Marco Pavone
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Biosketch

Dr. Marco Pavone is an Associate Professor of Aeronautics and Astronautics at Stanford University, where he directs the Stanford Autonomous Systems Laboratory and the Center for Automotive Research at Stanford. He also serves as Director of Autonomous Vehicle Research at NVIDIA. Before joining Stanford, he was a Research Technologist within the Robotics Section at the NASA Jet Propulsion Laboratory. He received a Ph.D. degree in Aeronautics and Astronautics from the Massachusetts Institute of Technology in 2010. Dr. Pavone's expertise lies in the fields of optimal and learning-based control, robot motion planning, decision making under uncertainty, and, more broadly, robot autonomy. His main research interests are in the development of methodologies for the analysis, design, and control of autonomous systems, with a focus on aerospace robotics, autonomous vehicles, and future mobility systems. He is the recipient of a number of awards, including a **Presidential Early Career Award for Scientists and Engineers** from President Barack Obama (the highest honor bestowed by the U.S. government on outstanding scientists and engineers beginning their independent careers), an **ONR Young Investigator Award**, an **NSF CAREER Award**, a **NASA Early Career Faculty Award**, and an Early-Career Spotlight Award from the Robotics: Science and Systems Foundation. He was identified by the American Society for Engineering Education as one of America's 20 most highly promising investigators under the age of 40, and was invited to the **White House** in 2014 and the **U.S. Senate** in 2016 and 2017 to present his research on autonomous ground and aerospace vehicles. His work has been recognized with best paper nominations or awards at a number of venues, including the European Conference on Computer Vision, the IEEE International Conference on Robotics and Automation, the European Control Conference, the IEEE International Conference on Intelligent Transportation Systems, the Field and Service Robotics Conference, the Robotics: Science and Systems Conference, and the INFORMS Annual Meeting. He is the founder and faculty director of the Stanford Student Space Initiative, a student group involving more than 300 undergraduate students in aerospace-related projects (e.g., rockets, satellites, and high-altitude balloons).

Education

Massachusetts Institute of Technology (Cambridge, MA), Ph.D. in Aeronautics and Astronautics, 2010. Advisor: Prof. E. Frazzoli.

Scuola Superiore of Catania (Catania, Italy), Diploma in Computer Engineering, 2005.

University of Catania (Catania, Italy), Laurea (B.S.+M.S. equivalent) in Electrical Engineering, 2004.

Employment

Director, Autonomous Vehicle Research, NVIDIA, CA (Feb. 2021–present). Group website: `https://nvr-avg.github.io/`.

Associate Professor with tenure, Aeronautics and Astronautics Department, Stanford University, Stanford, CA (Feb. 2019–present). Director, Autonomous Systems Laboratory: `http://asl.stanford.edu/`. Director, Center for Automotive Research at Stanford: `https://cars.stanford.edu/`.

Associate Professor (by courtesy), Computer Science Department, Electrical Engineering Department, and Institute for Computational and Mathematical Engineering, Stanford University, Stanford, CA (Feb. 2019–present).

Assistant Professor, Aeronautics and Astronautics Department, Stanford University, Stanford, CA (Feb. 2012–Jan 2019). Director, Autonomous Systems Laboratory: `http://asl.stanford.edu/`. Co-Director, Center for Automotive Research at Stanford: `https://cars.stanford.edu/`.

Assistant Professor (by courtesy), Electrical Engineering Department and Institute for Computational and Mathematical Engineering, Stanford University, Stanford, CA (Oct. 2012–Jan 2019).

Research Technologist, NASA Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA (Oct. 2010–Jan. 2012).

Postdoctoral Associate, Laboratory for Information and Decision Systems, Massachusetts Institute of Technology, Cambridge, MA (June 2010–Sept. 2010).

Graduate Research Assistant, Aeronautics and Astronautics Department, Massachusetts Institute of Technology, Cambridge, MA (Sept. 2006–June 2010).

Analyst, Accenture, Milan, Italy (Nov. 2005–Jan. 2006).

Selected Awards

- **Major Awards**:
  - **PECASE Award** (2017)–the highest honor bestowed by the U.S. government on outstanding scientists and engineers beginning their independent careers.
  - **ONR Young Investigator Award** (2017).
  - **NSF CAREER Award** (2015).
  - **NASA Early Career Faculty Award** (2012).

- **Other Awards (selected)**:
  - Outstanding Paper in Facility Logistics Award from the Transportation Science and Logistics Section of INFORMS (2022).
  - Best Paper Award, AI4Space Workshop at the European Conference on Computer Vision (2022).
  - Best Student Paper Award Finalist (as advisor), European Control Conference (2020).
  - Best Multi-Robot Paper Finalist, IEEE International Conference on Robotics and Automation (2020).
  - Early-Career Spotlight Award from the Robotics: Science and Systems Foundation (2019).
  - Vance D. and Arlene C. Coffman Faculty Scholar (2019).
  - Named Top 20 Under 40 by American Society for Engineering Education (2018).
  - Best Student Paper Award (as advisor), IEEE International Conference on Intelligent Transportation Systems (2018).
  - ISSNAF Franco Strazzabosco Award For Engineers (2017).
  - Invited to the U.S. Senate to brief U.S. Senate staff about space robotics (2017 and 2016).

- Best Student Paper Award (as advisor), Field and Service Robotics Conference (2015).
- Best Paper Award Finalist, Robotics: Science and Systems Conference (2014).
- Invited to the White House to brief White House staff about self-driving cars (2014).
- Certificate of Appreciation from NASA Space Technology Mission Directorate for "outstanding contributions to NASA" (2014).
- National Academy of Engineering's Frontiers of Engineering Program (2013).
- Hellman Faculty Scholar Award (2012).

Teaching and Training

Undergraduate Curriculum

- Founder and faculty director of the Stanford Student Space Initiative, a student group involving more than 300 undergraduate students in aerospace-related projects (e.g., rockets and high-altitude balloons): `http://stanfordssi.org/` (2013 - present).
- Aero/Astro undergraduate program director (2014 - 2021).
- Added a hands-on project to the Stanford Introduction to Aeronautics and Astronautics course, where students design, build, and test a glider.
- Offered several undergraduate student opportunities to participate in research projects and supervised their creative efforts.
- Served as pre-major advisor for Stanford University low-income and first-generation students at Stanford University.
- Engaged San Francisco Bay Area high-school students in basic aerospace research performed in his lab.

Graduate Curriculum

- Designed new graduate courses on robust control, optimal and learning-based control, and robot autonomy.

Courses Taught

- AA 100: Introduction to Aeronautics and Astronautics, Fall '12, '13, '14,'15, '16, '17, and '18 – Undergraduate Level.
- AA 212: Advanced Feedback Control Design, Winter '13, '14, '15, and '16 – Graduate Level.
- AA 203: Introduction to Optimal Control and Dynamic Optimization, Spring '13, '14, '15, '16, '17, and '18 – Graduate Level.
- AA 203: Optimal and Learning-based Control, Spring '19 and '20 – Graduate Level.
- AA 274: Principles of Robotic Autonomy, Winter '17, '18, and '19 – Graduate Level.
- AA 174A/AA 274A: Principles of Robot Autonomy I, Fall '19 and '20 – Undergraduate/Graduate Level.
- AA 174B/AA 274B: Principles of Robot Autonomy II, Winter '20, '21, '22, and '23 – Undergraduate/Graduate Level.
- AA289: Robotics and Autonomous Systems Seminar Fall '17, '18, '19, and '22; Winter '18, '19, '20, '22, and '23; Spring '18, '19, and '22 – Graduate Level.

