Stanford

Marco Pavone

Associate Professor of Aeronautics and Astronautics, Senior Fellow at the Precourt Institute for Energy and Associate Professor, by courtesy, of Electrical Engineering & of Computer Science

CONTACT INFORMATION

- **Administrator**

  Renee Quiroz - Administrative Associate

  Email rnquiroz@stanford.edu

  Tel (650) 723-2867

Bio

BIO

Dr. Marco Pavone is an Associate Professor of Aeronautics and Astronautics at Stanford University, where he directs the Autonomous Systems Laboratory and the Center for Automotive Research at Stanford. He is also a Distinguished Research Scientist at NVIDIA where he leads autonomous vehicle research. 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. His main research interests are in the development of methodologies for the analysis, design, and control of autonomous systems, with an emphasis on self-driving cars, autonomous aerospace vehicles, and future mobility systems. He is a recipient of a number of awards, including a Presidential Early Career Award for Scientists and Engineers from President Barack Obama, an Office of Naval Research Young Investigator Award, a National Science Foundation Early Career (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 (ASEE) as one of America's 20 most highly promising investigators under the age of 40. 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.

ACADEMIC APPOINTMENTS

- Associate Professor, Aeronautics and Astronautics
- Senior Fellow, Precourt Institute for Energy
- Associate Professor (By courtesy), Electrical Engineering
- Associate Professor (By courtesy), Computer Science
- Faculty Affiliate, Institute for Human-Centered Artificial Intelligence (HAI)
- Member, Institute for Computational and Mathematical Engineering (ICME)

HONORS AND AWARDS

- PECASE Award, White House (2017)

- YIP Award, ONR (2017)
- CAREER Award, NSF (2015)
- Frontiers of Engineering Program, National Academy of Engineering (2013)
- Early Career Faculty award, NASA (2012)
- Hellman Faculty Scholar Award, Hellman Fellows Fund (2012)
- NIAC Fellow, NASA (2011)

PROGRAM AFFILIATIONS

- Center for Automotive Research at Stanford (CARS)

PROFESSIONAL EDUCATION

- Ph.D., MIT , Aeronautics and Astronautics (2010)

Teaching

COURSES

2025-26

- Optimal and Learning-based Control: AA 203 (Spr)
- Principles of Robot Autonomy I: AA 174A, CS 137A, EE 160A (Aut)
- Robotics and Autonomous Systems Seminar: ENGR 319 (Aut, Win, Spr)

2024-25

- Optimal and Learning-based Control: AA 203 (Spr)
- Principles of Robot Autonomy I: AA 174A, CS 137A (Aut)
- Principles of Robot Autonomy II: AA 174B, AA 274B, CS 237B, EE 260B, ME 274B (Win)
- Robotics and Autonomous Systems Seminar: ENGR 319 (Aut, Win, Spr)

2023-24

- Optimal and Learning-based Control: AA 203 (Spr)
- Principles of Robot Autonomy I: AA 174A, CS 137A, EE 160A (Aut)
- Principles of Robot Autonomy II: AA 174B, AA 274B, CS 237B (Win)
- Robotics and Autonomous Systems Seminar: AA 289, CS 529 (Aut, Win, Spr)

2022-23

- Principles of Robot Autonomy II: AA 174B, AA 274B, CS 237B, EE 260B (Win)
- Robotics and Autonomous Systems Seminar: AA 289, CS 529 (Aut, Win, Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Mahdi Al-Husseini, Polo Contreras, Aaron Feldman, Yuji Takubo, Alexandros Tzikas, Romeo Valentin

Postdoctoral Faculty Sponsor

Carmen Amo Alonso, Jonas Frey, Daniele Gammelli, Katie Luo, Jakob Thumm

Doctoral Dissertation Advisor (AC)

Hugo Buurmeijer, Pranit Mohnot, Daniel Morton, Luis Pabon, Rohan Sinha

Orals Evaluator

Alexandros Tzikas, Romeo Valentin

Master's Program Advisor

Ellie Brosius, Kabir Cheema, Chenyang Dai, Billy Gao, Aviad Golan Peretz, Callista Holleschak, Pierre Labroche, Joseph Lee, Yousef Liang, David Lu, Bora Oztekin, Tanis Priddle, Julian Rodriguez Cardenas, Angela Sifuentes, Matthew Simpson, Avi Singh

Doctoral (Program)

Erik Bauer, Milan Ganai, Jacky Kwok, Xilun Zhang

Publications

PUBLICATIONS

- **Elevating Variational Quantum Semidefinite Programs for Polynomial Objectives** *QUANTUM*
  Wang, I., Brown, R., Patti, T. L., Anandkumar, A., Pavone, M., Yelin, S. F.
  2026; 10
- **Safety Evaluation of Motion Plans Using Trajectory Predictors as Forward Reachable Set Estimators** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Chakraborty, K., Feng, Z., Veer, S., Sharma, A., Ding, W., Topan, S., Ivanovic, B., Pavone, M., Bansal, S.
  2026; 11 (3): 3262-3269
- **Reproducibility in the Control of Autonomous Mobility-on-Demand Systems** *IEEE TRANSACTIONS ON ROBOTICS*
  Li, X., Alharbi, M., Gammelli, D., Harrison, J., Rodrigues, F., Schiffer, M., Pavone, M., Frazzoli, E., Zhao, J., Zardini, G.
  2026; 42: 1428-1447
- **Convex Hulls of Reachable Sets** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*
  Lew, T., Bonalli, R., Pavone, M.
  2025; 70 (12): 8195-8209
- **Efficient Multi-Camera Tokenization With Triplanes for End-to-End Driving** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Ivanovic, B., Saltori, C., You, Y., Wang, Y., Luo, W., Pavone, M.
  2025; 10 (11): 11713-11720
- **Benchmarking the operation of quantum heuristics and Ising machines: scoring parameter setting strategies on optimization applications.** *Quantum machine intelligence*
  Bernal Neira, D. E., Brown, R., Sathe, P., Wudarski, F., Pavone, M., Rieffel, E., Venturelli, D.
  2025; 7 (2): 86
- **Centralized and Decentralized Implicit Differentiation** *IEEE TRANSACTIONS ON CONTROL OF NETWORK SYSTEMS*
  Valenzuela, L., Brown, R., Pavone, M.
  2025; 12 (3): 1957-1967
- **It's All in the Mix: Technology choice between driverless and human-driven vehicles in sharing systems** *EUROPEAN JOURNAL OF OPERATIONAL RESEARCH*
  Martin, L., Minner, S., Pavone, M., Schiffer, M.
  2025; 324 (3): 969-980
- **Matching with transfers under distributional constraints** *GAMES AND ECONOMIC BEHAVIOR*
  Jalota, D., Ostrovsky, M., Pavone, M.
  2025; 152: 313-332
- **Optimal coordination of electric buses and battery storage for achieving a 24/7 carbon-free electrified fleet** *Applied Energy*
  Luke, J., Ribeiro, M., Martin, S., Balogun, E., Cezar, G. V., Pavone, M., Rajagopal, R.
  2025; 377
- **Pseudo-Simulation for Autonomous Driving**

Cao, W., Hallgarten, M., Li, T., Dauner, D., Gu, X., Wang, C., Miron, Y., Aiello, M., Li, H., Gilitschenski, I., Ivanovic, B., Pavone, M., Geiger, et al
edited by Lim, J., Song, S., Park, H. W.
JMLR-JOURNAL MACHINE LEARNING RESEARCH.2025: 4709-4722

- **Real-Time Out-of-Distribution Failure Prevention via Multi-Modal Reasoning**
  Ganai, M., Sinha, R., Agia, C., Morton, D., Di Lillo, L., Pavone, M.
  edited by Lim, J., Song, S., Park, H. W.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2025: 283-308
- **Sim2Val: Leveraging Correlation Across Test Platforms for Variance-Reduced Metric Estimation**
  Luo, R., Yang, H., Watson, M., Sharma, A., Veer, S., Schmerling, E., Pavone, M.
  edited by Lim, J., Song, S., Park, H. W.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2025: 2294-2310
- **Towards Robust Spacecraft Trajectory Optimization via Transformers**
  Takubo, Y., Guffanti, T., Gammelli, D., Pavone, M., D'Amico, S., IEEE
  IEEE.2025
- **Space-LLaVA: a Vision-Language Model Adapted to Extraterrestrial Applications**
  Foutter, M., Gammelli, D., Kruger, J., Foss, E., Bhoj, P., Guffanti, T., D'Amico, S., Pavone, M., IEEE
  IEEE.2025
- **Controls for Space: a perspective to 2030s and beyond II**
  Mammarella, M., D'Amico, S., Pavone, M., Linares, R., Acheson, M. J., Ankersen, F., Sasaki, T., Ancona, E., DiMatteo, J., Spiegel, I. A., Azza, F., Varile, M., IEEE
  IEEE.2025: 3047-3056
- **Controls for Space: a perspective to 2030s and beyond I**
  Mammarella, M., D'Amico, S., Pavone, M., Linares, R., Acheson, M. J., Ankersen, F., Sasaki, T., Ancona, E., DiMatteo, J., Spiegel, I. A., Azza, F., Varile, M., IEEE
  IEEE.2025: 2286-2296
- **Generalizable Spacecraft Trajectory Generation via Multimodal Learning with Transformers**
  Celestini, D., Afsharrad, A., Gammelli, D., Guffanti, T., Zardini, G., Lall, S., Capello, E., D'Amico, S., Pavone, M., IEEE
  IEEE.2025: 3558-3565
- **LoRD: Adapting Differentiable Driving Policies to Distribution Shifts**
  Diehl, C., Karkus, P., Veer, S., Pavone, M., Bertram, T.
  edited by Ott, C.
  IEEE.2025: 7036-7043
- **Closed-Loop Supervised Fine-Tuning of Tokenized Traffic Models**
  Zhang, Z., Karkus, P., Igl, M., Ding, W., Chen, Y., Ivanovic, B., Pavone, M., IEEE COMPUTER SOC
  IEEE COMPUTER SOC.2025: 5422-5432
- **LLaMA-Berry: Pairwise Optimization for Olympiad-level Mathematical Reasoning via O1-like Monte Carlo Tree Search**
  Zhang, D., Wu, J., Lei, J., Che, T., Li, J., Xie, T., Huang, X., Zhang, S., Pavone, M., Li, Y., Ouyang, W., Zhou, D., Ritter, et al
  edited by Chiruzzo, L., Wang, L.
  ASSOC COMPUTATIONAL LINGUISTICS-ACL.2025: 7315-7337
- **System-Level Safety Monitoring and Recovery for Perception Failures in Autonomous Vehicles**
  Chakraborty, K., Feng, Z., Veer, S., Sharma, A., Ivanovic, B., Pavone, M., Bansal, S.
  edited by Ott, C.
  IEEE.2025: 12885-12891
- **Online Aggregation of Trajectory Predictors**
  Tong, A., Sharma, A., Veer, S., Pavone, M., Yang, H.
  edited by Ott, C.
  IEEE.2025: 3437-3444

