

James Usevitch

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Education

PhD in Aerospace Engineering, University of Michigan, 2021
MS in Aerospace Engineering, University of Michigan, 2020
BS in Mechanical Engineering, Brigham Young University, 2016

Experience

2023 - Present	Assistant Professor, Electrical and Computer Engineering Department, Brigham Young University, Provo, UT
2021 - 2023	Technical Staff / Autonomous Systems Researcher, MIT Lincoln Laboratory, Lexington, MA
2016 - 2021	Graduate Research Assistant, Aerospace Engineering Department, University of Michigan, Ann Arbor, MI
2020	Teaching Assistant, Aerospace Engineering Department, University of Michigan, Ann Arbor, MI
2020	Autonomous Systems Intern, MITRE, Ann Arbor, MI
2015	Engineering Teaching Assistant, Mechanical Engineering Department, Brigham Young University, Provo, UT
2013 - 2014	Teacher, Missionary Training Center, The Church of Jesus Christ of Latter-Day Saints, Provo, UT
2014	Research Assistant, Mechanical Engineering Department, Brigham Young University, Provo, UT
2009	Undergraduate Physics Teaching Assistant, Physics Department, Brigham Young University, Provo, UT

Fields of Research Interest

Control theory, Multi-agent Systems, Nonlinear Systems, Convex Optimization, Combinatorial Optimization, Graph Theory, Automatic Differentiation, Differentiable Programming, Autonomous Systems, Robotics, Machine Learning

Research Publications

Peer Reviewed Journal Publications

1. Garg, Kunal, James Usevitch, et al. "Advances in the Theory of Control Barrier Functions: Addressing practical challenges in safe control synthesis for autonomous and robotic systems." *Annual Reviews in Control* 57 (2024): 100945.
2. Usevitch, James, and Dimitra Panagou. "Adversarial resilience for sampled-data systems under high-relative-degree safety constraints." *IEEE Transactions on Automatic Control* (2022).
3. Usevitch, James, and Dimitra Panagou. "Resilient Trajectory Propagation in Multirobot Networks." *IEEE Transactions on Robotics* 38.1 (2021): 42-56.
4. Usevitch, James, and Dimitra Panagou. "Determining r-and (r, s)-robustness of digraphs using mixed integer linear programming." *Automatica* 111 (2020): 108586.
5. Usevitch, James, and Dimitra Panagou. "Resilient leader-follower consensus to arbitrary reference values in time-varying graphs." *IEEE Transactions on Automatic Control* 65.4 (2019): 1755-1762.

Peer Reviewed Conference Publications

1. Usevitch, James and Jackson Sahleen. "Safety for Time-Varying Parameterized Sets Using Control Barrier Function Methods." 2025 American Control Conference. Accepted.
2. Loveland, Donald, James Usevitch, Zachary Serlin, Danai Koutra, and Rajmonda S. Caceres. "MAGNET: A Multi-Agent Graph Neural Network for Efficient Bipartite Task Assignment." 24th International Conference on Autonomous Agents and Multiagent Systems, 2024. Accepted.
3. Usevitch, James, and Dimitra Panagou. "Adversarial resilience for sampled-data systems using control barrier function methods." 2021 American Control Conference (ACC). IEEE, 2021.
4. Usevitch, James, Kunal Garg, and Dimitra Panagou. "Strong invariance using control barrier functions: A Clarke tangent cone approach." 2020 59th IEEE Conference on Decision and Control (CDC). IEEE, 2020.
5. Usevitch, James, and Dimitra Panagou. "Resilient finite-time consensus: a discontinuous systems perspective." 2020 American Control Conference (ACC). IEEE, 2020.

6. Usevitch, James, and Dimitra Panagou. "Resilient leader-follower consensus with time-varying leaders in discrete-time systems." 2019 IEEE 58th Conference on Decision and Control (CDC). IEEE, 2019.
7. Usevitch, James and Dimitra Panagou. "Determining r -Robustness of Digraphs Using Mixed Integer Linear Programming." 2019 American Control Conference (ACC) (2019): 2257-2263.
8. Usevitch, James, Kunal Garg, and Dimitra Panagou. "Finite-time resilient formation control with bounded inputs." 2018 IEEE Conference on Decision and Control (CDC). IEEE, 2018.
9. Usevitch, James, and Dimitra Panagou. "Resilient leader-follower consensus to arbitrary reference values." 2018 Annual American Control Conference (ACC). IEEE, 2018.
10. Usevitch, James, and Dimitra Panagou. " r -Robustness and (r, s) -Robustness of Circulant Graphs." 2017 IEEE 56th Annual Conference on Decision and Control (CDC). IEEE, 2017.

Peer Reviewed Workshop Publications

1. Usevitch, James, and Dimitra Panagou, "Resilience in Multi-Agent Systems: Recent Contributions." 2019 ICRA Workshop on "Resilient Robot Teams: Composing, Acting, and Learning."

Grants and Awards

1. *Safety for the ROSFlight Autopilot System*. PI: Tim McLain, co-PI: James Usevitch. 01/2025 – 03/2027. Aerovironment. Total: \$50,000.

Talks and Seminars

1. *A Multi-Agent Graph Neural Network for Efficient Task Assignments*. Invited speaker at the MIT Lincoln Laboratory 2025 Graph Exploitation (GraphEx) Symposium, Boston, MA. May 21, 2025.
2. *Towards Robust, Resilient, Safe, and Intelligent Multi-Agent Autonomous Systems*. Invited speaker at the BYU Robotics Seminar series, Brigham Young University, Provo, UT. December 14, 2023.
3. DASC Lab Controls Conversations Seminar Series, Robotics Institute, University of Michigan, Ann Arbor. February 7, 2023.

Advising / Mentoring

PhD Students

Jamison Moody (January 2024 – Present)

David Akagi (August 2024 – Present)

Masters Students

Jackson Sahleen (January 2024 – Present)

Derek Ward (April 2024 – Present)

Undergraduate Students

Juan Zurita (May 2025 – Present)

Austin McGlashan (May 2025 – Present)

Brian Bascom (May 2025 – Present)

Tsu-Lee Weng (September 2024 – Present)

Derek Ward (September 2024 – April 2024)

Cameron Stoker (May 2024 – December 2024)

Tanner Osburn (May 2024 – December 2024)

Professional and Service Activities

Member, Institute of Electrical and Electronics Engineers, 2021 – Present

Student Member, Institute of Electrical and Electronics Engineers, 2019 – 2021

Member, IEEE Control Systems Society, 2021 – Present

Member, IEEE Robotics and Automation Society, 2022 – Present

Reviewer for International Journals

IEEE Transactions on Automatic Control

Automatica

IEEE Transaction on Robotics

IEEE Transactions on Control of Networked Systems

IEEE Robotics and Automation Letters

Reviewer for International Conferences

IEEE International Conference on Reliable Autonomous Systems (ERAS)

Robotics: Science and Systems
IEEE Conference on Decision and Control
American Control Conference
ICRA
IROS

Teaching

Brigham Young University

EC EN 481 / ME EN 431: Design of Control Systems (F24)
EC EN 774 / ME EN 734: Nonlinear Systems Theory (W24)
EC EN 493R: Introduction to Machine Learning (F23, W25)