Students

Current Ph.D. Students

- Student Name: Chris Agia (co-advised with Prof. Jeannette Bohg).
  Thesis topic: foundation models for integrated task & motion planning.
  Anticipated Date of Graduation: 2026.

- Student Name: Yixiao (Alvin) Sun.
  Thesis topic: implicit representations for robot control.
  Anticipated Date of Graduation: 2026.

- Student Name: Rohan Sinha.
  Thesis: run-time monitoring for learning-based autonomy.
  Anticipated Date of Graduation: 2025.

- Student Name: John Alora.
  Thesis topic: control of infinite-dimensional systems.
  Anticipated Date of Graduation: 2024.

- Student Name: Robin Brown.
  Thesis topic: unconventional computing architectures for robotic decision making.
  Anticipated Date of Graduation: 2024.

- Student Name: Amine Elhafsi.
  Thesis topic: foundation models for semantic anomaly detection.
  Anticipated Date of Graduation: 2024.

- Student Name: Devansh Jalota.
  Thesis topic: algorithmic game theory and market design for future mobility systems.
  Anticipated Date of Graduation: 2024.

- Student Name: Justin Luke (co-advised with Prof. Ram Rajagopal).
  Thesis topic: grid integration of electric autonomous mobility on demand.
  Anticipated Date of Graduation: 2024.

- Student Name: Somrita Banerjee.
  Thesis topic: data-driven control and data lifecycle management for space robotics.
  Anticipated Date of Graduation: 2023.

- Student Name: Robert Dyro.
  Thesis topic: structured modeling and optimal planning for robotics.
  Anticipated Date of Graduation: 2023.

- Student Name: Thomas Lew.
  Thesis topic: sampling-based reachability analysis for robust planning and data-driven control.
  Anticipated Date of Graduation: 2023.

- Student Name: Rachel Luo.
  Thesis topic: uncertainty quantification for robotic perception and decision making.
  Anticipated Date of Graduation: 2023.

- Student Name: Stephanie Newdick.
  Thesis topic: design and control of unconventional space robots.
  Anticipated Date of Graduation: 2023.

- Student Name: Spencer M. Richards.
  Thesis topic: safe learning-based control.
  Anticipated Date of Graduation: 2023.

Former Ph.D. Students

- Student Name: Apoorva Sharma.
  Thesis: "Methods for Quantifying, Representing, and Utilizing Uncertainty in Learning-Enabled Autonomy."
  Graduated: 2022. Now at NVIDIA.

- Student Name: Matthew Tsao.
  Thesis: "Techniques for Efficient and Responsible Operation of Mobility Systems."
  Graduated: 2022. Now at Lyft.

- Student Name: Abhishek Cauligi.
  Thesis: "Data-Driven Approaches for Mixed Integer Convex Programming in Robot Control."
  Graduated: 2021. Now at NASA Jet Propulsion Laboratory.

- Student Name: Boris Ivanovic.
  Thesis: "Trajectory Forecasting in the Modern Robotic Autonomy Stack."
  Graduated: 2021. Now at NVIDIA.

- Student Name: Joseph Lorenzetti.
  Thesis: "Reduced Order Model Predictive Control of High-Dimensional Systems."
  Graduated: 2021. Now at Zoox.

- Student Name: James Harrison.
  Thesis: "Uncertainty and Efficiency in Adaptive Robot Learning and Control."
  Graduated: 2021. Now at Google Brain.

- Student Name: Karen Leung.
  Thesis: "On Using Formal Methods for Safe and Robust Robot Autonomy."
  Graduated: 2021. Now at University of Washington.

- Student Name: Andrew Bylard.
  Thesis: "Leveraging the Geometric Structure of Robotic Tasks for Motion Design."
  Graduated: 2021. Now at Dexterity.

- Student Name: Benoit Landry.
  Thesis: "Differentiable and Bilevel Optimization for Control in Robotics."
  Graduated: 2021. Now at Apple.

- Student Name: Ramon Iglesias.
  Thesis: "Stochastic Modeling and Control of Autonomous Mobility-on-Demand Systems."
  Graduated: 2019. Now at Lyft.

- Student Name: Sumeet Singh.
  Thesis: "Robust Control, Planning, and Inference for Safe Robot Autonomy."
  Graduated: 2019. Now at Google Brain.

- Student Name: Edward Schmerling.
  Thesis: "Multimodal Modeling and Uncertainty Quantification for Robot Planning and Decision Making."
  Graduated: 2019. Now at Stanford.

- Student Name: Brian Ichter.
  Thesis: "Massive Parallelism and Sampling Strategies for Robust and Real-time Robotic Motion Planning."
  Graduated: 2018. Now at Google Brain.

- Student Name: Benjamin Hockman.
  Thesis: "Robotic Mobility on Small Solar System Bodies: Design, Control, and Autonomy."
  Graduated: 2018. Now at NASA Jet Propulsion Laboratory.

- Student Name: Stefan Jorgensen.
  Thesis: "Submodular Optimization for Risk-Aware Coordination of Multi-Robot Systems."
  Graduated: 2018. Now at Shield AI.

- Student Name: Federico Rossi.
  Thesis: "On the Interaction between Autonomous Mobility-on-Demand Systems and the Built Environment: Models and Large Scale Coordination Algorithms."
  Graduated: 2018. Now at NASA Jet Propulsion Laboratory.

- Student Name: Yin-Lam Chow.
  Thesis: "Risk-Sensitive and Data-Driven Sequential Decision Making."
  Graduated: 2016. Now at Google.

- Student Name: Rick Zhang.
  Thesis: "Models and Large-Scale Coordination Algorithms for Autonomous Mobility-on-Demand."
  Graduated: 2016. Now at Zoox.

- Student Name: Ross Allen.
  Thesis: "A Real-Time Framework for Kinodynamic Planning with Application to Quadrotor Obstacle Avoidance."
  Graduated: 2016. Now at MIT Lincoln Laboratory.

- Student Name: Joseph Starek.
  Thesis: "Sampling-Based Motion Planning for Safe and Efficient Spacecraft Proximity Operations."
  Graduated: 2016. Now at Nuro.

Current Postdoctoral Researchers

- Name: Karthik Gopalakrishnan
  Appointed: 2021.

Former Postdoctoral Researchers Supervised

- Name: Shreyas Kousik
  Appointed: 2021. Now Assistant Professor at Georgia Tech.

- Name: Navid Azizan.
  Appointed: 2020. Now Assistant Professor at Massachusetts Institute of Technology.

- Name: Sandeep Chinchali.
  Appointed: 2020. Now Assistant Professor at The University of Texas at Austin.

- Name: Kaidi Yang.
  Appointed: 2019. Now Assistant Professor at the National University of Singapore.

- Name: Mauro Salazar.
  Appointed: 2019. Now Assistant Professor at the Eindhoven University of Technology.

- Name: Kiril Solovey.
  Appointed: 2018. Now Assistant Professor at the Technion - Israel Institute of Technology.