- **Realistic Extreme Behavior Generation for Improved AV Testing**
  Dyro, R., Foutter, M., Li, R., Di Lillo, L., Schmerling, E., Zhou, X., Pavone, M.
  edited by Ott, C.
  IEEE.2025: 1354-1362

- **Gen-Drive: Enhancing Diffusion Generative Driving Policies with Reward Modeling and Reinforcement Learning Fine-tuning**
  Huang, Z., Weng, X., Igl, M., Chen, Y., Cao, Y., Ivanovic, B., Pavone, M., Lv, C.
  edited by Ott, C.
  IEEE.2025: 3445-3451

- **Categorical Traffic Transformer: Interpretable and Diverse Behavior Prediction with Tokenized Latent**
  Chen, Y., Tonkens, S., Pavone, M.
  edited by Ott, C.
  IEEE.2025: 2423-2430

- **Safe, Task-Consistent Manipulation with Operational Space Control Barrier Functions**
  Morton, D., Pavone, M.
  edited by Laugier, C., Atanasov, N., Birchfield, S., Cielniak, G., DeMattos, L., Fiorini, L., Giguere, P., Hashimoto, K., Ibanez-Guzman, J., Kamegawa, T., Lee, J., Laugier, C., Loianno, G., Luck, K., Maruyama, H., Martinet, P., Moradi, H., Nunes, U., Pettre, J., Pretto, A., Ranzani, T., Ronnau, A., Rossi, S., Rouse, E., Ruggiero, F., Simonin, O., Wang, D., Yang, M., Yoshida, E., Zhao, H.
  IEEE.2025: 187-194

- **LOTUS: A Leaderboard for Detailed Image Captioning from Quality to Societal Bias and User Preferences**
  Hirota, Y., Li, B., Hachiuma, R., Wu, Y., Ivanovic, B., Nakashima, Y., Pavone, M., Choi, Y., Wang, Y., Yang, H.
  edited by Rehm, G., Li, Y.
  ASSOC COMPUTATIONAL LINGUISTICS-ACL.2025: 295-309

- **Benchmarking Population-Based Reinforcement Learning across Robotic Tasks with GPU-Accelerated Simulation**
  Shahid, A., Narang, Y., Petrone, V., Ferrentino, E., Handa, A., Fox, D., Pavone, M., Roveda, L., IEEE
  IEEE.2025: 1231-1238

- **To Spend or to Gain: Online Learning in Repeated Karma Auctions**
  Berriaud, D., Elokda, E., Jalota, D., Frazzoli, E., Pavone, M., Dorfler, F., ACM
  ASSOC COMPUTING MACHINERY.2025: 289-297

- **Accelerating Online Mapping and Behavior Prediction via Direct BEV Feature Attention**
  Gu, X., Song, G., Gilitschenski, I., Pavone, M., Ivanovic, B.
  edited by Leonardis, A., Ricci, E., Roth, S., Russakovsky, O., Sattler, T., Varol, G.
  SPRINGER INTERNATIONAL PUBLISHING AG.2025: 412-428

- **Dolphins: Multimodal Language Model for Driving**
  Ma, Y., Cao, Y., Sun, J., Pavone, M., Xiao, C.
  edited by Leonardis, A., Ricci, E., Roth, S., Russakovsky, O., Sattler, T., Varol, G.
  SPRINGER INTERNATIONAL PUBLISHING AG.2025: 403-420

- **RealGen: Retrieval Augmented Generation for Controllable Traffic Scenarios**
  Ding, W., Cao, Y., Zhao, D., Xiao, C., Pavone, M.
  edited by Leonardis, A., Ricci, E., Roth, S., Russakovsky, O., Sattler, T., Varol, G.
  SPRINGER INTERNATIONAL PUBLISHING AG.2025: 93-110

- **Transformer-Based Model Predictive Control: Trajectory Optimization via Sequence Modeling** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Celestini, D., Gammelli, D., Guffanti, T., D'Amico, S., Capello, E., Pavone, M.
  2024; 9 (11): 9820-9827

- **Gradient Descent-Based Task-Orientation Robot Control Enhanced With Gaussian Process Predictions** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Roveda, L., Pavone, M.
  2024; 9 (9): 8035-8042

- **On the Interplay Between Self-Driving Cars and Public Transportation** *IEEE TRANSACTIONS ON CONTROL OF NETWORK SYSTEMS*
  Lanzetti, N., Schiffer, M., Ostrovsky, M., Pavone, M.
  2024; 11 (3): 1478-1490
- **Estimating the Convex Hull of the Image of a Set with Smooth Boundary: Error Bounds and Applications** *DISCRETE & COMPUTATIONAL GEOMETRY*
  Lew, T., Bonalli, R., Janson, L., Pavone, M.
  2024
- **When Efficiency Meets Equity in Congestion Pricing and Revenue Refunding Schemes** *IEEE TRANSACTIONS ON CONTROL OF NETWORK SYSTEMS*
  Jalota, D., Solovey, K., Gopalakrishnan, K., Zoepf, S., Balakrishnan, H., Pavone, M.
  2024; 11 (2): 1127-1138
- **Locomotion as manipulation with ReachBot.** *Science robotics*
  Chen, T. G., Newdick, S., Di, J., Bosio, C., Ongole, N., Lapôtre, M., Pavone, M., Cutkosky, M. R.
  2024; 9 (89): eadi9762
- **Bayesian Embeddings for Few-Shot Open World Recognition.** *IEEE transactions on pattern analysis and machine intelligence*
  Willes, J., Harrison, J., Harakeh, A., Finn, C., Pavone, M., Waslander, S. L.
  2024; 46 (3): 1513-1529
- **Interactive Joint Planning for Autonomous Vehicles** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Chen, Y., Veer, S., Karkus, P., Pavone, M.
  2024; 9 (2): 987-994
- **Risk-Averse Trajectory Optimization via Sample Average Approximation** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Lew, T., Bonalli, R., Pavone, M.
  2024; 9 (2): 1500-1507
- **A COPOSITIVE FRAMEWORK FOR ANALYSIS OF HYBRID ISING-CLASSICAL ALGORITHMS** *SIAM JOURNAL ON OPTIMIZATION*
  Brown, R., Neira, D., Venturelli, D., Pavone, M.
  2024; 34 (2): 1455-1489
- **SAMPLE AVERAGE APPROXIMATION FOR STOCHASTIC PROGRAMMING WITH EQUALITY CONSTRAINTS** *SIAM JOURNAL ON OPTIMIZATION*
  Lew, T., Bonalli, R., Pavone, M.
  2024; 34 (4): 3506-3533
- **Transformers for Trajectory Optimization with Application to Spacecraft Rendezvous**
  Guffanti, T., Gammelli, D., D'Amico, S., Pavone, M., IEEE
  IEEE.2024
- **Modeling Considerations for Developing Deep Space Autonomous Spacecraft and Simulators**
  Agia, C., Vila, G., Bandyopadhyay, S., Bayard, D. S., Cheung, K., Lee, C. H., Wood, E., Aenishanslin, I., Ardito, S., Fesq, L., Pavone, M., Nesnas, I. A. D., IEEE
  IEEE.2024
- **Contingency Planning Using Bi-level Markov Decision Processes for Space Missions**
  Banerjee, S., Balaban, E., Shirley, M., Bradner, K., Pavone, M., IEEE
  IEEE.2024
- **Martian Exploration of Lava Tubes (MELT) with ReachBot: Scientific Investigation and Concept of Operations**
  Dil, J., Cuevas-Quinones, S., Newdick, S., Chen, T. G., Pavone, M., Lapotre, M. G. A., Cutkosky, M., IEEE
  IEEE.2024: 36-41
- **Partial-View Object View Synthesis via Filtering Inversion**
  Sun, F., Tremblay, J., Blukis, V., Lin, K., Xu, D., Ivanovic, B., Karkus, P., Birchfield, S., Fox, D., Zhang, R., Li, Y., Wu, J., Pavone, et al
  IEEE COMPUTER SOC.2024: 453-463

