James Usevitch

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Education

University of Michigan — **Ann Arbor, MI**
Ph.D. Candidate, Aerospace Controls — April 2021
GPA: 3.776/4.0
Dissertation topic: *Control strategies for secure and resilient multi-agent systems*

Brigham Young University — **Provo, UT**
B.S. in Mechanical Engineering — June 2016
GPA: 3.61/4.0
2015 Crocker Innovation Fellowship recipient

Engineering Experience

Distributed Aerospace Systems and Control Lab — **Ann Arbor, MI**
Graduate Research Lead — Jul 2016-Present

- Designed course materials and trained students in multi-agent control algorithms for graduate level Aerospace course
- 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
- 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 – April 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 — December 2016 - Present