- Name: Riccardo Bonalli.
  Appointed: 2018. Now Researcher at the Centre National de la Recherche Scientifique (CNRS).

- Name: Mo Chen.
  Appointed: 2017. Now Assistant Professor at Simon Fraser University.
- Name: Anirudha Majumdar.
  Appointed: 2016. Now Assistant Professor at Princeton University.

University Service Activities

- Member of the executive committee of the Stanford Robotics Center (2022–present).
- Aeronautics and Astronautics Quals Committee (2020–present).
- Director of the Aeronautics and Astronautics Industrial Affiliates Program (2019–present).
- Aeronautics and Astronautics Search Committee (2018–2019).
- Institute for Computational and Mathematical Engineering Admissions Committee (2018–2019).
- Ad Hoc Hiring Committee on Data Science and Physics-Based Computation (2018).
- Institute for Computational and Mathematical Engineering Admissions Committee (2017–2018).
- Aeronautics and Astronautics Curriculum Coordinator for "Dynamics, Guidance, Navigation, Control, and Autonomy" Area (2017–2021).
- Aeronautics and Astronautics Search Committee (2016–2017).
- Electrical Engineering Search Committee (2016–2017).
- Member of the Undergraduate Council of the School of Engineering (2015–2017).
- Aeronautics and Astronautics Undergraduate Initiative (2015–2017).
- Institute for Computational and Mathematical Engineering Search Committee (2015–2016).
- Mechanical Engineering Search Committee (2015–2016).
- Undergraduate Program Director (2014–2021).
- Aeronautics and Astronautics Search Committee (2014–2015).
- Faculty Director for Stanford Student Space Initiative (2013–present).
- Space Committee (2013–2015).
- Thesis Selection Committee for Ballhaus Award (2012–2014).
- Aeronautics and Astronautics Admissions Committee (2012–2013).

Professional Service Activities

Conference Organization (selected)

- Area Chair or Associate Editor for a number of conferences, including Robotics: Science and Systems Conference (2020, 2018, 2017), Conference on Robot Learning (2021, 2018), IEEE International Conference on Robotics and Automation (2019), and IEEE/RSJ International Conference on Intelligent Robots and Systems (2015).
- Co-founder and co-organizer of Robotics Today – A Series of Technical Talks (`https://roboticstoday.github.io/`): a virtual robotics seminar series with thousands of virtual followers (2021, 2020).
- Co-Organizer, Bay Area Robotics Symposium (2018, 2017, 2016, 2015, and 2014).
- Program Co-Chair, IEEE International Conference on Simulation, Modeling and Programming for Autonomous Robots (2016).
- Local Arrangements Chair, NASA Innovative Advanced Concepts Symposium (2014).

Editorial Boards

- Associate Editor for the IEEE Control Systems Magazine (2015–2021).

Memberships

- Member, the American Institute of Aeronautics and Astronautics (AIAA).
- Member, Institute of Electrical and Electronics Engineers (IEEE).

Reviewer (selected)

- *Journal reviewer*: AIAA Journal of Guidance, Control, and Dynamics ("Excellent Reviewer," 2022, 2016, 2012, 2011) ⋄ IEEE Transactions on Automatic Control ⋄ IEEE Control Systems Magazine ⋄ Automatica ⋄ International Journal of Robust and Nonlinear Control ⋄ ASME Journal of Dynamic Systems, Measurement, and Control ⋄ International Journal of Control ⋄ International Journal of Robotics Research ⋄ IEEE Transactions on Robotics ⋄ Autonomous Robots ⋄ Journal of Robotics ⋄ Journal of Intelligent & Robotic Systems ⋄ Journal of Optimization Theory and Applications ⋄ Computers & Operations Research ⋄ Annals of Operations Research ⋄ INFORMS Journal on Computing ⋄ Naval Research Logistics ⋄ ACM Transactions on Sensor Networks ⋄ IEEE Transactions on Mobile Computing ⋄ Transportation Science ⋄ IEEE Transactions on Circuits and Systems-Part I.

- *Conference reviewer*: IEEE Conference on Decision and Control ⋄ American Control Conference ⋄ International Symposium on Robotics Research ⋄ Robotics: Science and Systems ⋄ IEEE International Conference on Robotics and Automation ⋄ IEEE/RSJ International Conference on Intelligent Robots and Systems ⋄ International Workshop on the Algorithmic Foundations of Robotics ⋄ Hybrid Systems: Computation and Control ⋄ Conference on Neural Information Processing Systems ⋄ Conference on Robot Learning ⋄ Learning for Dynamics and Control ⋄ IFAC Symposium on Nonlinear Control Systems ⋄ International Conference on Parallel Problem Solving from Nature ⋄ European Conference on Artificial Life.

- *Proposal reviewer*: NSF ⋄ NASA ⋄ United States-Israel Binational Science Foundation ⋄ Agency for Science, Technology and Research, Singapore ⋄ ETH Mobility Initiative ⋄ FWO.

Consulting and Other Outside Professional Activities

- *Consulting (selected)*: ⋄ Airbus ⋄ Bedestrian ⋄ Greenberg Traurig, LLP ⋄ Lacuna Technologies (Chief Scientific Advisor) ⋄ Lendlease ⋄ Marain.

- *Advisory Boards*: Coast Autonomous (2018–present) ⋄ PTV Group (2017–2018) ⋄ Zoox (2015–2016) ⋄ NM Robotic (2014–2021) ⋄ AeroSpy Sense & Avoid Technology GmbH (2012–2013).

Presentations

Department Seminars

1. Electrical & Computer Engineering Department, University of California, Los Angeles, talk title: "Towards Safe, Data-driven Autonomy" (Nov. 2022).
2. DREAM Seminar, University of California, Berkeley, talk title: "Towards Safe, Data-driven Autonomy" (Oct. 2022).
3. Chair's Distinguished Lecture, Department of Aerospace Engineering, University of Michigan, talk title: "Towards Safe, Data-driven Autonomy" (Oct. 2022).

4. Robotics Seminar, Massachusetts Institute of Technology, talk title: "Towards Safe, Data-driven Autonomy" (May 2022).

5. IRIM Seminar Series, Georgia Institute of Technology, talk title: "Towards Safe, Data-driven Autonomy" (Apr. 2022).

6. Contextual Robotics Institute, University of California, San Diego, talk title: "Towards Safe, Data-driven Autonomy" (Apr. 2022).

7. Center for Automotive Research, The Ohio State University, talk title: "Towards Safe, Data-driven Autonomy" (Apr. 2022).

8. Aerospace Engineering Seminar, University of Illinois Urbana-Champaign, talk title: "Towards Safe, Data-driven Autonomy" (Mar. 2022).

9. Computer Science Colloquium, University of Southern California, talk title: "Towards Safe, Data-driven Autonomy" (Mar. 2022).

10. Electrical Engineering Department, Korea Advanced Institute of Science and Technology, talk title: "Safe, Interaction-Aware Decision Making and Control for Robot Autonomy" (Nov. 2021).

11. Università di Modena e Reggio Emilia, talk title: "Safe, Interaction-Aware Decision Making and Control for Robot Autonomy" (Oct. 2021).

12. King Abdullah University of Science and Technology, talk title: "Safe, Interaction-Aware Decision Making and Control for Robot Autonomy" (Apr. 2021).