- **Dynamic Locational Marginal Emissions via Implicit Differentiation** *IEEE TRANSACTIONS ON POWER SYSTEMS*
  Valenzuela, L., Degleris, A., El Gamal, A., Pavone, M., Rajagopal, R.
  2024; 39 (1): 1138-1147
- **Text2Interaction: Establishing Safe and Preferable Human-Robot Interaction**
  Thumm, J., Agia, C., Pavone, M., Althoff, M.
  edited by Kroemer, O., Agrawal, P., Burgard, W.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2024
- **Credit vs. Discount-Based Congestion Pricing: A Comparison Study**
  Chiu, C., Jalota, D., Pavone, M., IEEE
  IEEE.2024: 2331-2336
- **Learning for CasADi Data-driven Models in Numerical Optimization**
  Salzmann, T., Arrizabalaga, J., Andersson, J., Pavone, M., Ryll, M.
  edited by Abate, A., Cannon, M., Margellos, K., Papachristodoulou, A.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2024: 541-552
- **DTPP: Differentiable Joint Conditional Prediction and Cost Evaluation for Tree Policy Planning in Autonomous Driving**
  Huang, Z., Karkus, P., Ivanovic, B., Chen, Y., Pavone, M., Lv, C., IEEE
  IEEE.2024: 6806-6812
- **Augmenting Lane Perception and Topology Understanding with Standard Definition Navigation Maps**
  Luo, K. Z., Weng, X., Wang, Y., Wu, S., Li, J., Weinberger, K. Q., Wang, Y., Pavone, M., IEEE
  IEEE.2024: 4029-4035
- **Mapping High-level Semantic Regions in Indoor Environments without Object Recognition**
  Bigazzi, R., Baraldi, L., Kousik, S., Cucchiar, R., Pavone, M., IEEE
  IEEE.2024: 7686-7693
- **Driving Everywhere with Large Language Model Policy Adaptation**
  Li, B., Wang, Y., Mao, J., Ivanovic, B., Veer, S., Leung, K., Pavone, M., IEEE
  IEEE COMPUTER SOC.2024: 14948-+
- **Producing and Leveraging Online Map Uncertainty in Trajectory Prediction**
  Gu, X., Song, G., Gilitschenski, I., Pavone, M., Ivanovic, B., IEEE
  IEEE COMPUTER SOC.2024: 14521-14530
- **PARA-Drive: Parallelized Architecture for Real-time Autonomous Driving**
  Weng, X., Ivanovic, B., Wang, Y., Wang, Y., Pavone, M., IEEE
  IEEE COMPUTER SOC.2024: 15449-15458
- **Reinforcement Learning with Human Feedback for Realistic Traffic Simulation**
  Cao, Y., Ivanovic, B., Xiao, C., Pavone, M., IEEE
  IEEE.2024: 14428-14434
- **ZAPP! Zonotope Agreement of Prediction and Planning for Continuous-Time Collision Avoidance with Discrete-Time Dynamics**
  Paparusso, L., Kousik, S., Schmerling, E., Braghin, F., Pavone, M., IEEE
  IEEE.2024: 9285-9292
- **Online Distribution Shift Detection via Recency Prediction**
  Luo, R., Sinha, R., Sun, Y., Hindy, A., Zhao, S., Savarese, S., Schmerling, E., Pavone, M., IEEE
  IEEE.2024: 16251-16263
- **Accelerating Continuous Variable Coherent Ising Machines via Momentum**
  Brown, R. A., Venturelli, D., Pavone, M., Neira, D.
  edited by Dilkina, B.
  SPRINGER INTERNATIONAL PUBLISHING AG.2024: 109-126

- **SAMPLE AVERAGE APPROXIMATION FOR STOCHASTIC PROGRAMMING WITH EQUALITY CONSTRAINTS** *SIAM JOURNAL ON OPTIMIZATION*
  Lew, T., Bonalli, R., Pavone, M.
  2024; 34 (4): 3506-3533
- **Transformers for Trajectory Optimization with Application to Spacecraft Rendezvous**
  Guffanti, T., Gammelli, D., D'Amico, S., Pavone, M., IEEE
  IEEE.2024
- **Modeling Considerations for Developing Deep Space Autonomous Spacecraft and Simulators**
  Agia, C., Vila, G., Bandyopadhyay, S., Bayard, D. S., Cheung, K., Lee, C. H., Wood, E., Aenishanslin, I., Ardito, S., Fesq, L., Pavone, M., Nesnas, I. A. D., IEEE
  IEEE.2024
- **Contingency Planning Using Bi-level Markov Decision Processes for Space Missions**
  Banerjee, S., Balaban, E., Shirley, M., Bradner, K., Pavone, M., IEEE
  IEEE.2024
- **Martian Exploration of Lava Tubes (MELT) with ReachBot: Scientific Investigation and Concept of Operations**
  Dil, J., Cuevas-Quinones, S., Newdick, S., Chen, T. G., Pavone, M., Lapotre, M. G. A., Cutkosky, M., IEEE
  IEEE.2024: 36-41
- **Partial-View Object View Synthesis via Filtering Inversion**
  Sun, F., Tremblay, J., Blukis, V., Lin, K., Xu, D., Ivanovic, B., Karkus, P., Birchfield, S., Fox, D., Zhang, R., Li, Y., Wu, J., Pavone, et al
  IEEE COMPUTER SOC.2024: 453-463
- **Dynamic Locational Marginal Emissions via Implicit Differentiation** *IEEE TRANSACTIONS ON POWER SYSTEMS*
  Valenzuela, L., Degleris, A., El Gamal, A., Pavone, M., Rajagopal, R.
  2024; 39 (1): 1138-1147
- **Sample-efficient safety assurances using conformal prediction** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Luo, R., Zhao, S., Kuck, J., Ivanovic, B., Savarese, S., Schmerling, E., Pavone, M.
  2023
- **Text2Motion: from natural language instructions to feasible plans** *AUTONOMOUS ROBOTS*
  Lin, K., Agia, C., Migimatsu, T., Pavone, M., Bohg, J.
  2023; 47 (8): 1345-1365
- **The matroid team surviving orienteers problem and its variants: Constrained routing of heterogeneous teams with risky traversal** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Jorgensen, S., Pavone, M.
  2023
- **Semantic anomaly detection with large language models** *AUTONOMOUS ROBOTS*
  Elhafsi, A., Sinha, R., Agia, C., Schmerling, E., Nesnas, I. A. D., Pavone, M.
  2023
- **Balancing fairness and efficiency in traffic routing via interpolated traffic assignment** *AUTONOMOUS AGENTS AND MULTI-AGENT SYSTEMS*
  Jalota, D., Solovey, K., Tsao, M., Zoepf, S., Pavone, M.
  2023; 37 (2)
- **Near-Optimal Multi-Robot Motion Planning with Finite Sampling** *IEEE TRANSACTIONS ON ROBOTICS*
  Dayan, D., Solovey, K., Pavone, M., Halperin, D.
  2023; 39 (5): 3422-3436
- **Analysis of Theoretical and Numerical Properties of Sequential Convex Programming for Continuous-Time Optimal Control** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*
  Bonalli, R., Lew, T., Pavone, M.
  2023; 68 (8): 4570-4585

- **Robust feedback motion planning via contraction theory** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Singh, S., Landry, B., Majumdar, A., Slotine, J., Pavone, M.
  2023; 42 (9): 655-688
- **Fisher markets with linear constraints: Equilibrium properties and efficient distributed algorithms** *GAMES AND ECONOMIC BEHAVIOR*
  Jalota, D., Pavone, M., Qi, Q., Ye, Y.
  2023; 141: 223-260
- **Control-oriented meta-learning** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Richards, S. M., Azizan, N., Slotine, J., Pavone, M.
  2023
- **Trustworthy AI-Part II** *COMPUTER*
  Mariani, R., Rossi, F., Cucchiara, R., Pavone, M., Simkin, B., Koene, A., Papenbrock, J.
  2023; 56 (5): 13-16
- **Real-Time Neural MPC: Deep Learning Model Predictive Control for Quadrotors and Agile Robotic Platforms** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Salzmann, T., Kaufmann, E., Arrizabalaga, J., Pavone, M., Scaramuzza, D., Ryll, M.
  2023; 8 (4): 2397-2404
- **Co-design of communication and machine inference for cloud robotics** *AUTONOMOUS ROBOTS*
  Nakanoya, M., Narasimhan, S., Bhat, S., Anemogiannis, A., Datta, A., Katti, S., Chinchali, S., Pavone, M.
  2023
- **Co-Design to Enable User-Friendly Tools to Assess the Impact of Future Mobility Solutions** *IEEE TRANSACTIONS ON NETWORK SCIENCE AND ENGINEERING*
  Zardini, G., Lanzetti, N., Censi, A., Frazzoli, E., Pavone, M.
  2023; 10 (2): 827-844
- **Online Routing Over Parallel Networks: Deterministic Limits and Data-driven Enhancements** *INFORMS JOURNAL ON COMPUTING*
  Jalota, D., Paccagnan, D., Schiffer, M., Pavone, M.
  2023
- **Trustworthy AI-Part 1** *COMPUTER*
  Mariani, R., Rossi, F., Cucchiara, R., Pavone, M., Simkin, B., Koene, A., Papenbrock, J.
  2023; 56 (2): 14-18
- **Data-Driven Spectral Submanifold Reduction for Nonlinear Optimal Control of High-Dimensional Robots**
  Alora, J., Cenedese, M., Schmerling, E., Haller, G., Pavone, M., IEEE
  IEEE.2023: 2627-2633
- **Learning Responsibility Allocations for Safe Human-Robot Interaction with Applications to Autonomous Driving**
  Cosner, R. K., Chen, Y., Leung, K., Pavone, M., IEEE
  IEEE.2023: 9757-9763
- **Motion Planning for a Climbing Robot with Stochastic Grasps**
  Newdick, S., Ongole, N., Chen, T. G., Schmerling, E., Cutkosky, M. R., Pavone, M., IEEE
  IEEE.2023: 11838-11844
- **Learning Autonomous Vehicle Safety Concepts from Demonstrations**
  Leung, K., Veer, S., Schmerling, E., Pavone, M., IEEE
  IEEE.2023: 3193-3200
- **FreeNeRF: Improving Few-shot Neural Rendering with Free Frequency Regularization**
  Yang, J., Pavone, M., Wang, Y., IEEE
  IEEE COMPUTER SOC.2023: 8254-8263
- **Differentially Private Stochastic Convex Optimization for Network Routing Applications**
  Tsao, M., Gopalakrishnan, K., Yang, K., Pavone, M., IEEE

