Xi Yu *(she / her / hers)*
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RESEARCH INTEREST

Multi-agent systems; Resilient autonomous systems; Optimal control and decision-making

PROFESSIONAL EXPERIENCE

Arizona State University, Tempe, AZ
Assistant Professor August 2024 - present
School of Manufacturing Systems and Networks

West Virginia University, Morgantown, WV
Assistant Professor January 2021 - August 2024
Department of Mechanical, Materials and Aerospace Engineering

University of Pennsylvania, Philadelphia, PA
Post-Doctoral Researcher February 2018 - December 2020
GRASP Lab, Department of Mechanical Engineering and Applied Mechanics

EDUCATION

Boston University, Boston, MA
Ph.D., Mechanical Engineering January 2018
M.S. in Mechanical Engineering (claimed before the terminal degree)

Karlsruhe Institute of Technology, Karlsruhe, Germany
Dipl.-Ing., Mechanical Engineering October 2011
B.Sc., Mechanical Engineering October 2010

TEACHING

Graduate Core Course(s)
(ASU) EGR 501 Applied Linear Algebra for Engineers (Fall 2024, Fall 2025)

Undergraduate Core Courses
(WVU) MAE 460 Automatic Control (Fall 2021, Fall 2022, Fall 2023)
(WVU) MAE 102 MAE Design (Spring 2023)
(WVU) MAE 411L Mechatronics Lab (Spring 2024)

Graduate/Undergraduate Electives (newly developed)
(WVU) MAE 593C Coordinated Mobile Robots, Graduate Level (Spring 2022)
(WVU) MAE 493B Coordinated Mobile Robots, Undergrad Level (Spring 2024)

MENTORING

Graduate Students (5):
Prajjwal Dutta (ASU), EE Master, anticipated 2025
Austin Sponaugle (WVU), ME Master, anticipated 2025
Juan David Pabon (WVU), AE Master 2023
Li Shen (UPenn), MEAM Master 2022, ***annual winner*** *of Penn MEAM* ***Outstanding Research Award***
Peihan Li (UPenn), MEAM Master 2022, *currently Ph.D. candidate at Drexel University*

Undergraduate Research Assistants (14):

Class of 2023(WVU): Kevin Scott Blankenship (ME/AE), Joshua Caswell (ME/AE), Zachary Roney (ME/AE),
Travis Mueller (CS/Physics), Grant Stumpf (CPE)
Class of 2024(WVU): Kendal McCutcheon (ME/AE), Kevin Lang (ME/AE), Ethan Wright (CS)
Class of 2025(WVU): Christ Smith (ME/AE), Ava Milano (EE), Tucker Wilson (EE)
Class of 2026(WVU): Tryston Freeman (ME), Ryan Jefferies (ME/AE)
Class of 2027(WVU): Aiden Ballard (CS)

PEER REVIEWED PUBLICATION

Journal Articles

[J6] **X. Yu**, D. Saldana, D. Shishika, and M. A. Hsieh, "Resilient consensus in robot swarms with periodic motion and intermittent communication", IEEE Tran. on Robotics (T-RO) 38 (1), pp.110-125. 2021.

[J5] N. Zhou, C. G. Cassandras, **X. Yu**, and S. B. Andersson, "The price of decentralization: event-driven optimization algorithms for multi-agent persistent monitoring tasks", IEEE Tran. on Control of Network Systems (T-CNS) 8 (2), pp. 976-986. 2020.

[J4] **X. Yu** and M. A. Hsieh, "Synthesis of a time-varying communication network by robot teams with information propagation guarantees", IEEE Robotics and Automation Letters (RA-L), 5(2), pp.1413 – 1420, *with presentation* at the International Conference on Robotics and Automation (ICRA), 2020.

[J3] **X. Yu**, M. A. Hsieh, C. Wei and H. G. Tanner, "Synchronous rendezvous for networks of marine robots in large scale ocean monitoring", Frontiers in Robotics and AI 6 (2019): 76. 2019.

[J2] **X. Yu**, S. B. Andersson, N. Zhou, and C. G. Cassandras, "Scheduling multiple agents in a persistent monitoring task using reachability analysis", IEEE Tran. on Automatic Control (T-AC) 65(4), pp.1499-1513. 2019.