13. Chair's Distinguished Lecture, Department of Aerospace Engineering, University of Michigan, talk title: "On Safe and Efficient Human-Robot Interactions via Multimodal Intent Modeling and Reachability-Based Safety Assurance" (Feb. 2021).

14. Mechanical and Civil Engineering Seminar, Caltech, talk title: "Safe, Interaction-Aware Decision Making and Control for Robot Autonomy" (Feb. 2021).

15. CISE Seminar, Boston University, talk title: "On the Role of Interaction in Future Mobility Systems, from Vehicle-Centric to System-Wide Control" (Dec. 2020).

16. University of Toronto, talk title: "On Safe and Efficient Human-robot Interactions via Multimodal Intent Modeling and Reachability-based Safety Assurance" (Nov. 2020).

17. GRASP On Robotics Seminar, University of Pennsylvania, talk title: "On Safe and Efficient Human-robot Interactions via Multimodal Intent Modeling and Reachability-based Safety Assurance" (Nov. 2020).

18. IPAM Workshop on Safe Operation of Connected and Autonomous Vehicle Fleets, University of California, Los Angeles, talk title: "On Safe and Efficient Human-robot Interactions via Multimodal Intent Modeling and Reachability-based Safety Assurance" (Oct. 2020).

19. Department of Electrical and Computer Engineering, University of Southern California, talk title: "Autonomous Mobility-on-Demand Systems for Future Urban Mobility" (Apr. 2019).

20. Institute of Transportation Studies, University of California, Irvine, talk title: "Autonomous Mobility-on-Demand Systems for Future Urban Mobility" (Mar. 2019).

21. Department of Electrical and Computer Engineering, University of Southern California, talk title: "On the Role of Interaction in Future Mobility Systems, from Vehicle-Centric to System-Wide Control" (Oct. 2018).

22. Department of Aeronautics and Astronautics, Massachusetts Institute of Technology, talk title: "Planning and Decision Making for Autonomous Spacecraft and Space Robots" (Mar. 2018).

23. Paul G. Allen School of Computer Science & Engineering, University of Washington, talk title: "Planning and Decision Making for Autonomous Spacecraft and Space Robots" (Mar. 2018).

24. Decision and Control Laboratory, Georgia Institute of Technology, talk title: "Planning and Decision Making for Autonomous Spacecraft and Space Robots" (Feb. 2018).

25. Department of Mechanical and Aerospace Engineering, University of California, San Diego, talk title: "Planning and Decision Making for Autonomous Spacecraft and Space Robots" (Jan. 2018).

26. Institute of Anthropomatics and Robotics, Karlsruhe Institute of Technology, talk title: "Planning and Decision Making for Autonomous Spacecraft and Space Robots" (Dec. 2017).

27. Automatic Control Laboratory, ETH Zürich, talk title: "Planning and Decision Making for Autonomous Spacecraft and Space Robots" (Nov. 2017).

28. Politecnico di Torino, talk title: "Self-Driving Vehicles and the Future of Urban Mobility" (Nov. 2017).

29. Department of Aerospace Engineering, University of Illinois at Urbana-Champaign, talk title: "Planning and Decision Making for Autonomous Spacecraft and Space Robots" (Oct. 2017).
30. DREAM Seminar, University of California, Berkeley, talk title: "Sampling-Based Techniques for Planning and Control of Autonomous Spacecraft and Space Robots" (Nov 2016).
31. Department of Aeronautics and Astronautics, University of Washington, talk title: "Sampling-Based Techniques for Planning and Control of Autonomous Spacecraft and Space Robots" (May 2016).
32. Department of Electrical and Computer Engineering, University of New Mexico, talk title: "Sampling-Based Techniques for Planning and Control of Autonomous Spacecraft and Space Robots" (Apr. 2016).
33. Institute of Transportation Studies, University of California, Berkeley, talk title: "Models, Algorithms, and Evaluation for Autonomous Mobility-On-Demand Systems" (Feb. 2016).
34. Department of Electrical and Computer Engineering, Concordia University, talk title: "Certifiable Planning for Autonomous Vehicles" (Feb. 2016).
35. Department of Systems Engineering, Naval Postgraduate School, talk title: "Models, Algorithms, and Evaluation for Autonomous Mobility-On-Demand Systems " (Nov. 2015).
36. Laboratory for Computational Sensing and Robotics, Johns Hopkins University, talk title: "Certifiable Planning for Autonomous Vehicles" (Oct. 2015).
37. Hansen Experimental Physics Laboratory, Stanford University, talk title: "Spacecraft/Rover Hybrids for the Exploration of Small Solar System Bodies" (Oct. 2015).
38. Center for Automotive Research at Stanford, Stanford University, talk title: "Control and Evaluation of Autonomous Mobility-On-Demand Systems" (Dec. 2014).
39. Hansen Experimental Physics Laboratory, Stanford University, talk title: "Real-Time and Dependable Robotic Motion Planning: Theory and Algorithms" (Oct. 2014).
40. Department of Aerospace and Mechanical Engineering, University of Arizona, talk title: "Real-Time and Dependable Spacecraft Motion Planning: Theory and Algorithms" (Nov. 2013).
41. Aerospace Engineering Department, University of Illinois at Urbana-Champaign, talk title: "Real-Time and Dependable Spacecraft Motion Planning: Theory and Algorithms" (Oct. 2013).
42. Computer Science Department, University of California at Merced, talk title: "Dynamic and Communication-Aware Coordination of Large-Scale Mobile Robotic Networks" (Oct. 2013).
43. Department of Electrical and Computer Engineering, University of Waterloo, talk title: "Fast Marching Trees: a Fast Marching Sampling-Based Method for Optimal Motion Planning in Many Dimensions" (Sept. 2013).
44. Hansen Experimental Physics Laboratory, Stanford University, talk title: "Spacecraft/Rover Hybrids for the Exploration of Small Solar System Bodies" (Apr. 2013).
45. Center for Information and Systems Engineering, Boston University, talk title: "On Stochastic Optimal Control with Risk Constraints: Applications to Planetary Missions and Time-Consistent Formulations" (Oct. 2012).
46. Laboratory for Information and Decision Systems, Massachusetts Institute of Technology, talk title: "On Stochastic Optimal Control with Risk Constraints: Applications to Planetary Missions and Time-Consistent Formulations" (Oct. 2012).
47. SMART Centre, National University of Singapore, talk title: "Challenges to MoD systems" (Aug. 2012).
48. School of Aerospace Engineering, Georgia Institute of Technology, talk title: "Challenges for Spacecraft Autonomy and Architectures for the In-situ Exploration of Small Bodies" (Jun. 2012).
49. Institute for Computational & Mathematical Engineering, Stanford University, talk title: "Dynamic Coordination of Large-Scale Mobile Robotic Networks" (May 2012).
50. Department of Aeronautics and Astronautics, Stanford University, talk title: "Dynamic Coordination of Large-Scale Mobile Robotic Networks" (Apr. 2011).
51. Department of Mechanical Engineering, University of California at Santa Barbara, talk title: "Dynamic Vehicle Routing for Robotic Networks" (Mar. 2011).
52. Computer Science Department, University of Southern California, talk title: "Dynamic Vehicle Routing for Robotic Networks" (Feb. 2010).
53. Laboratory for Information and Decision Systems, Massachusetts Institute of Technology, talk title: "Equitable Partitioning Policies for Mobile Robotic Networks" (Jan. 2009).
54. Laboratory for Information and Decision Systems, Massachusetts Institute of Technology, talk title: "Dynamic Vehicle Routing with Customer Impatience" (Jan. 2008).
55. Laboratory for Information and Decision Systems, Massachusetts Institute of Technology, talk title: "Decentralized Policies for Geometric Pattern Formation and Path Coverage" (Jan. 2007).
56. School of Engineering and Applied Sciences, University of California at Los Angeles, talk title: "Decentralized Policies for Geometric Pattern Formation and Path Coverage" (May 2006).