IEEE.2023: 7475-7482

- **Exact Characterization of the Convex Hulls of Reachable Sets**
  Lew, T., Bonalli, R., Pavone, M., IEEE
  IEEE.2023: 52-59
- **Credit-Based Congestion Pricing: Equilibrium Properties and Optimal Scheme Design**
  Jalota, D., Lazarus, J., Bayen, A., Pavone, M., IEEE
  IEEE.2023: 4124-4129
- **Robust Nonlinear Reduced-Order Model Predictive Control**
  Alora, J., Pabon, L. A., Kohler, J., Cenedese, M., Schmerlingl, E., Zeilinger, M. N., Haller, G., Pavone, M., IEEE
  IEEE.2023: 4798-4805
- **Closing the Loop on Runtime Monitors with Fallback-Safe MPC**
  Sinha, R., Schmerling, E., Pavone, M., IEEE
  IEEE.2023: 6533-6540
- **Receding Horizon Planning with Rule Hierarchies for Autonomous Vehicles**
  Veer, S., Leung, K., Cosner, R. K., Chen, Y., Karkus, P., Pavone, M., IEEE
  IEEE.2023: 1507-1513
- **BITS: Bi-level Imitation for Traffic Simulation**
  Xu, D., Chen, Y., Ivanovic, B., Pavone, M., IEEE
  IEEE.2023: 2929-2936
- **Planning with Occluded Traffic Agents using Bi-Level Variational Occlusion Models**
  Christianos, F., Karkus, P., Ivanovic, B., Albrecht, S., Pavone, M., IEEE
  IEEE.2023: 5558-5565
- **Guided Conditional Diffusion for Controllable Traffic Simulation**
  Zhong, Z., Rempe, D., Xu, D., Chen, Y., Veer, S., Che, T., Ray, B., Pavone, M., IEEE
  IEEE.2023: 3560-3566
- **Tree-structured Policy Planning with Learned Behavior Models**
  Chen, Y., Karkus, P., Ivanovic, B., Weng, X., Pavone, M., IEEE
  IEEE.2023: 7902-7908
- **Learning Responsibility Allocations for Safe Human-Robot Interaction with Applications to Autonomous Driving**
  Cosner, R. K., Chen, Y., Leung, K., Pavone, M., IEEE
  IEEE.2023: 9757-9763
- **Motion Planning for a Climbing Robot with Stochastic Grasps**
  Newdick, S., Ongole, N., Chen, T. G., Schmerling, E., Cutkosky, M. R., Pavone, M., IEEE
  IEEE.2023: 11838-11844
- **Learning Autonomous Vehicle Safety Concepts from Demonstrations**
  Leung, K., Veer, S., Schmerling, E., Pavone, M., IEEE
  IEEE.2023: 3193-3200
- **FreeNeRF: Improving Few-shot Neural Rendering with Free Frequency Regularization**
  Yang, J., Pavone, M., Wang, Y., IEEE
  IEEE COMPUTER SOC.2023: 8254-8263
- **Differentially Private Stochastic Convex Optimization for Network Routing Applications**
  Tsao, M., Gopalakrishnan, K., Yang, K., Pavone, M., IEEE
  IEEE.2023: 7475-7482
- **Exact Characterization of the Convex Hulls of Reachable Sets**
  Lew, T., Bonalli, R., Pavone, M., IEEE

IEEE.2023: 52-59

- **Credit-Based Congestion Pricing: Equilibrium Properties and Optimal Scheme Design**
  Jalota, D., Lazarus, J., Bayen, A., Pavone, M., IEEE
  IEEE.2023: 4124-4129
- **Robust Nonlinear Reduced-Order Model Predictive Control**
  Alora, J., Pabon, L. A., Kohler, J., Cenedese, M., Schmerlingl, E., Zeilinger, M. N., Haller, G., Pavone, M., IEEE
  IEEE.2023: 4798-4805
- **Closing the Loop on Runtime Monitors with Fallback-Safe MPC**
  Sinha, R., Schmerling, E., Pavone, M., IEEE
  IEEE.2023: 6533-6540
- **Receding Horizon Planning with Rule Hierarchies for Autonomous Vehicles**
  Veer, S., Leung, K., Cosner, R. K., Chen, Y., Karkus, P., Pavone, M., IEEE
  IEEE.2023: 1507-1513
- **BITS: Bi-level Imitation for Traffic Simulation**
  Xu, D., Chen, Y., Ivanovic, B., Pavone, M., IEEE
  IEEE.2023: 2929-2936
- **Planning with Occluded Traffic Agents using Bi-Level Variational Occlusion Models**
  Christianos, F., Karkus, P., Ivanovic, B., Albrecht, S., Pavone, M., IEEE
  IEEE.2023: 5558-5565
- **Guided Conditional Diffusion for Controllable Traffic Simulation**
  Zhong, Z., Rempe, D., Xu, D., Chen, Y., Veer, S., Che, T., Ray, B., Pavone, M., IEEE
  IEEE.2023: 3560-3566
- **Risk-Sensitive Safety Analysis Using Conditional Value-at-Risk** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*
  Chapman, M. P., Bonalli, R., Smith, K. M., Yang, I., Pavone, M., Tomlin, C. J.
  2022; 67 (12): 6521-6536
- **Linear Reduced-Order Model Predictive Control** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*
  Lorenzetti, J., McClellan, A., Farhat, C., Pavone, M.
  2022; 67 (11): 5980-5995
- **SEQUENTIAL CONVEX PROGRAMMING FOR NON-LINEAR STOCHASTIC OPTIMAL CONTROL** *ESAIM-CONTROL OPTIMISATION AND CALCULUS OF VARIATIONS*
  Bonalli, R., Lew, T., Pavone, M.
  2022; 28
- **Safe Reinforcement Learning Using Black-Box Reachability Analysis** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Selim, M., Alanwar, A., Kousik, S., Gao, G., Pavone, M., Johansson, K. H.
  2022; 7 (4): 10665-10672
- **< Convex Optimization for Trajectory Generation: A Tutorial on Generating Dynamically Feasible Trajectories Reliably and Efficiently** *IEEE CONTROL SYSTEMS MAGAZINE*
  Malyuta, D., Reynolds, T. P., Szmuk, M., Lew, T., Bonalli, R., Pavone, M., Acikmese, B.
  2022; 42 (5): 40-113
- **A physics-based digital twin for model predictive control of autonomous unmanned aerial vehicle landing.** *Philosophical transactions. Series A, Mathematical, physical, and engineering sciences*
  McClellan, A., Lorenzetti, J., Pavone, M., Farhat, C.
  2022; 380 (2229): 20210204
- **Routing and Rebalancing Intermodal Autonomous Mobility-on-Demand Systems in Mixed Traffic.** *IEEE transactions on intelligent transportation systems : a publication of the IEEE Intelligent Transportation Systems Council*
  Wollenstein-Betech, S., Salazar, M., Houshmand, A., Pavone, M., Paschalidis, I. C., Cassandras, C. G.
  2022; 23 (8): 12263-12275

- **Backpropagation through signal temporal logic specifications: Infusing logical structure into gradient-based methods** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Leung, K., Arechiga, N., Pavone, M.
  2022
- **Testing Gecko-Inspired Adhesives with Astrobee Aboard the International Space Station: Readying the Technology for Space** *IEEE ROBOTICS & AUTOMATION MAGAZINE*
  Chen, T. G., Cauligi, A., Suresh, S., Pavone, M., Cutkosky, M.
  2022
- **Safe Active Dynamics Learning and Control: A Sequential Exploration-Exploitation Framework** *IEEE TRANSACTIONS ON ROBOTICS*
  Lew, T., Sharma, A., Harrison, J., Bylard, A., Pavone, M.
  2022
- **Integration of Reinforcement Learning in a Virtual Robotic Surgical Simulation.** *Surgical innovation*
  Bourdillon, A. T., Garg, A., Wang, H., Woo, Y. J., Pavone, M., Boyd, J.
  2022: 15533506221095298
- **Online Hypergraph Matching with Delays** *OPERATIONS RESEARCH*
  Pavone, M., Saberi, A., Schiffer, M., Tsao, M.
  2022
- **CoCo: Online Mixed-Integer Control Via Supervised Learning** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Cauligi, A., Culbertson, P., Schmerling, E., Schwager, M., Stellato, B., Pavone, M.
  2022; 7 (2): 1447-1454
- **Tube-Certified Trajectory Tracking for Nonlinear Systems With Robust Control Contraction Metrics** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Zhao, P., Lakshmanan, A., Ackerman, K., Gahlawat, A., Pavone, M., Hovakimyan, N.
  2022; 7 (2): 5528-5535
- **Optimal Picking Policies in E-Commerce Warehouses** *MANAGEMENT SCIENCE*
  Schiffer, M., Boysen, N., Klein, P. S., Laporte, G., Pavone, M.
  2022
- **Trust but Verify: Cryptographic Data Privacy for Mobility Management** *IEEE TRANSACTIONS ON CONTROL OF NETWORK SYSTEMS*
  Tsao, M., Yang, K., Zoepf, S., Pavone, M.
  2022; 9 (1): 50-61
- **Analysis and Control of Autonomous Mobility-on-Demand Systems** *ANNUAL REVIEW OF CONTROL ROBOTICS AND AUTONOMOUS SYSTEMS*
  Zardini, G., Lanzetti, N., Pavone, M., Frazzoli, E.
  2022; 5: 633-658
- **Motron: Multimodal Probabilistic Human Motion Forecasting**
  Salzmann, T., Pavone, M., Ryll, M., IEEE COMP SOC
  IEEE COMPUTER SOC.2022: 6447-6456
- **Whose Track Is It Anyway? Improving Robustness to Tracking Errors with Affinity-based Trajectory Prediction**
  Weng, X., Ivanovic, B., Kitani, K., Pavone, M., IEEE COMP SOC
  IEEE COMPUTER SOC.2022: 6563-6572
- **AdvDO: Realistic Adversarial Attacks for Trajectory Prediction**
  Cao, Y., Xiao, C., Anandkumar, A., Xu, D., Pavone, M.
  edited by Avidan, S., Brostow, G., Cisse, M., Farinella, G. M., Hassner, T.
  SPRINGER INTERNATIONAL PUBLISHING AG.2022: 36-52
- **Heterogeneous-Agent Trajectory Forecasting Incorporating Class Uncertainty**
  Ivanovic, B., Lee, K., Tokmakov, P., Wulfe, B., McAllister, R., Gaidon, A., Pavone, M., IEEE
  IEEE.2022: 12196-12203

