

Sylvia Herbert | Curriculum Vitae

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I am an Assistant Professor of Mechanical and Aerospace Engineering at University of California, San Diego. I am also affiliated with Computer Science and Engineering as well as Electrical and Computer Engineering. My research focus is to enable efficient and safe decision-making in robots and other complex autonomous systems, while reasoning about uncertainty in real-world environments and human interactions. These techniques are backed by both rigorous theoretical guarantees and physical testing on robotic platforms.

Education

University of California, Berkeley

Ph.D., Electrical Engineering

2020

Advisor: Claire J. Tomlin

Drexel University

B.S./M.S., Mechanical Engineering

2014

Select Honors and Awards

2024: Selected for the Society of Hellman Fellows

2024: UC San Diego Engineering Early Faculty Development Award

2023: RoboCup Best Paper award at the IEEE Conference on Intelligent Robots and Systems (IROS)

2022: Office of Naval Research Young Investigator Program (ONR YIP) Award

2018: Outstanding Graduate Student Instructor, UC Berkeley

2018: Demetri Angelakos Memorial Achievement Award for Altruism, UC Berkeley

2014: Chancellor's Fellowship, UC Berkeley

2014: Graduate Research Fellowship (NSF GRFP), National Science Foundation

Publications

[Link to Google Scholar Profile](#)

Teaching

2021-2024: Special Topics: Safety for Autonomous Systems (Grad)

2023: Signals and Systems (UG)

2021-2024: Linear Feedback Control (UG)

2018: Teaching Assistant for Optimization Models in Engineering (Grad)

2017: Teaching Assistant for Linear Systems Theory (Grad)

2013: Teaching Assistant for Computer Aided Engineering Design (UG)

Students Mentored

PhD Students: 7 Current

MS Students: 2 Current, 4 Graduated

UG Students: 10 Current, 1 Graduated

Outreach

2020-present: Mentoring under-represented and/or first-generation undergraduate students doing research in my lab through the following programs: [GEAR](#), [STARS](#), [TRELS](#), [Regents Scholarship Program](#), [PATHS](#), [ACES](#), and [UC LEADS](#).

2020-2021: Mentor, Inclusion@RSS Program

2017-2020: Graduate Mentor, Society of Women Engineers
2018-2020: Graduate Mentor, Women in CS and Engineering
2018-2020: Chair, Electrical Engineering and Computer Science Peer Mentorship Program, UC Berkeley
2017-2020: Chair, Electrical Engineering and Computer Science Wellness Committee, UC Berkeley

Service

2023: Publication Chair, Robotics: Science and Systems (RSS) 2023
2021-2023: IEEE Robotics and Automation Society (RAS) Women in Engineering (WiE) Committee
2020-2022: ICRA Workshop Lead Organizer: Debates on the Future of Robotics Research
2021-2022: Lead Organizer, Center for Control Systems and Dynamics Seminar Series, UCSD
2019-2020: RSS Workshop Organizer: Robust Autonomy, Safety in Uncertain Environments
2017-2020: Lead Organizer, DREAM/CPAR Seminar Series, UC Berkeley
2017-2018: President, Electrical Engineering Graduate Student Association, UC Berkeley
2017: CDC Workshop Organizer: Tutorial on Hamilton-Jacobi Reachability Analysis

Select Invited Talks

Invited Keynotes

2021: IEEE Symposium on Multi-Robot and Multi-Agent Systems, Early Career Spotlight Talk

Invited Conference and Workshop Talks

2024: Information Theory and Applications (ITA) Workshop
2023: International Conference on Robotics and Automation (ICRA) Workshop on Bridging the Lab-to-Real Gap
2023: American Control Conference (ACC) Workshop on Human Autonomy Interaction and Integration
2022: UCLA Institute for Pure and Applied Mathematics (IPAM) Workshop on High-Dimensional Hamilton-Jacobi PDEs
2021: Intelligent Robots and Systems (IROS) Workshop on Cognitive and Social Aspects of Human Multi-Robot Interaction

Invited Seminar Talks

2024: UC Irvine Mechanical Engineering Seminar Series
2023: Spotlight talk, UCSD Contextual Robotics Forum
2023: Stanford Robotics Seminar Series
2023: USC Electrical Engineering Research Seminar Series
2023: UC Berkeley Semiautonomous Seminar Series
2023: University of Utah Robotics Seminar Series
2022: Stanford AI Safety Seminar Series
2022: Cornell Robotics Seminar Series
2022: ETH Zurich Autonomy Talks
2022: UC Irvine Robotics Seminar Series
2022: UC Riverside Applied Mathematics Seminar Series

Software

[HopfReach](#): linear time varying reachability analysis using the Hopf-Lax formulation.

[refineCBF](#): framework for refining data-driven or hand-crafting control barrier function to reduce conservativeness and provide safety guarantees.

[FaSTrack](#): robust planning and control framework compatible with the Open Motion Planning Library.

[helperOC](#): optimal control toolbox, pairs with the toolbox of level set methods.