Invited Presentations (selected)

- **2022**

  1. Workshop on *Trustworthy and Socially Responsible Machine Learning*, Conference on Neural Information Processing Systems, talk title: "Run-time Monitoring for Safe Robot Autonomy" (Dec. 2022).

  2. Workshop on *Combining Learning and Control in Cyber-Physical Systems*, IEEE Conference on Decision and Control, talk title: "Run-time Monitoring for Safe Robot Autonomy" (Dec. 2022).

  3. Workshop on *Co-Design and Coordination of Future Mobility Systems*, IEEE International Conference on Intelligent Transportation Systems, talk title: "When Efficiency Meets Equity in Mobility Management" (Oct. 2022).

  4. International Symposium on Future Mobility (**plenary speaker**), Korea Advanced Institute of Science & Technology, talk title: "Towards Safe, Data-driven Autonomy" (Oct. 2022).

  5. Driving the Next in motor risk, SwissRe, talk title: "Open Research Challenges in Vehicle Autonomy" (Sep. 2022).

  6. NIAC Symposium, talk title: "ReachBot: A Small Robot for Large Mobile Manipulation Tasks in Martian Cave Environments" (Sep. 2022).

  7. Autonomy Seminar, NASA Jet Propulsion Laboratory, talk title: "Towards Safe, Data-driven autonomy" (Jul. 2022).

  8. Workshop on *Design Automation for the Certification of Autonomous Systems*, Design Automation Conference, talk title: "Run-time Monitoring for Safe Robot Autonomy" (Jul. 2022).

  9. Workshop on *Safe and Reliable Robot Autonomy under Uncertainty*, IEEE International Conference on Robotics and Automation, talk title: "Run-time Monitoring for Safe Robot Autonomy" (May 2022).

  10. Forum on *Autonomous Driving*, IEEE International Conference on Robotics and Automation, talk title: "Open Research Challenges in Vehicle Autonomy" (May 2022).

  11. Ambrosetti, talk title: "Self-Driving Vehicles and the Future of Urban Mobility" (May 2022).

  12. NVIDIA GTC Digital Spring Conference, talk title: "Addressing Open Research Challenges in Vehicle Autonomy" (Mar. 2022).

  13. NASA ULI Tech Talk, talk title: "Safe Aviation Autonomy with Learning-Enabled Components in the Loop" (Mar. 2022).

- **2021**

  1. Workshop on *Control for Autonomous Cities*, IEEE Conference on Decision and Control, talk title: "Private and Verifiable Data Analysis for Future Mobility Systems" (Dec. 2021).

  2. Raytheon Technologies, talk title: "Safe, Interaction-Aware Decision Making and Control for Robot Autonomy" (Nov. 2021).

  3. Bay Area Robotics Symposium, talk title: "Safe AI for Future Aviation Systems" (Oct. 2021).

  4. Workshop on *Benchmark and Challenge on Human Trajectory and Pose Dynamics Forecasting in the Wild*, International Conference on Computer Vision, talk title: "Safe, Interaction-aware Decision Making and Control" (Oct. 2021).

  5. Workshop on *Multi-Agent Interaction and Relational Reasoning*, IEEE/RSJ International Conference on Intelligent Robots and Systems, talk title: "Safe, Interaction-aware Decision Making and Control" (Oct. 2021).

  6. Mechanistic Machine Learning and Digital Twins for Computational Science, Engineering & Technology Conference (**plenary speaker**), talk title: "Safe, Interaction-Aware Decision Making and Control for Robot Autonomy" (Sep. 2021).

  7. Autonomous Driving Summit, talk title: "Safe, Interaction-aware Decision Making and Control" (Sep. 2021).

  8. NIAC Symposium, talk title: "ReachBot: A Small Robot for Large Mobile Manipulation Tasks in Martian Cave Environments" (Sep. 2021).

  9. Stanford HAI Summer Speaker Series, talk title: "Artificial Intelligence in Space Exploration" (Jul. 2021).

10. Workshop on *Safe Robot Control with Learned Motion and Environment Models*, IEEE International Conference on Robotics and Automation, talk title: "Safe Learning-based Control for Robot Autonomy" (Jun. 2021).

11. NSF-PIRE Workshop, talk title: "Towards Safe Aviation Autonomy" (Jun. 2021).

12. Control Meets Learning Seminar Series, talk title: "Safe, Interaction-Aware Decision Making and Control for Robot Autonomy" (Feb. 2021).

- **2020**

    1. Workshop on *Control, Optimization, and Learning Methods for Emerging Mobility Systems*, IEEE Conference on Decision and Control, talk title: "Autonomous Mobility-on-Demand Systems for Future Urban Mobility" (Dec. 2020).

    2. Workshop on *Safe Human-Robot Interaction: Sensing, Modeling, and Learning*, International Conference on Social Robotics, talk title: "On Safe and Efficient Human-robot Interactions via Multimodal Intent Modeling and Reachability-based Safety Assurance" (Nov. 2020).

    3. Bay Area Robotics Symposium, talk title: "On Interaction-Aware Decision Making" (Nov. 2020).

    4. DIGITALmeet, talk title: "The Road to Self-Driving Vehicles: Where Are We, and What to Expect?" (Oct. 2020).

    5. IEEE RAS Summer School on Multi-Robot Systems, talk title: "Multimodal Deep Generative Models for Interaction-Aware Navigation in Crowded Environments" (Sep. 2020).

    6. Autoware Meetup, talk title: "Using AI to Deal with Unpredictable Humans on the Road" (Jun. 2020).

    7. Workshop on *Long-term Human Motion Prediction*, International Conference on Robotics and Automation, talk title: "Multimodal Deep Generative Models for Intent Prediction" (Jun. 2020).

    8. Workshop on *Perception, Action, Learning*, International Conference on Robotics and Automation, talk title: "Multimodal Deep Generative Models for Interaction-Aware Decision Making" (Jun. 2020).

    9. AAAI Spring Symposium on *Combining Artificial Intelligence and Machine Learning with Physics Sciences*, talk title: "On safe and efficient human-robot interactions via multimodal intent modeling and reachability-based safety assurance" (Mar. 2020).

    10. NVIDIA, talk title: "On safe and efficient human-robot interactions via multimodal intent modeling and reachability-based safety assurance" (Jan. 2020).

- **2019**

    1. Baltic-American Dialogue Program, talk title: "Self-driving Cars: Progress and Challenges" (Dec. 2019).

    2. Workshop on *Safety and Robustness in Decision Making*, Conference on Neural Information Processing Systems, talk title: "On Safe and Efficient Human-robot Interactions via Multimodal Intent Modeling and Reachability-based Safety Assurance" (Dec. 2019).