[J1] N. Zhou, **X. Yu**, S. B. Andersson, and C. G. Cassandras, "Optimal event-driven multi-agent persistent monitoring of a finite set of data sources", IEEE Tran. on Automatic Control (T-AC) 63(12), pp.4204-4217. 2018.

Conference Proceedings

[C19] B. Ford, M. Kumar, A. Sel, Z. M. Kassas, **X. Yu**, "Autonomous Wildland Fire Monitoring through Integrated UAS Path Planning and Sensor Fusion" In 2025 American Control Conference (ACC).

[C18] T. C. Silva, **X. Yu**, and M. A. Hsieh, "Probabilistic multi-robot planning with temporal tasks and communication constraints." In Distributed Autonomous Robotic Systems (DARS): The 17th International Symposium, 2024.

[C17] J. D. Pabon, M. C. Valenti, and **X. Yu,** "Where to deploy an airborne relay in unknown environments: feasible locations for throughput and los enhancement." In MILCOM 2023-2023 IEEE.

[C16] T. C. Silva, L. Shen, **X. Yu**, and M. A. Hsieh, "Receding horizon control on the broadcast of information in stochastic networks." In Distributed Autonomous Robotic Systems (DARS): The 16th International Symposium, 2022.

[C15] J. D. Pabon, S. Alkandari, M. C. Valenti, and **X. Yu,** "Air-aided communication between ground assets in a Poisson Forest." In MILCOM 2022-2022 IEEE, pp. 133-139. IEEE, 2022 *(short-listed for the best paper award)*.

[C14] L. Shen, **X. Yu**, and M. A. Hsieh, "Topology control of a periodic time-varying communication network with stochastic temporal links." In 2022 American Control Conference (ACC), pp. 4211-4217. IEEE, 2022.

[C13] G. Knizhnik, P. Li, **X. Yu**, and M. A. Hsieh, "Flow-based control of marine robots in gyre-like environments." In 2022 International Conference on Robotics and Automation (ICRA), pp. 3047-3053. IEEE, 2022.

[C12] **X. Yu**, D. Shishika, D. Saldana and M. A. Hsieh, "Modular robot formation and routing for resilient consensus." In 2020 American Control Conference (ACC), pp. 2464-2471.IEEE, 2020.

[C11] C. Wei, H.G. Tanner, **X. Yu**, and M.A. Hsieh, "Low-range interaction periodic rendezvous along Lagrangian coherent structures." In 2019 American Control Conference (ACC), pp. 4012-4017. IEEE, 2019.

[C10] N. Zhou, C. G. Cassandras, **X. Yu**, and S. B. Andersson, "Optimal threshold-based control policies for persistent monitoring on graphs." In 2019 American Control Conference (ACC), pp. 2030-2035. IEEE 2019.

[C9] C. Wei, **X. Yu***(Primary Author), H.G. Tanner, and M.A. Hsieh, "Synchronous rendezvous for networks of active drifters in gyre flows." In Distributed Autonomous Robotic Systems (DARS): The 14th International Symposium, pp. 413-425. Springer International Publishing, 2019.

[C8] **X. Yu**, S. B. Andersson, N. Zhou, and C. G. Cassandras, "Optimal visiting schedule search for persistent monitoring of a finite set of targets." In 2018 American Control Conference (ACC), pp. 4032-4037. IEEE 2018.

[C7] N. Zhou, C. G. Cassandras, **X. Yu**, and S. B. Andersson, "Decentralized event-driven algorithms for multi-agent persistent monitoring." In 2017 IEEE 56th Annual Conference on Decision and Control (CDC), pp. 4064-4069. IEEE, 2017.

[C6] **X. Yu**, S. B. Andersson, N. Zhou, and C. G. Cassandras, "Optimal dwell times for persistent monitoring of a finite set of targets." In 2017 American Control Conference (ACC), pp. 5544-5549. IEEE, 2017.

[C5] N. Zhou, C. G. Cassandras, **X. Yu**, and S. B. Andersson, "Optimal event-driven multi-agent persistent monitoring with graph-limited mobility." IFAC-PapersOnLine, 50(1), pp.2181-2186. 2017.

[C4] N. Zhou, **X. Yu**, S. B. Andersson, and C. G. Cassandras, "Optimal event driven multi-agent persistent monitoring of a finite set of targets." In 2016 IEEE 55th Conference on Decision and Control (CDC), pp. 1814-1819. IEEE, 2016.