- **ScePT: Scene-consistent, Policy-based Trajectory Predictions for Planning**
  Chen, Y., Ivanovic, B., Pavone, M., IEEE COMP SOC
  IEEE COMPUTER SOC.2022: 17082-17091
- **Private Location Sharing for Decentralized Routing Services**
  Tsao, M., Yang, K., Gopalakrishnan, K., Pavone, M., IEEE
  IEEE.2022: 2479-2486
- **Propagating State Uncertainty Through Trajectory Forecasting**
  Ivanovic, B., Lin, Y., Shrivastava, S., Chakravarty, P., Pavone, M., IEEE
  IEEE.2022: 2351-2358
- **Using Spectral Submanifolds for Nonlinear Periodic Control**
  Mahlknecht, F., Alora, J., Jain, S., Schmerling, E., Bonalli, R., Haller, G., Pavone, M., IEEE
  IEEE.2022: 6548-6555
- **ReachBot: A Small Robot with Exceptional Reach for Rough Terrain**
  Chen, T. G., Miller, B., Winston, C., Schneider, S., Bylard, A., Pavone, M., Cutkosky, M. R., IEEE
  IEEE.2022: 4517-4523
- **Semi-Supervised Trajectory-Feedback Controller Synthesis for Signal Temporal Logic Specifications**
  Leung, K., Pavone, M., IEEE
  IEEE.2022: 178-185
- **Adaptive Robust Model Predictive Control with Matched and Unmatched Uncertainty**
  Sinha, R., Harrison, J., Richards, S. M., Pavone, M., IEEE
  IEEE.2022: 906-913
- **Injecting Planning-Awareness into Prediction and Detection Evaluation**
  Ivanovic, B., Pavone, M., IEEE
  IEEE.2022: 821-828
- **MTP: Multi-hypothesis Tracking and Prediction for Reduced Error Propagation**
  Weng, X., Ivanovic, B., Pavone, M., IEEE
  IEEE.2022: 1218-1225
- **A Unified View of SDP-based Neural Network Verification through Completely Positive Programming**
  Brown, R., Schmerling, E., Azizan, N., Pavone, M.
  edited by Camps-Valls, G., Ruiz, F. J., Valera
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2022
- **Second-Order Sensitivity Analysis for Bilevel Optimization**
  Dyro, R., Schmerling, E., Arechiga, N., Pavone, M.
  edited by Camps-Valls, G., Ruiz, F. J., Valera
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2022
- **Bilevel Optimization for Planning Through Contact: A Semidirect Method**
  Landry, B., Lorenzetti, J., Manchester, Z., Pavone, M.
  edited by Asfour, T., Yoshida, E., Park, J., Christensen, H., Khatib, O.
  SPRINGER INTERNATIONAL PUBLISHING AG.2022: 789-804
- **Control Barrier Functions for Cyber-Physical Systems and Applications to NMPC** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Schilliger, J., Lew, T., Richards, S. M., Hanggi, S., Pavone, M., Onder, C.
  2021; 6 (4): 8623-8630
- **Routing and Rebalancing Intermodal Autonomous Mobility-on-Demand Systems in Mixed Traffic** *IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS*
  Wollenstein-Betech, S., Salazar, M., Houshmand, A., Pavone, M., Paschalidis, I., Cassandras, C. G.
  2021

- **Network offloading policies for cloud robotics: a learning-based approach** *AUTONOMOUS ROBOTS*
  Chinchali, S., Sharma, A., Harrison, J., Elhafsi, A., Kang, D., Pergament, E., Cidon, E., Katti, S., Pavone, M.
  2021
- **On Local Computation for Network-Structured Convex Optimization in Multiagent Systems** *IEEE TRANSACTIONS ON CONTROL OF NETWORK SYSTEMS*
  Brown, R., Rossi, F., Solovey, K., Tsao, M., Wolf, M. T., Pavone, M.
  2021; 8 (2): 542-554
- **Multimodal Deep Generative Models for Trajectory Prediction: A Conditional Variational Autoencoder Approach** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Ivanovic, B., Leung, K., Schmerling, E., Pavone, M.
  2021; 6 (2): 295–302
- **Graph Neural Network Reinforcement Learning for Autonomous Mobility-on-Demand Systems**
  Gammelli, D., Yang, K., Harrison, J., Rodrigues, F., Pereira, F. C., Pavone, M., IEEE
  IEEE.2021: 2996-3003
- **Real-Time Control of Mixed Fleets in Mobility-on-Demand Systems**
  Yang, K., Tsao, M. W., Xu, X., Pavone, M., IEEE
  IEEE.2021: 3570-3577
- **Joint Optimization of Autonomous Electric Vehicle Fleet Operations and Charging Station Siting** *2021 IEEE International Intelligent Transportation Systems Conference (ITSC)*
  Luke, J., Salazar, M., Rajagopal, R., Pavone, M.
  2021: 3340-3347
- **Particle MPC for Uncertain and Learning-Based Control**
  Dyro, R., Harrison, J., Sharma, A., Pavone, M., IEEE
  IEEE.2021: 7127-7134
- **Efficient Large-Scale Multi-Drone Delivery using Transit Networks** *JOURNAL OF ARTIFICIAL INTELLIGENCE RESEARCH*
  Choudhury, S., Solovey, K., Kochenderfer, M. J., Pavone, M.
  2021; 70: 757-788
- **Composable Geometric Motion Policies using Multi-Task Pullback Bundle Dynamical Systems**
  Bylard, A., Bonalli, R., Pavone, M., IEEE
  IEEE.2021: 7464-7470
- **Leveraging Neural Network Gradients within Trajectory Optimization for Proactive Human-Robot Interactions**
  Schaefer, S., Leung, K., Ivanovic, B., Pavone, M., IEEE
  IEEE.2021: 9673-9679
- **Near-Optimal Multi-Robot Motion Planning with Finite Sampling**
  Dayan, D., Solovey, K., Pavone, M., Halperin, D., IEEE
  IEEE.2021: 9190-9196
- **Soft Robot Optimal Control Via Reduced Order Finite Element Models**
  Tonkens, S., Lorenzett, J., Pavone, M., IEEE
  IEEE.2021: 12010-12016
- **Fast Near-Optimal Heterogeneous Task Allocation via Flow Decomposition**
  Solovey, K., Bandyopadhyay, S., Rossi, F., Wolf, M. T., Pavone, M., IEEE
  IEEE.2021: 9117-9123
- **Adaptive-Control-Oriented Meta-Learning for Nonlinear Systems**
  Richards, S. M., Azizan, N., Slotine, J., Pavone, M.
  edited by Shell, D. A., Toussaint, M., Hsieh, M. A.
  RSS FOUNDATION-ROBOTICS SCIENCE & SYSTEMS FOUNDATION.2021

- **Lyapunov-stable neural-network control**
  Dai, H., Landry, B., Yang, L., Pavone, M., Tedrake, R.
  edited by Shell, D. A., Toussaint, M., Hsieh, M. A.
  RSS FOUNDATION-ROBOTICS SCIENCE & SYSTEMS FOUNDATION.2021

- **Co-Design of Communication and Machine Inference for Cloud Robotics**
  Nakanoya, M., Chinchali, S., Anemogiannis, A., Datta, A., Katti, S., Pavone, M.
  edited by Shell, D. A., Toussaint, M., Hsieh, M. A.
  RSS FOUNDATION-ROBOTICS SCIENCE & SYSTEMS FOUNDATION.2021

- **On the Interaction between Autonomous Mobility on Demand Systems and Power Distribution Networks --- An Optimal Power Flow Approach** *IEEE Transactions on Control of Network Systems*
  Estandia, A., Schiffer, M., Rossi, F., Luke, J., Kara, E. C., Rajagopal, R., Pavone, M.
  2021

- **Soft Tensegrity Systems for Planetary Landing and Exploration**
  Garanger, K., Krajewski, M., del Valle, I., Raheja, U., Rimoli, J. J., Rath, M., Pavone, M.
  edited by Vansusante, P. J., Roberts, A. D.
  AMER SOC CIVIL ENGINEERS.2021: 841-854

- **Vision-based Autonomous Disinfection of High-touch Surfaces in Indoor Environments**
  Roelofs, S., Landry, B., Jalil, M., Martin, A., Koppaka, S., Tang, S. K. Y., Pavone, M., IEEE
  IEEE.2021: 263-270

- **Intermodal Autonomous Mobility-on-Demand** *IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS*
  Salazar, M., Lanzetti, N., Rossi, F., Schiffer, M., Pavone, M.
  2020; 21 (9): 3946–60

- **Learning stabilizable nonlinear dynamics with contraction-based regularization** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Singh, S., Richards, S. M., Sindhwani, V., Slotine, J. E., Pavone, M.
  2020

- **On infusing reachability-based safety assurance within planning frameworks for human-robot vehicle interactions** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Leung, K., Schmerling, E., Zhang, M., Chen, M., Talbot, J., Gerdes, J., Pavone, M.
  2020

- **Collision-Inclusive Trajectory Optimization for Free-Flying Spacecraft** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Mote, M., Egerstedt, M., Feron, E., Bylard, A., Pavone, M.
  2020; 43 (7): 1247–58

- **On the Interaction Between Autonomous Mobility-on-Demand Systems and the Power Network: Models and Coordination Algorithms** *IEEE TRANSACTIONS ON CONTROL OF NETWORK SYSTEMS*
  Rossi, F., Iglesias, R., Alizadeh, M., Pavone, M.
  2020; 7 (1): 384–97

- **A Vehicle Coordination and Charge Scheduling Algorithm for Electric Autonomous Mobility-on-Demand Systems**
  Boewing, F., Schiffer, M., Salazar, M., Pavone, M., IEEE
  IEEE.2020: 248–55

- **On Infusing Reachability-Based Safety Assurance Within Probabilistic Planning Frameworks for Human-Robot Vehicle Interactions**
  Leung, K., Schmerling, E., Chen, M., Talbot, J., Gerdes, J., Pavone, M.
  edited by Xiao, J., Kroger, T., Khatib, O.
  SPRINGER INTERNATIONAL PUBLISHING AG.2020: 561-574

- **Efficient Large-Scale Multi-Drone Delivery Using Transit Networks**
  Choudhury, S., Solovey, K., Kochenderfer, M. J., Pavone, M., IEEE
  IEEE.2020: 4543-4550