    3. Ford, talk title: "Overview of Autonomous Systems Laboratory" (Dec. 2019).

    4. Bay Area Robotics Symposium, talk title: "Model-based Learning for Robot Autonomy" (Nov. 2019).

    5. Politecnico di Torino, Italy, talk title: "Self-Driving Vehicles: Where Are We, and What to Expect?" (Nov. 2019).

    6. Workshop on *A Sociotechnical Systems Approach for Energy-Efficient Mobility in Smart Cities*, American Control Conference, talk title: "On the Interaction Between Autonomous Mobility-on-Demand Systems and the Power Network: Models and Coordination Algorithms" (Jul. 2019).

    7. Waymo, talk title: "On the Role of Interaction in Future Mobility Systems, from Vehicle-Centric to System-Wide Control" (Jun. 2019).

    8. Robotics: Science and Systems Conference (**plenary speaker**), talk title: "Planning and Decision Making for Autonomous Spacecraft and Space Robots" (Jun. 2019).

    9. Industrial Technology Research Institute, Taiwan, talk title: "Self-Driving Vehicles and the Future of Urban Mobility" (Jun. 2019).

    10. Ambrosetti, talk title: "Self-Driving Vehicles and the Future of Urban Mobility" (Mar. 2019).

11. Airbus, talk title: "Trajectory Optimization Methods for Autonomous Robotic Systems" (Feb. 2019).

- **2018**

   1. SystemX Seminar at Stanford, talk title: "Planning and Decision Making for Autonomous Spacecraft and Space Robots" (Dec. 2018).

   2. Bay Area Robotics Symposium, talk title: "On Infusing Safety Assurance within Probabilistic Planning Frameworks for Human-Robot Vehicle Interactions" (Nov. 2018).

   3. Ford's Research Lab, talk title: "On the Role of Interaction in Future Mobility Systems, from Vehicle-Centric to System-Wide Control" (May 2018).

   4. SystemX Seminar at Stanford, talk title: "On the Role of Interaction in Future Mobility Systems, from Vehicle-Centric to System-Wide Control" (Apr. 2018).

   5. Google, talk title: "On the Role of Interaction in Future Mobility Systems, from Vehicle-Centric to System-Wide Control" (Apr. 2018).

   6. NASA Jet Propulsion Laboratory, talk title: "Assistive Free-Flyers with Gecko-Inspired Adhesive Appendages for Automated Logistics in Space" (Apr. 2018).

   7. J. P. Morgan, talk title: "Self-Driving Vehicles and the Future of Urban Mobility" (Mar. 2018).

   8. Microsoft Research, talk title: "Planning and Decision Making for Autonomous Spacecraft and Space Robots" (Mar. 2018).

   9. Digital Cities Summit at Stanford, talk title: "Autonomous Mobility-on-Demand Systems for Future Urban Mobility" (Feb. 2018).

   10. Cyngn, talk title: "On the Role of Interaction in Future Mobility Systems, from Vehicle-Centric to System-Wide Control" (Feb. 2018).

- **2017**

   1. Zoox, talk title: "On the Role of Interaction in Future Mobility Systems, from Vehicle-Centric to System-Wide Control" (Dec. 2017).

   2. Bay Area Robotics Symposium, talk title: "Risk-Sensitive Decision Making for Autonomous Robots" (Nov. 2017).

   3. Italian Embassy in Washington D.C., talk title: "Algorithmic Foundations for Real-Time and Dependable Spacecraft Motion Planning" (Nov. 2017).

   4. NASA Ames Research Center, Workshop on *Convergent Solutions for Developing Trustworthy Automated Systems*, talk title: "Planning and Control for Autonomous Spacecraft and Space Robots" (Oct. 2017).

   5. Qualcomm, talk title: "GPU-enabled Planning and Decision-Making Algorithms for Autonomous Robotic Systems" (Aug. 2017).

   6. ONR Workshop on *Science of Autonomy*, talk title: "Risk-Aware Planning and Control for Autonomous Systems: Models and Real-Time Algorithms" (Aug. 2017).

   7. ONR Workshop on *Science of Autonomy*, talk title: "Proactive Decision Making for Autonomous Systems: a Formal Methods Approach" (Aug. 2017).

   8. University of Michigan, AIAA Workshop on *Intelligent Systems*, talk title: "Planning and Control Techniques for Autonomous Spacecraft and Space Robots" (July 2017).

   9. RSS Workshop on *Bridging the Gap in Space Robotics*, talk title: "Sampling-Based Techniques for Planning and Control of Autonomous Spacecraft and Space Robots" (July 2017).

   10. RSS Workshop on *Resilient Intelligence in Autonomous Systems: Challenges and Opportunities*, talk title: "How Should a Robot Assess Risk? Towards an Axiomatic Theory of Risk in Robotics" (July 2017).

   11. PTV, talk title: "Autonomous Mobility-on-Demand Systems: Operational and Economic Aspects" (July 2017).

   12. NASA Johnson Space Center, talk title: "Sampling-Based Techniques for Planning and Control of Autonomous Spacecraft and Space Robots" (June 2017).

13. Space Systems Loral, talk title: "Sampling-Based Techniques for Planning and Control of Autonomous Spacecraft and Space Robots" (Apr. 2017).

- **2016**

1. Bay Area Robotics Symposium, talk title: "Planning and Control of Autonomous Spacecraft and Space Robots (and Beyond)" (Nov. 2016).

2. CROSS Research Symposium at University of California, Santa Cruz, talk title: "Models, Algorithms, and Evaluation for Autonomous Mobility-On-Demand Systems" (Oct. 2016).

3. Italian Embassy in Washington D.C., talk title: "Algorithmic Foundations for Real-Time and Dependable Spacecraft Motion Planning" (Oct. 2016).

4. NASA Ames Research Center, talk title: "Sampling-Based Techniques for Planning and Control of Autonomous Spacecraft and Space Robots" (Sept. 2016).

5. Northrop Grumman Corporation, talk title: "Sampling-Based Techniques for Planning and Control of Autonomous Spacecraft and Space Robots" (Sept. 2016).

6. ARL Workshop on *Heterogeneity, Diversity and Resilience in Multi-Robot Systems*, talk title: "Models, Algorithms, and Evaluation for Autonomous Mobility-On-Demand Systems" (Aug. 2016).

7. NASA Goddard Space Flight Center, talk title: "Sampling-Based Techniques for Planning and Control of Autonomous Spacecraft and Space Robots" (Aug. 2016).

8. ONR Workshop on *Science of Autonomy*, talk title: "Risk-Aware Planning and Control for Autonomous Systems: Models and Real-Time Algorithms" (Aug. 2016).

9. Johns Hopkins University, Applied Physics Laboratory, 15th Meeting of the NASA Small Bodies Assessment Group, talk title: "Spacecraft/Rover Hybrids for the Exploration of Small Solar System Bodies" (June 2016).

- **2015**

1. Institute for Pure & Applied Mathematics, University of California, Los Angeles, talk title: "Models, Algorithms, and Evaluation for Autonomous Mobility-On-Demand Systems" (Nov. 2015).