[C3] **X. Yu** and S. B. Andersson, "Preservation of system properties for networked linear, time invariant control systems in the presence of switching delays." In 2014 IEEE 53rd Conference on Decision and Control, pp. 5260-5265. IEEE, 2014.

[C2] **X. Yu** and S. B. Andersson, "Effect of switching delay on a networked control system." In 2013 IEEE 52nd Conference on Decision and Control, pp. 5945-5950. IEEE, 2013.

[C1] A. Albers**, X. Yu** and H. Sommer, "Effect of initial knowledge on reinforcement learning based control", Conference of Danube Adria Association for Automation & Manufacturing, Vienna, Austria, 2011.

PUBLIC PRESENTATION

[P17] "Sailing with the uncertainty: multi-robot systems in a dynamic world", Department of Mechanical Engineering, University of Kansas, Lawrence, KS, August 2024

[P16] "Recent advancement of indoor light-than-air agents: Coordinating robots in a dynamic world", workshop at IEEE International Conference on Advanced Intelligent Mechatronics (AIM), Boston, MA, July 2024

[P15] "Sailing with the uncertainty: multi-robot systems in a dynamic world", Department of Electrical and Computer Engineering, University of Connecticut, Storrs, CT, March 2024

[P14] "Sailing with the uncertainty: multi-robot systems in a dynamic world", Department of Mechanical Engineering and Mechanics, Lehigh University, Bethlehem, PA, March 2024

[P13] "Sailing with the uncertainty: multi-robot systems in a dynamic world", Institute for Autonomous & Connected Systems, Old Dominion University, Norfolk, VA, March 2024

[P12] "Sailing with the uncertainty: multi-robot systems in a dynamic world", Department of Aerospace Engineering, University of Maryland, College Park, MD, February 2024

[P11] "Sailing with the uncertainty: multi-robot systems in a dynamic world", Walker Department of Mechanical Engineering, The University of Texas at Austin, Austin, TX, February 2024

[P10] "Sailing with the uncertainty: multi-robot systems in a dynamic world", Department of Mechanical, Aerospace, and Biomedical Engineering, University of Tennessee, Knoxville, TN, February 2024

[P9] "Sailing with the uncertainty: multi-robot systems in a dynamic world", School of Manufacturing Systems and Networks, Arizona State University, Tempe, AZ, January 2024

[P8] "Stochastic time-varying networks synthesized by robots in dynamic environments", MAE Robotics Seminar at Ohio State University, Columbus, OH, November 2023

[P7] ***(virtual)*** "Stochastic time-varying networks synthesized by robots in dynamic environments", ECE Graduate Seminar at Old Dominion University, Norfolk, VA, November 2023

[P6] ***(virtual)*** "Stochastic time-varying networks synthesized by robots in dynamic environments", ECE Department Seminar at Drexel University, Philadelphia, PA, August 2023

[P5] "Stochastic time-varying networks synthesized by robots in dynamic environments", Baylor University, Waco, TX, June 2023

[P4] "Stochastic time-varying networks synthesized by robots in dynamic environments", CISE Seminar at Boston University, Boston, MA, October 2022

[P3] ***(virtual)*** "Intermittently connected robotic systems in dynamic environments", Lehigh University, Bethlehem, PA, September 2020

[P2] ***(virtual)*** "Intermittently connected robotic systems in dynamic environments", Department of Mechanical and Aerospace Engineering, West Virginia University, Morgantown, WV, April 2020

[P1] "Multi-agent persistent monitoring of a finite set of targets", GRASP Special Seminar at the GRASP Lab, University of Pennsylvania, Philadelphia, PA, October 2017. YouTube Source: https://youtu.be/CNbUTUlAypM

PRESS / PUBLICITY

[N6] "WVU engineer part of team aiming to send fleet of marine robots under ocean ice to combat climate change", by John Mark Shaver, on The State Journal (statewide weekly newspaper in WV)

[N5] "Meet the WVU researcher training a swarm of robots to explore deep below oceanic ice", by Jack Walker, on Times West Virginian (daily newspaper in North Central West Virginia)

[N4] "WVU researcher helping to deploy robots underwater", by WDTV News Staff, on WDTV 5 (TV channel, CBS affiliate for the Weston/Clarksburg/Fairmont, WV)