- **Sample Complexity of Probabilistic Roadmaps via c -nets**

Tsao, M., Solovey, K., Pavone, M., IEEE
IEEE.2020: 2196-2202

- **Map-Predictive Motion Planning in Unknown Environments**
  Elhafsi, A., Ivanovic, B., Janson, L., Pavone, M., IEEE
  IEEE.2020: 8552-8558
- **Shapeshifter: A Multi-Agent, Multi-Modal Robotic Platform for Exploration of Titan**
  Tagliabue, A., Schneider, S., Pavone, M., Agha-mohammadi, A., IEEE
  IEEE.2020
- **Learning-based Warm-Starting for Fast Sequential Convex Programming and Trajectory Optimization**
  Banerjee, S., Lew, T., Bonalli, R., Alfaadhel, A., Alomar, I., Shageer, H. M., Pavone, M., IEEE
  IEEE.2020
- **Revisiting the Asymptotic Optimality of RRT**
  Solovey, K., Janson, L., Schmerling, E., Frazzoli, E., Pavone, M., IEEE
  IEEE.2020: 2189-2195
- **Counter-example guided synthesis of neural network Lyapunov functions for piecewise linear systems**
  Dai, H., Landry, B., Pavone, M., Tedrake, R., IEEE
  IEEE.2020: 1274-1281
- **Learning Mixed-Integer Convex Optimization Strategies for Robot Planning and Control**
  Cauligi, A., Culbertson, P., Stellato, B., Bertsimas, D., Mac Schwager, Pavone, M., IEEE
  IEEE.2020: 1698-1705
- **Error Bounds for Reduced Order Model Predictive Control**
  Lorenzetti, J., Pavone, M., IEEE
  IEEE.2020: 2521-2528
- **Risk-Sensitive Sequential Action Control with Multi-Modal Human Trajectory Forecasting for Safe Crowd-Robot Interaction**
  Nishimura, H., Ivanovic, B., Gaidon, A., Pavone, M., Schwager, M., IEEE
  IEEE.2020: 11205-11212
- **On the Co-Design of AV-Enabled Mobility Systems**
  Zardini, G., Lanzetti, N., Salazar, M., Censi, A., Frazzoli, E., Pavone, M., IEEE
  IEEE.2020
- **Congestion-aware Routing and Rebalancing of Autonomous Mobility-on-Demand Systems in Mixed Traffic**
  Wollenstein-Betech, S., Houshmand, A., Salazar, M., Pavone, M., Cassandras, C. G., Paschalidis, I., IEEE
  IEEE.2020
- **Interpretable Policies from Formally-Specified Temporal Properties**
  DeCastro, J., Leung, K., Arechiga, N., Pavone, M., IEEE
  IEEE.2020
- **Infusing Reachability-Based Safety into Planning and Control for Multi-agent Interactions**
  Wang, X., Leung, K., Pavone, M., IEEE
  IEEE.2020: 6252-6259
- **Stochastic Motion Planning for Hopping Rovers on Small Solar System Bodies**
  Hockman, B., Pavone, M.
  edited by Amato, N. M., Hager, G., Thomas, S., TorresTorriti, M.
  SPRINGER INTERNATIONAL PUBLISHING AG.2020: 877–93
- **How Should a Robot Assess Risk? Towards an Axiomatic Theory of Risk in Robotics**
  Majumdar, A., Pavone, M.
  edited by Amato, N. M., Hager, G., Thomas, S., TorresTorriti, M.
  SPRINGER INTERNATIONAL PUBLISHING AG.2020: 75–84

- **Multi-objective Optimal Control for Proactive Decision Making with Temporal Logic Models**
  Chinchali, S. P., Livingston, S. C., Pavone, M.
  edited by Amato, N. M., Hager, G., Thomas, S., TorresTorriti, M.
  SPRINGER INTERNATIONAL PUBLISHING AG.2020: 127–44

- **Perception-Aware Motion Planning via Multiobjective Search on GPUs**
  Ichter, B., Landry, B., Schmerling, E., Pavone, M.
  edited by Amato, N. M., Hager, G., Thomas, S., TorresTorriti, M.
  SPRINGER INTERNATIONAL PUBLISHING AG.2020: 895–912

- **ADAPT: Zero-Shot Adaptive Policy Transfer for Stochastic Dynamical Systems**
  Harrison, J., Garg, A., Ivanovic, B., Zhu, Y., Savarese, S., Li Fei-Fei, Pavone, M.
  edited by Amato, N. M., Hager, G., Thomas, S., TorresTorriti, M.
  SPRINGER INTERNATIONAL PUBLISHING AG.2020: 437–53

- **Joint Design and Control of Electric Vehicle Propulsion Systems**
  Verbruggen, F., Salazar, M., Pavone, M., Hofman, T., IEEE
  IEEE.2020: 1725–31

- **Chance-Constrained Sequential Convex Programming for Robust Trajectory Optimization**
  Lew, T., Bonalli, R., Pavone, M., IEEE
  IEEE.2020: 1871–78

- **A Simple and Efficient Tube-based Robust Output Feedback Model Predictive Control Scheme**
  Lorenzetti, J., Pavone, M., IEEE
  IEEE.2020: 1775–82

- **Exploiting Locality and Structure for Distributed Optimization in Multi-Agent Systems**
  Brown, R., Rossi, F., Solovey, K., Wolf, M. T., Pavone, M., IEEE
  IEEE.2020: 440–47

- **Multi-objective optimal control for proactive decision making with temporal logic models** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Chinchali, S. P., Livingston, S. C., Chen, M., Pavone, M.
  2019

- **A Framework for Time-Consistent, Risk-Sensitive Model Predictive Control: Theory and Algorithms** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*
  Singh, S., Chow, Y., Majumdar, A., Pavone, M.
  2019; 64 (7): 2905–12

- **Robot Motion Planning in Learned Latent Spaces** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Ichter, B., Pavone, M.
  2019; 4 (3): 2407–14

- **A real-time framework for kinodynamic planning in dynamic environments with application to quadrotor obstacle avoidance** *ROBOTICS AND AUTONOMOUS SYSTEMS*
  Allen, R. E., Pavone, M.
  2019; 115: 174–93

- **A BCMP network approach to modeling and controlling autonomous mobility-on-demand systems** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Iglesias, R., Rossi, F., Zhang, R., Pavone, M.
  2019; 38 (2-3): 357–74

- **Backpropagation for Parametric STL**
  Leung, K., Arechiga, N., Pavone, M., IEEE
  IEEE.2019: 185–92

- **A Risk-Sensitive Finite-Time Reachability Approach for Safety of Stochastic Dynamic Systems**

Chapman, M. P., Lacotte, J., Tamar, A., Lee, D., Smith, K. M., Cheng, V., Fisac, J. F., Jha, S., Pavone, M., Tomlin, C. J., IEEE
IEEE.2019: 2958-2963

- **Optimal Routing and Energy Management Strategies for Plug-in Hybrid Electric Vehicles**
  Salazar, M., Houshmand, A., Cassandras, C. G., Pavone, M., IEEE
  IEEE.2019: 733–39
- **A Model Predictive Control Scheme for Intermodal Autonomous Mobility-on-Demand**
  Zgraggen, J., Tsao, M., Salazar, M., Schiffer, M., Pavone, M., IEEE
  IEEE.2019: 1953–60
- **Perception-Constrained Robot Manipulator Planning for Satellite Servicing**
  Zahroof, T., Bylard, A., Shageer, H., Pavone, M., IEEE
  IEEE.2019
- **The Trajectron: Probabilistic Multi-Agent Trajectory Modeling With Dynamic Spatiotemporal Graphs**
  Ivanovic, B., Pavone, M., IEEE
  IEEE COMPUTER SOC.2019: 2375–84
- **Reduced Order Model Predictive Control For Setpoint Tracking**
  Lorenzetti, J., Landry, B., Singh, S., Pavone, M., IEEE
  IEEE.2019: 299–306
- **A Congestion-aware Routing Scheme for Autonomous Mobility-on-Demand Systems**
  Salazar, M., Tsao, M., Aguiar, I., Schiffer, M., Pavone, M., IEEE
  IEEE.2019: 3040–46
- **Risk-Sensitive Generative Adversarial Imitation Learning**
  Lacotte, J., Ghavamzadeh, M., Chow, Y., Pavone, M.
  edited by Chaudhuri, K., Sugiyama, M.
  MICROTOME PUBLISHING.2019
- **Trajectory Optimization on Manifolds: A Theoretically-Guaranteed Embedded Sequential Convex Programming Approach**
  Bonalli, R., Bylard, A., Cauligi, A., Lew, T., Pavone, M.
  edited by Bicchi, A., KressGazit, H., Hutchinson, S.
  MIT PRESS.2019
- **A Differentiable Augmented Lagrangian Method for Bilevel Nonlinear Optimization**
  Landry, B., Manchester, Z., Pavone, M.
  edited by Bicchi, A., KressGazit, H., Hutchinson, S.
  MIT PRESS.2019
- **Network Offloading Policies for Cloud Robotics: a Learning-based Approach**
  Chinchali, S., Sharma, A., Harrison, J., Elhafsi, A., Kang, D., Pergament, E., Cidon, E., Katti, S., Pavone, M.
  edited by Bicchi, A., KressGazit, H., Hutchinson, S.
  MIT PRESS.2019
- **High-Dimensional Optimization in Adaptive Random Subspaces**
  Lacotte, J., Pilanci, M., Pavone, M.
  edited by Wallach, H., Larochelle, H., Beygelzimer, A., d'Alche-Buc, F., Fox, E., Garnett, R.
  NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2019
- **BaRC: Backward Reachability Curriculum for Robotic Reinforcement Learning**
  Ivanovic, B., Harrison, J., Sharma, A., Chen, M., Pavone, M., IEEE
  edited by Howard, A., Althoefer, K., Arai, F., Arrichiello, F., Caputo, B., Castellanos, J., Hauser, K., Isler, Kim, J., Liu, H., Oh, P., Santos, Scaramuzza, D., Ude, A., Voyles, R., Yamane, K., Okamura, A.
  IEEE.2019: 15–21
- **Model Predictive Control of Ride-sharing Autonomous Mobility-on-Demand Systems**
  Tsao, M., Milojevic, D., Ruch, C., Salazar, M., Frazzoli, E., Pavone, M., IEEE

edited by Howard, A., Althoefer, K., Arai, F., Arrichiello, F., Caputo, B., Castellanos, J., Hauser, K., Isler, Kim, J., Liu, H., Oh, P., Santos, Scaramuzza, D., Ude, A., Voyles, R., Yamane, K., Okamura, A.
IEEE.2019: 6665–71