2. Oak Ridge National Laboratory, talk title: "Models and Control Methods to Coordinate Fleets of Self-Driving Vehicles in Future Transportation Networks" (Nov 2015).

3. NASA NIAC Symposium, talk title: "Spacecraft/Rover Hybrids for the Exploration of Small Solar System Bodies" (Oct. 2015).

4. Italian Embassy in Washington D.C., talk title: "Models, Algorithms, and Evaluation for Autonomous Mobility-On-Demand Systems" (Oct. 2015).

5. Bay Area Robotics Symposium, talk title: "Models, Algorithms, and Evaluation for Autonomous Mobility-On-Demand Systems" (Oct. 2015).

6. NASA Ames Research Center, talk title: "Spacecraft/Rover Hybrids for the Exploration of Small Solar System Bodies" (Aug. 2015).

7. NASA Headquarters, talk title: "Spacecraft/Rover Hybrids for the Exploration of Small Solar System Bodies" (July 2015).

8. Workshop on *Optimal Robot Motion Planning*, IEEE International Conference on Robotics and Automation, talk title: "Deterministic Sampling-Based Motion Planning: Optimality, Complexity, and Performance" (May 2015).

9. Workshop on *Beyond Geometric Constraints: Planning for Solving Complex Tasks, Reducing Uncertainty, and Generating Informative Paths & Policies*, IEEE International Conference on Robotics and Automation, talk title: "Monte Carlo Motion Planning for Robot Motion Optimization Under Uncertainty" (May 2015).

10. King Abdulaziz City for Science and Technology, talk title: "Drag-Free ATC and Formation Flying Technologies" (Mar. 2015).

11. NASA NIAC Symposium, talk title: "Spacecraft/Rover Hybrids for the Exploration of Small Solar System Bodies" (Jan. 2015).

12. Lockheed Martin, talk title: "Planning and Control for Next Generation Space Robots" (Jan. 2015).

- **2014**

  1. Qualcomm, talk title: "Real-Time and Dependable Robotic Motion Planning: Theory and Algorithms" (Nov. 2014).
  2. Session on *Optimization in Dynamics and Control*, INFORMS Annual Meeting, talk title: "Optimal Sampling-Based Motion Planning under Differential Constraints" (Nov. 2014).
  3. Stanford-Berkeley Robotics Symposium, talk title: "Planning and Control for Spacecraft and Space Robots" (Oct. 2014).
  4. École Nationale de l'Aviation Civile, talk title: "Real-Time and Dependable Spacecraft Motion Planning: Theory and Algorithms" (Oct. 2014).
  5. Mobility and Robotic Systems Section, NASA Jet Propulsion Laboratory, talk title: "Spacecraft/Rover Hybrids for the Exploration of Small Solar System Bodies" (Sept. 2014).
  6. NASA Headquarters, talk title: "Algorithmic Foundations for Real-Time and Dependable Spacecraft Motion Planning" (July 2014).
  7. Workshop on *Humans and Sensing in Cyber-Physical Systems*, Robotics: Science and Systems Conference, talk title: "On the Societal and Engineering Impact of Autonomous Cars" (July 2014).
  8. Workshop on *Constrained Decision-making in Robotics: Models, Algorithms, and Applications*, Robotics: Science and Systems Conference, talk title: "Risk-Averse and Risk-Constrained Stochastic Optimal Control" (July 2014).
  9. Daimler Foundation, talk title: "The Value of Robotic Mobility-On-Demand Systems" (Feb. 2014).
  10. NASA Ames Research Center, talk title: "Real-Time and Dependable Spacecraft Motion Planning: Theory and Algorithms" (Jan. 2014).

- **2013**

  1. NASA Goddard Space Flight Center, talk title: "Real-Time and Dependable Spacecraft Motion Planning: Theory and Algorithms" (Sept. 2013).
  2. NASA Headquarters, talk title: "Algorithmic Foundations for Real-Time and Dependable Spacecraft Motion Planning" (July 2013).
  3. SETI Institute, talk title: "Surface Exploration of Small Solar System Bodies: Challenges and Prospects" (Feb. 2013).

- **2010-2012**

  1. Draper Laboratory, talk title: "Internally-Actuated Rovers for All-Access Surface Mobility: Theory and Experimentation" (Oct. 2012).
  2. Aurora Flight Sciences, talk title: "Internally-Actuated Rovers for All-Access Surface Mobility: Theory and Experimentation" (Oct. 2012).
  3. NASA Ames Research Center, talk title: "Spacecraft/Rover Hybrids for the Exploration of Small Solar System Bodies" (May 2012).
  4. NASA NIAC Symposium, talk title: "Spacecraft/Rover Hybrids for the Exploration of Small Solar System Bodies" (Mar. 2012).
  5. Research & Development Division, AgustaWestland, talk title: "Cooperative Control of Large-Scale Robotic Networks" (Mar. 2010).
  6. Mobility and Robotic Systems Section, NASA Jet Propulsion Laboratory, talk title: "Dynamic Vehicle Routing for Robotic Networks " (Jan. 2010).

In the News

Dr. Pavone's work has been reported in many popular press outlets, including: CNN ◇ ABC ◇ NBC ◇ The Economist ◇ Forbes ◇ Reuters ◇ San Francisco Chronicle ◇ IEEE Spectrum ◇ Popular Science ◇ Huffington Post ◇ The Times of India ◇ MIT Technology Review ◇ The Verge ◇ Universe Today.

Publications

All publications can be found at `https://scholar.google.com/citations?user=RhOpyXcAAAAJ&hl=en&oi=ao`.

Refereed Journal Publications

[1] Bonalli, R., Lew, T., Pavone, M., "Analysis of Theoretical and Numerical Properties of Sequential Convex Programming for Continuous-Time Optimal Control". In: *IEEE Transactions on Automatic Control* (2022).

[2] Bonalli, R., Lew, T., Pavone, M., "Sequential Convex Programming For Non-Linear Stochastic Optimal Control". In: *ESAIM: Control, Optimisation & Calculus of Variations* 28 (2022).

[3] Bourdillon, A., Garg, A., Wang, H., Woo, Y., Pavone, M., Boyd, J., "Integration of Reinforcement Learning in a Virtual Robotic Surgical Simulation". In: *Journal of Surgical Innovations* (2022).

[4] Cauligi, A., Culbertson, P., Schmerling, E., Schwager, M., Stellato, B., Pavone, M., "CoCo: Online Mixed-Integer Control via Supervised Learning". In: *IEEE Robotics and Automation Letters* 7.2 (2022), pp. 1447–1454.

[5] Chen, T. G., Cauligi, A., Suresh, S. A., Pavone, M., Cutkosky, M. R., "Testing Gecko-Inspired Adhesives with Astrobee Aboard the ISS". In: *IEEE Robotics and Automation Magazine* 29.3 (2022), pp. 24–33.

[6] Leung, K., Aréchiga, N., Pavone, M., "Backpropagation through signal temporal logic specifications: Infusing logical structure into gradient-based methods". In: *Int. Journal of Robotics Research* (2022).

[7] Lew, T., Sharma, A., Harrison, J., Bylard, A., Pavone, M., "Safe Active Dynamics Learning and Control: A Sequential Exploration-Exploitation Framework". In: *IEEE Transactions on Robotics* 38.5 (2022), pp. 2888–2907.