[N3] "WVU researcher to help send swarm of robots beneath ocean ice", by David Sibray, on West Virginia Explorer (local magazine)

[N2] "WVU researcher to help send swarm of marine robots on climate change quest beneath ocean ice", by Katie McDowell, on The Dominian Post (daily newspaper in Morgantown, WV)

[N1] "WVU researcher to help send swarm of marine robots on climate change quest beneath ocean ice", by Micaela Morrissette, *Top Story* on WVUToday (University media)

PROFESSIONAL SERVICE

Academic Societies

Associate Editor

IEEE Robotics and Automation Letters (RA-L) 2021- present

IEEE International Conference on Robotics and Automation (ICRA) 2020

Workshop Organizer

Workshop on 'Autonomy Under Duress' at IEEE ICRA 2025, Atlanta, GA 2025

Program Committee

IFAC Conference on Networked Systems (NecSys)

American Control Conference (ACC) 2025

IEEE Military Communications Conference 2023

The ACM/SIGAPP Symposium on Applied Computing 2020 - 2023

Finance Chair

The 3rd IEEE International Symposium on Multi-Robot and Multi-Agent Systems 2021

Session Chair

IEEE International Conference on Robotics and Automation (ICRA) 2022

Reviewer

- Journal Reviews -

IEEE Transaction of Automatic and Control (T-AC), IEEE Transactions on Control of Network Systems (T-CNS), IFAC Automatica, IEEE Transaction on Robotics (T-RO), IEEE Robotics and Automation Letters (RA-L), Autonomous Robots (AURO).

- Conferences -

IEEE Conference on Decision and Control (CDC), IEEE American Control Conference (ACC), IEEE International Conference on Robotics and Automation (ICRA), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Robotics: Science and Systems (RSS), IFAC World Congress.

Arizona State University, Tempe, AZ

Organizer and mentor of the 'Mountain Devils' Blimps Competition Team 2024 - present
Executive committee member, Ira Fulton Engineering Schools 2025 - present
Ph.D. thesis committee member for:
Venkata Satya Anirudh Rani (ASU), MSN, Ph.D. *Proposal Defense 2024*
Fuchen Chen (ASU), MSN, Ph.D. *Proposal Defense 2024*
Bryce Ford (Ohio State University), ME, Ph.D. *Proposal Defense 2025*

West Virginia University, Morgantown, WV

Organizer and mentor of the 'Lighter than Air' Blimps Competition Team 2023 - 2024
Curriculum committee member, Robotics BS program 2023 - 2024
Ph.D. qualification exam committee member, Area of Applied Mathematics Fall 2023
Ph.D. thesis committee member for:
James Long (WVU), Mathematics, Ph.D. *Graduated* 2023
Ryan Gerald McLaughlin (WVU), Aerospace Engineering, Ph.D. *Graduated* 2023
Bernardo Martinez Rocamora Junior (WVU), Aerospace Engineering Ph.D. *Graduated* 2023
Jared Joseph Beard (WVU), Aerospace Engineering, Ph.D. *Graduated* 2024
Clarus Goldsmith (WVU), Mechanical Engineering Ph.D. *Proposal Defense* 2022
Christopher Arend Tatsch (WVU), Mechanical Engineering Ph.D. *Proposal Defense* 2024
Luis Escobar Carvajal (WVU), Mechanical Engineering, Ph.D. *Proposal Defense* 2025
MS thesis committee member for:
Dylan Covell (2022), Shaikha Alkandari (2022), Chloe Guie (2023), William Zyhowski (2023), Thomas Clareson (2024)
NSF-funded REU programs mentor 2021 - 2022

University of Pennsylvania, Philadelphia, PA

Volunteer of the Penn Health-Tech Face Shields Rapid Response Team 2020
GRASP Exhibitor at USA Science & Engineering Festival 2018

Boston University, Boston, MA

RISE Mentor for high school students summer research programs 2017
Organizer of department Annual Graduate Student Workshop 2016 - 2017
Student host for department invited seminar speakers 2014 - 2017

Local Communities

Mentor of Desert WAVE Competition Team of Si Se Pseudo Foundation, Chandler, AZ 2024 - present
Volunteer for Annual North Central West Virginia Girls in Aviation Day, Fairmont, WV 2022 - 2023
Volunteer Judge for Annual Science and Technology Fair, Pioneer Charter School of Science, Everett, MA 2014 - 2017