- **GuSTO: Guaranteed Sequential Trajectory Optimization via Sequential Convex Programming**
  Bonalli, R., Cauligi, A., Bylard, A., Pavone, M., IEEE
  edited by Howard, A., Althoefer, K., Arai, F., Arrichiello, F., Caputo, B., Castellanos, J., Hauser, K., Isler, Kim, J., Liu, H., Oh, P., Santos, Scaramuzza, D., Ude, A., Voyles, R., Yamane, K., Okamura, A.
  IEEE.2019: 6741–47
- **Beyond The Force: Using Quadcopters to Appropriate Objects and the Environment for Haptics in Virtual Reality**
  Abtahi, P., Landry, B., Yang, J., Pavone, M., Follmer, S., Landay, J. A., Assoc Comp Machinery
  ASSOC COMPUTING MACHINERY.2019
- **Risk-sensitive inverse reinforcement learning via semi- and non-parametric methods** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Singh, S., Lacotte, J., Majumdar, A., Pavone, M.
  2018; 37 (13-14): 1713–40
- **Routing autonomous vehicles in congested transportation networks: structural properties and coordination algorithms**
  Rossi, F., Zhang, R., Hindy, Y., Pavone, M.
  SPRINGER.2018: 1427–42
- **The Team Surviving Orienteers problem: routing teams of robots in uncertain environments with survival constraints** *AUTONOMOUS ROBOTS*
  Jorgensen, S., Chen, R. H., Milam, M. B., Pavone, M.
  2018; 42 (4): 927–52
- **Deterministic sampling-based motion planning: Optimality, complexity, and performance** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Janson, L., Ichter, B., Pavone, M.
  2018; 37 (1): 46–61
- **On the interaction between Autonomous Mobility-on-Demand systems and the power network: models and coordination algorithms**
  Rossi, F., Iglesias, R., Alizadeh, M., Pavone, M.
  edited by KressGazit, H., Srinivasa, S., Howard, T., Atanasov, N.
  MIT PRESS.2018
- **Safe Motion Planning in Unknown Environments: Optimality Benchmarks and Tractable Policies**
  Janson, L., Hu, T., Pavone, M.
  edited by KressGazit, H., Srinivasa, S., Howard, T., Atanasov, N.
  MIT PRESS.2018
- **Cellular Network Traffic Scheduling with Deep Reinforcement Learning**
  Chinchali, S., Hu, P., Chu, T., Sharma, M., Bansal, M., Misra, R., Pavone, M., Katti, S., AAAI
  ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2018: 766–74
- **Reach-Avoid Games Via Mixed-Integer Second-Order Cone Programming**
  Lorenzetti, J., Chen, M., Landry, B., Pavone, M., IEEE
  IEEE.2018: 4409–16
- **Stochastic Model Predictive Control for Autonomous Mobility on Demand**
  Tsao, M., Iglesias, R., Pavone, M., IEEE
  IEEE.2018: 3941–48
- **Cooperative Object Transport in 3D with Multiple Quadrotors using No Peer Communication**
  Wang, Z., Singh, S., Pavone, M., Schwager, M., IEEE
  IEEE COMPUTER SOC.2018: 1064–71
- **Learning Sampling Distributions for Robot Motion Planning**
  Ichter, B., Harrison, J., Pavone, M., IEEE

IEEE COMPUTER SOC.2018: 7087–94

- **Multimodal Probabilistic Model-Based Planning for Human-Robot Interaction**
  Schmerling, E., Leung, K., Vollprecht, W., Pavone, M., IEEE
  IEEE COMPUTER SOC.2018: 3399–3406

- **Data-Driven Model Predictive Control of Autonomous Mobility-on-Demand Systems**
  Iglesias, R., Rossi, F., Wang, K., Hallac, D., Leskovec, J., Pavone, M., IEEE
  IEEE COMPUTER SOC.2018: 6019–25

- **Reach-Avoid Problems via Sum-of-Squares Optimization and Dynamic Programming**
  Landry, B., Chen, M., Hemley, S., Pavone, M., Kosecka, J.
  edited by Maciejewski, A. A., Okamura, A., Bicchi, A., Stachniss, C., Song, D. Z., Lee, D. H., Chaumette, F., Ding, H., Li, J. S., Wen, J., Roberts, J., Masamune, K., Chong, N. Y., Amato, N., Tsagwarakis, N., Rocco, P., Asfour, T., Chung, W. K., Yasuyoshi, Y., Sun, Y., Maciekeski, T., Althoefer, K., AndradeCetto, J., Chung, W. K., Demircan, E., Dias, J., Fraisse, P., Gross, R., Harada, H., Hasegawa, Y., Hayashibe, M., Kiguchi, K., Kim, K., Kroeger, T., Li, Y., Ma, S., Mochiyama, H., Monje, C. A., Rekleitis, Roberts, R., Stulp, F., Tsai, C. H., Zollo, L.
  IEEE.2018: 4325–32

- **Generative Modeling of Multimodal Multi-Human Behavior**
  Ivanovic, B., Schmerling, E., Leung, K., Pavone, M., Kosecka, J.
  edited by Maciejewski, A. A., Okamura, A., Bicchi, A., Stachniss, C., Song, D. Z., Lee, D. H., Chaumette, F., Ding, H., Li, J. S., Wen, J., Roberts, J., Masamune, K., Chong, N. Y., Amato, N., Tsagwarakis, N., Rocco, P., Asfour, T., Chung, W. K., Yasuyoshi, Y., Sun, Y., Maciekeski, T., Althoefer, K., AndradeCetto, J., Chung, W. K., Demircan, E., Dias, J., Fraisse, P., Gross, R., Harada, H., Hasegawa, Y., Hayashibe, M., Kiguchi, K., Kim, K., Kroeger, T., Li, Y., Ma, S., Mochiyama, H., Monje, C. A., Rekleitis, Roberts, R., Stulp, F., Tsai, C. H., Zollo, L.
  IEEE.2018: 3088–95

- **Gravimetric Localization on the Surface of Small Bodies**
  Hockman, B., Reid, R. G., Nesnas, I. D., Pavone, M., IEEE
  IEEE.2018

- **Deterministic Sampling-Based Motion Planning: Optimality, Complexity, and Performance**
  Janson, L., Ichter, B., Pavone, M.
  edited by Bicchi, A., Burgard, W.
  SPRINGER INTERNATIONAL PUBLISHING AG.2018: 507–25

- **Monte Carlo Motion Planning for Robot Trajectory Optimization Under Uncertainty**
  Janson, L., Schmerling, E., Pavone, M.
  edited by Bicchi, A., Burgard, W.
  SPRINGER INTERNATIONAL PUBLISHING AG.2018: 343–61

- **Risk-Constrained Reinforcement Learning with Percentile Risk Criteria** *JOURNAL OF MACHINE LEARNING RESEARCH*
  Chow, Y., Ghavamzadeh, M., Janson, L., Pavone, M.
  2018; 18

- **Fast, Safe, Propellant-Efficient Spacecraft Motion Planning Under Clohessy-Wiltshire-Hill Dynamics** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Starek, J. A., Schmerling, E., Maher, G. D., Barbee, B. W., Pavone, M.
  2017; 40 (2): 418-438

- **Design, Control, and Experimentation of Internally-Actuated Rovers for the Exploration of Low-gravity Planetary Bodies** *JOURNAL OF FIELD ROBOTICS*
  Hockman, B. J., Frick, A., Reid, R. G., Nesnas, I. A., Pavone, M.
  2017; 34 (1): 5-24

- **Group Marching Tree: Sampling-Based Approximately Optimal Motion Planning on GPUs**
  Ichter, B., Schmerling, E., Pavone, M., IEEE
  IEEE.2017: 219-226

- **Robust Capture and Deorbit of Rocket Body Debris Using Controllable Dry Adhesion**
  Bylard, A., MacPherson, R., Hockman, B., Cutkosky, M. R., Pavone, M., IEEE
  IEEE.2017

- **Evaluating Trajectory Collision Probability through Adaptive Importance Sampling for Safe Motion Planning**
  Schmerling, E., Pavone, M.
  edited by Amato, N., Srinivasa, S., Ayanian, N., Kuindersma, S.
  MIT PRESS.2017
- **Risk-sensitive Inverse Reinforcement Learning via Coherent Risk Models**
  Majumdar, A., Singh, S., Mandlekar, A., Pavone, M.
  edited by Amato, N., Srinivasa, S., Ayanian, N., Kuindersma, S.
  MIT PRESS.2017
- **Low Cost, High Endurance, Altitude-Controlled Latex Balloon for Near-Space Research (ValBal)**
  Sushko, A., Tedjarati, A., Creus-Costa, J., Maldonado, S., Marshland, K., Pavone, M., IEEE
  IEEE.2017
- **Experimental Methods for Mobility and Surface Operations of Microgravity Robots**
  Hockman, B., Reid, R. G., Nesnas, I. A. D., Pavone, M.
  edited by Kulic, D., Nakamura, Y., Khatib, O., Venture, G.
  SPRINGER INTERNATIONAL PUBLISHING AG.2017: 752–63
- **Extreme Engineering: Extreme Autonomy in Space and Air, on Land, and Under Water**
  Jackson, D., Pavone, M., Natl Acad Engn
  NATL ACADEMIES PRESS.2017: 31–32
- **The Matroid Team Surviving Orienteers Problem: Constrained Routing of Heterogeneous Teams with Risky Traversal**
  Jorgensen, S., Chen, R. H., Milam, M. B., Pavone, M.
  edited by Bicchi, A., Okamura, A.
  IEEE.2017: 5622–29
- **The Risk-Sensitive Coverage Problem: Multi-Robot Routing Under Uncertainty with Service Level and Survival Constraints**
  Jorgensen, S., Chen, R. H., Milam, M. B., Pavone, M., IEEE
  IEEE.2017
- **The Risk-Sensitive Coverage Problem: Multi-Robot Routing Under Uncertainty with Service Level and Survival Constraints**
  Jorgensen, S., Chen, R. H., Milam, M. B., Pavone, M., IEEE
  IEEE.2017
- **Flying Smartphones: When Portable Computing Sprouts Wings** *IEEE PERVASIVE COMPUTING*
  Allen, R., Pavone, M., Schwager, M.
  2016; 15 (3): 83-88
- **Control of robotic mobility-on-demand systems: A queueing-theoretical perspective** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Zhang, R., Pavone, M.
  2016; 35 (1-3): 186-203
- **Free-Flyer Acquisition of Spinning Objects with Gecko-Inspired Adhesives**
  Estrada, M. A., Hockman, B., Bylard, A., Hawkes, E. W., Cutkosky, M. R., Pavone, M.
  edited by Okamura, A., Menciassi, A., Ude, A., Burschka, D., Lee, D., Arrichiello, F., Liu, H., Moon, H., Neira, J., Sycara, K., Yokoi, K., Martinet, P., Oh, P., Valdastri, P., Krovi
  IEEE.2016: 4907-4913
- **Model Predictive Control of Autonomous Mobility-on-Demand Systems**
  Zhang, R., Rossi, F., Pavone, M.
  edited by Okamura, A., Menciassi, A., Ude, A., Burschka, D., Lee, D., Arrichiello, F., Liu, H., Moon, H., Neira, J., Sycara, K., Yokoi, K., Martinet, P., Oh, P., Valdastri, P., Krovi
  IEEE.2016: 1382-1389
- **Simultaneous Model Identification and Task Satisfaction in the Presence of Temporal Logic Constraints**
  Chinchali, S. P., Livingston, S. C., Pavone, M., Burdick, J. W.

