multi-agent systems*

Ann Arbor, MI

April 2021

### Brigham Young University

B.S. in Mechanical Engineering

GPA: 3.61/4.0

2015 Crocker Innovation Fellowship recipient

Provo, UT

June 2016

## Engineering Experience

### Distributed Aerospace Systems and Control Lab

Ann Arbor, MI

Graduate Research Assistant

Jul 2016-Present

- Developed and implemented leader-follower resilient trajectory tracking algorithm on six unmanned ground vehicles using C++, ROS, and Python in Linux environment (Ubuntu)
- Guided six master's degree students in creating hardware and software demonstrations of multi-agent systems of unmanned ground and aerial vehicles using C++, Python, MATLAB, ROS in Linux environment
- Designed and implemented custom benchmarking framework which tested over 33,600 mixed-integer linear programming optimization problems using MATLAB parallel processing and optimization toolboxes
- Published two journal articles and seven peer-reviewed conference articles with novel results in security of multi-agent control systems
- Designed course materials and trained students in multi-agent control algorithms for graduate-level aerospace course
- Saved over \$85,000 in hardware expenses by procuring UAV / UGV platforms at fraction of cost of prior lab equipment

### Intelliserv / National Oilwell Varco

Provo, UT

Engineering Technical Documentation Intern

May 2015 – Feb 2016

- Standardized and increased effectiveness of over 65 manufacturing documents for data-enabled drilling equipment
- Created technical illustration method which reduced illustration creation time by over 40%

### Boeing AerosPACE Capstone Program

Provo, UT

Aerodynamics Team Lead

Aug 2015- Apr 2016

- Collaborated within 11-person, multi-university team involving BYU, Washington State University, and Everett Community College to design, build, and fly fixed-wing aircraft weighing 15 lbs
- Researched preliminary designs, performed CFD simulations on final design with STAR-CCM

### Brigham Young University Engineering Department

Provo, UT

Engineering Teaching Assistant

Jan 2015 – Apr 2015

- Instructed undergraduate engineering students in fundamental principles of manufacturing techniques

## Skills

**Programming:** Python, C++, MATLAB, Julia

**Industry Tools:** Git, Robot Operating System (ROS), Ubuntu Linux, Gurobi, MATLAB Optimization Toolbox (linprog, intlinprog, quadprog), MATLAB parallel computing toolbox

**Coursework:** Nonlinear Systems, Nav. and Guidance of Aerospace Vehicles, Dynamics, Convex Optimization (audit)

## Journal Papers

- Usevitch, James, and Dimitra Panagou. "Determining r-and (r, s)-Robustness of Digraphs Using Mixed Integer Linear Programming." *Automatica*, January 2020.
- Usevitch, James, and Dimitra Panagou. "Resilient Leader-Follower Consensus to Arbitrary Reference Values in Time-Varying Graphs." *IEEE Transactions on Automatic Control*, April 2020

## Activities and Interests

Student Member of IEEE

Feb 2019 - Present

Peer Reviewer for *Automatica*, IEEE CDC, RSS, IEEE ACC

Dec 2016 - Present