[8] Lorenzetti, J., McClellan, A., Farhat, C., Pavone, M., "Linear Reduced-Order Model Predictive Control". In: *IEEE Transactions on Automatic Control* 67.11 (2022), pp. 5980–5995.

[9] Malyuta, D., Reynolds, T. P., Szmuk, M., Lew, T., Bonalli, R., Pavone, M., Acikmese, B., "Convex Optimization for Trajectory Generation". In: *IEEE Control Systems Magazine* 42.5 (2022), pp. 40–113.

[10] McClellan, A., Lorenzetti, J., Pavone, M., Farhat, C., "A Physics-Based Digital Twin for Model Predictive Control of Autonomous Unmanned Aerial Vehicle Landing". In: *Philosophical Transactions of the Royal Society A* 380 (2022).

[11] Pavone, M., Saberi, A., Schiffer, M., Tsao, M., "Online Hypergraph Matching with Delays". In: *Operations Research* 70.4 (2022), pp. 2194–2212.

[12] Schiffer, M., Boysen, N., Laporte, G., Pavone, M., "Optimal picking policies in e-commerce warehouses". In: *Management Science* 68.10 (2022), pp. 7497–7517.

[13] Selim, M., Alanwar, A., Kousik, S., Gao, G., Pavone, M., Johansson, K., "Safe Reinforcement Learning Using Black-Box Reachability Analysis". In: *IEEE Robotics and Automation Letters* 7.4 (2022), pp. 10665–10672.

[14] Tsao, M., Yang, K., Zoepf, S., Pavone, M., "Trust but Verify: Cryptographic Data Privacy for Mobility Management". In: *IEEE Transactions on Control of Network Systems* 9.1 (2022), pp. 50–61.

[15] Willes, J., Harrison, J., Harakeh, A., Finn, C., Pavone, M., Waslander, S., "Bayesian Embeddings for Few-Shot Open World Recognition". In: *IEEE Transactions on Pattern Analysis & Machine Intelligence* (2022).

[16] Wollenstein-Betech, S., Salazar, M., Houshmand, A., Pavone, M., Paschalidis, I. C., Cassandras, C. G., "Routing and Rebalancing Intermodal Autonomous Mobility-on-Demand Systems in Mixed Traffic". In: *IEEE Transactions on Intelligent Transportation Systems* 23.8 (2022), pp. 2261–2276.

[17] Zardini, G., Lanzetti, N., Pavone, M., Frazzoli, E., "Analysis and Control of Autonomous Mobility-on-Demand Systems: A Review". In: *Annual Review of Control, Robotics, and Autonomous Systems* 5.1 (2022), pp. 633–658.

[18] Zhao, P., Lakshmanan, A., Ackerman, K., Gahlawat, A., Pavone, M., Hovakimyan, N., "Tube-Certified Trajectory Tracking for Nonlinear Systems With Robust Control Contraction Metrics". In: *IEEE Robotics and Automation Letters* 7.2 (2022), pp. 5528–5535.

[19] Brown, R. A., Rossi, F., Solovey, K., Tsao, M., Wolf, M. T., Pavone, M., "On Local Computation for Network-Structured Convex Optimization in Multi-Agent Systems". In: *IEEE Transactions on Control of Network Systems* 8.2 (2021), pp. 542–554.

[20] Chapman, M. P., Bonalli, R., Smith, K. M., Yang, I., Pavone, M., Tomlin, C. J., "Risk-sensitive safety analysis using Conditional Value-at-Risk". In: *IEEE Transactions on Automatic Control* 67.12 (2021), pp. 6521–6536.

[21] Choudhury, S., Solovey, K., Kochenderfer, M., "Efficient Large-Scale Multi-Drone Delivery Using Transit Networks". In: *Journal of Artificial Intelligence Research* 70 (2021), pp. 757–788.

[22] Estandia, A., Schiffer, M., Rossi, F., Luke, J., Kara, E. C., Rajagopal, R., Pavone, M., "On the Interaction between Autonomous Mobility on Demand Systems and Power Distribution Networks – An Optimal Power Flow Approach". In: *IEEE Transactions on Control of Network Systems* 8.3 (2021), pp. 1163–1176.

[23] Ivanovic, B., Leung, K., Schmerling, E., Pavone, M., "Multimodal Deep Generative Models for Trajectory Prediction: A Conditional Variational Autoencoder Approach". In: *IEEE Robotics and Automation Letters* 6.2 (2021), pp. 295–302.

[24] Schilliger, J., Lew, T., Richards, S. M., Hanggi, S., Pavone, M., Onder, C., "Control Barrier Functions for Cyber-Physical Systems and Applications to NMPC". In: *IEEE Robotics and Automation Letters* 6.4 (2021), pp. 8623–8630.

[25] Singh, S., Richards, S. M., Sindhwani, V., Slotine, J.-J. E., Pavone, M., "Learning Stabilizable Nonlinear Dynamics with Contraction-Based Regularization". In: *Int. Journal of Robotics Research* 40.10–11 (2021), pp. 1123–1150.

[26] Leung, K., Schmerling, E., Zhang, M., Chen, M., Talbot, J., Gerdes, J. C., Pavone, M., "On Infusing Reachability-Based Safety Assurance within Planning Frameworks for Human-Robot Vehicle Interactions". In: *Int. Journal of Robotics Research* 39.10–11 (2020), pp. 1326–1345.

[27] Mote, M., Egerstedt, M., Feron, E., Bylard, A., Pavone, M., "Collision-Inclusive Trajectory Optimization for Free-Flying Spacecraft". In: *AIAA Journal of Guidance, Control, and Dynamics* 43.7 (2020), pp. 1247–1258.

[28] Rossi, F., Iglesias, R., Alizadeh, M., Pavone, M., "On the Interaction Between Autonomous Mobility-on-Demand Systems and the Power Network: Models and Coordination Algorithms". In: *IEEE Transactions on Control of Network Systems* 7.1 (2020), pp. 384–397.

[29] Salazar, M., Lanzetti, N., Rossi, F., Schiffer, M., Pavone, M., "Intermodal Autonomous Mobility-on-Demand". In: *IEEE Transactions on Intelligent Transportation Systems* 21.9 (2020), pp. 3946–3960.

[30] Allen, R., Pavone, M., "A Real-Time Framework for Kinodynamic Planning in Dynamic Environments with Application to Quadrotor Obstacle Avoidance". In: *Robotics and Autonomous Systems* 115 (2019), pp. 174–193.

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[35] Chow, Y., Ghavamzadeh, M., Janson, L., Pavone, M., "Risk-Constrained Reinforcement Learning with Percentile Risk Criteria". In: *Journal of Machine Learning Research* 18.167 (2018), pp. 1–51.

[36] Janson, L., Ichter, B., Pavone, M., "Deterministic Sampling-Based Motion Planning: Optimality, Complexity, and Performance". In: *Int. Journal of Robotics Research* 37.1 (2018), pp. 46–61.

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[39] Singh, S., Chow, Y.-L., Majumdar, A., Pavone, M., "A Framework for Time-Consistent, Risk-Sensitive Model Predictive Control: Theory and Algorithms". In: *IEEE Transactions on Automatic Control* 64.7 (2018). Extended version available at: http://arxiv.org/abs/1703.01029, pp. 2905–2912.

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