edited by Okamura, A., Menciassi, A., Ude, A., Burschka, D., Lee, D., Arrichiello, F., Liu, H., Moon, H., Neira, J., Sycara, K., Yokoi, K., Martinet, P., Oh, P., Valdastri, P., Krovi
IEEE.2016: 3682-3689

- **Risk Aversion in Finite Markov Decision Processes Using Total Cost Criteria and Average Value at Risk**
  Carpin, S., Chow, Y., Pavone, M.
  edited by Okamura, A., Menciassi, A., Ude, A., Burschka, D., Lee, D., Arrichiello, F., Liu, H., Moon, H., Neira, J., Sycara, K., Yokoi, K., Martinet, P., Oh, P., Valdastri, P., Krovi
  IEEE.2016: 335-342

- **Spacecraft Autonomy Challenges for Next-Generation Space Missions**
  Starek, J. A., Acikmese, B., Nesnas, I. A., Pavone, M.
  edited by Feron, E.
  SPRINGER-VERLAG BERLIN.2016: 1-48

- **Fast Marching Trees: A Fast Marching Sampling-Based Method for Optimal Motion Planning in Many Dimensions**
  Janson, L., Pavone, M.
  edited by Inaba, M., Corke, P.
  SPRINGER-VERLAG BERLIN.2016: 667-684

- **Real-Time, Propellant-Optimized Spacecraft Motion Planning under Clohessy-Wiltshire-Hill Dynamics**
  Starek, J. A., Schmerling, E., Maher, G. D., Barbee, B. W., Pavone, M., IEEE
  IEEE.2016

- **Routing Autonomous Vehicles in Congested Transportation Networks: Structural Properties and Coordination Algorithms**
  Zhang, R., Rossi, F., Pavone, M.
  edited by Hsu, D., Amato, N., Berman, S., Jacobs, S.
  MIT PRESS.2016

- **Autonomous Calibration of MEMS Disk Resonating Gyroscope for Improved Sensor Performance**
  Flader, I. B., Ahn, C. H., Gerrard, D. D., Ng, E. J., Yang, Y., Hong, V. A., Pavone, M., Kenny, T. W., IEEE
  IEEE.2016: 5803–10

- **Chance-constrained dynamic programming with application to risk-aware robotic space exploration** *AUTONOMOUS ROBOTS*
  Ono, M., Pavone, M., Kuwata, Y., Balaram, J.
  2015; 39 (4): 555-571

- **Guest Editorial: Special issue on constrained decision-making in robotics** *AUTONOMOUS ROBOTS*
  Pavone, M., Carpin, S.
  2015; 39 (4): 465-467

- **Optimal Sampling-Based Motion Planning under Differential Constraints: the Drift Case with Linear Affine Dynamics.** *Proceedings of the ... IEEE Conference on Decision & Control. IEEE Conference on Decision & Control*
  Schmerling, E., Janson, L., Pavone, M.
  2015; 2015: 2574-2581

- **Fast marching tree: A fast marching sampling-based method for optimal motion planning in many dimensions** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Janson, L., Schmerling, E., Clark, A., Pavone, M.
  2015; 34 (7): 883-921

- **Fast Marching Tree: a Fast Marching Sampling-Based Method for Optimal Motion Planning in Many Dimensions.** *The International journal of robotics research*
  Janson, L., Schmerling, E., Clark, A., Pavone, M.
  2015; 34 (7): 883-921

- **Trading Safety Versus Performance: Rapid Deployment of Robotic Swarms With Robust Performance Constraints** *JOURNAL OF DYNAMIC SYSTEMS MEASUREMENT AND CONTROL-TRANSACTIONS OF THE ASME*
  Chow, Y., Pavone, M., Sadler, B. M., Carpin, S.
  2015; 137 (3)

- **Optimal Sampling-Based Motion Planning under Differential Constraints: the Driftless Case.** *IEEE International Conference on Robotics and Automation : ICRA : [proceedings]. IEEE International Conference on Robotics and Automation*
  Schmerling, E. n., Janson, L. n., Pavone, M. n.
  2015; 2015: 2368–75
- **Toward a Real-Time Framework for Solving the Kinodynamic Motion Planning Problem**
  Allen, R., Pavone, M., IEEE
  IEEE COMPUTER SOC.2015: 928-934
- **Decentralized Algorithms for 3D Symmetric Formations in Robotic Networks - a Contraction Theory Approach**
  Singh, S., Schmerling, E., Pavone, M., IEEE
  IEEE COMPUTER SOC.2015: 1274-1281
- **A Queueing Network Approach to the Analysis and Control of Mobility-On-Demand Systems**
  Zhang, R., Pavone, M., IEEE
  IEEE.2015: 4702-4709
- **Models, Algorithms, and Evaluation for Autonomous Mobility-On-Demand Systems**
  Zhang, R., Spieser, K., Frazzoli, E., Pavone, M., IEEE
  IEEE.2015: 2573-2587
- **A SAMPLING-BASED APPROACH TO SPACECRAFT AUTONOMOUS MANEUVERING WITH SAFETY SPECIFICATIONS**
  Starek, J. A., Barbee, B., Pavone, M.
  edited by Gravseth, I. J.
  UNIVELT INC.2015: 725-737
- **A Convex Optimization Approach to Smooth Trajectories for Motion Planning with Car-Like Robots**
  Zhu, Z., Schmerling, E., Pavone, M., IEEE
  IEEE.2015: 835-842
- **Risk-Sensitive and Robust Decision-Making: a CVaR Optimization Approach**
  Chow, Y., Tamar, A., Mannor, S., Pavone, M.
  edited by Cortes, C., Lawrence, N. D., Lee, D. D., Sugiyama, M., Garnett, R.
  NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2015
- **A Unifying Framework for Time-Consistent, Risk-Averse Model Predictive Control: Theory and Algorithms**
  Chow, Y., L., Pavone, M.
  2014
- **A Dynamical Characterization of Internally-Actuated Microgravity Mobility Systems**
  Koenig, A. W., Pavone, M., Castillo-Rogez, J. C., Nesnas, I. A. D., IEEE
  IEEE.2014: 6618-6624
- **Rapid Multirobot Deployment with Time Constraints**
  Carpin, S., Pavone, M., Sadler, B. M., IEEE
  IEEE.2014: 1147-1154
- **Distributed consensus with mixed time/communication bandwidth performance metrics**
  Rossi, F., Pavone, M., IEEE
  IEEE.2014: 286-293
- **On the Fundamental Limitations of Performance for Distributed Decision-Making in Robotic Networks**
  Rossi, F., Pavone, M., IEEE
  IEEE.2014: 2433-2440
- **A Machine Learning Approach for Real-Time Reachability Analysis** *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*
  Allen, R. E., Clark, A. A., Starek, J. A., Pavone, M.
  IEEE.2014: 2202–2208

- **A Framework for Time-Consistent, Risk-Averse Model Predictive Control: Theory and Algorithms** *American Control Conference*
  Chow, Y., Pavone, M.
  IEEE.2014: 4204–4211
- **Toward a Systematic Approach to the Design and Evaluation of Automated Mobility-on-Demand Systems: A Case Study in Singapore** *2nd Annual Workshop on Road Vehicle Automation*
  Spieser, K., Treleaven, K., Zhang, R., Frazzoli, E., Morton, D., Pavone, M.
  SPRINGER INT PUBLISHING AG.2014: 229–245
- **Asymptotically Optimal Algorithms for One-to-One Pickup and Delivery Problems With Applications to Transportation Systems** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*
  Treleaven, K., Pavone, M., Frazzoli, E.
  2013; 58 (9): 2261-2276
- **Spacecraft/Rover Hybrids for the Exploration of Small Solar System Bodies** *IEEE Aerospace Conference*
  Pavone, M., Castillo-Rogez, J. C., Nesnas, I. A., Hoffman, J. A., Strange, N. J.
  IEEE.2013
- **A Uniform-Grid Discretization Algorithm for Stochastic Optimal Control with Risk Constraints**
  Chow, Y., Pavone, M., IEEE
  IEEE.2013: 2470-2475
- **Decentralized decision-making on robotic networks with hybrid performance metrics** *51st Annual Allerton Conference on Communication, Control, and Computing*
  Rossi, F., Pavone, M.
  IEEE.2013: 358–365
- **Internally-Actuated Rovers for All-Access Surface Mobility: Theory and Experimentation** *IEEE International Conference on Robotics and Automation (ICRA)*
  Allen, R., Pavone, M., McQuin, C., Nesnas, I. A., Castillo-Rogez, J. C., Tam-Nguyen Nguyen, T. N., Hoffman, J. A.
  IEEE.2013: 5481–5488
- **Internally-Actuated Rovers for All-Access Surface Mobility: Theory and Experimentation**
  Allen, R., Pavone, M., McQuin, C., Nesnas, I., Castillo, J., Nguyen, T., N.
  2013
- **Guidance, Navigation, and Control Technology Assessment for Future Planetary Science Missions.** *Technical Report for Planetary Science Division, Science Mission Directorate, NASA*
  Quadrelli, M., McHenry, M., Wilcox, B., Hall, J., Volpe, R., Nesnas, I., Pavone, M.
  2013
- **Decentralized decision-making on robotic networks with hybrid performance metrics**
  Rossi, F., Pavone, M.
  2013
- **A Uniform-grid Discretization Algorithm for Stochastic Optimal Control with Risk Constraints**
  Chow, Y., L., Pavone, M.
  2013
- **Asymptotically Optimal Algorithms for Pickup and Delivery Problems with Application to Large-Scale Transportation Systems** *IEEE Transactions on Automatic Control*
  Treleaven, K., Pavone, M., Frazzoli, E.
  2013
- **Rebalancing the Rebalancers: Optimally Routing Vehicles and Drivers in Mobility-on-Demand Systems**
  Smith, S., L., Pavone, M., Schwager, M., Frazzol, E., Rus, D.
  2013
- **Stochastic Optimal Control With Dynamic, Time-Consistent Risk Constraints**
  Chow, Y., L., Pavone, M.

2013

- **Stochastic Optimal Control With Dynamic, Time-Consistent Risk Constraints** *American Control Conference (ACC)*
  Chow, Y., Pavone, M.
  IEEE.2013: 390–395
- **Rebalancing the Rebalancers: Optimally Routing Vehicles and Drivers in Mobility-on-Demand Systems** *American Control Conference (ACC)*
  Smith, S. L., Pavone, M., Schwager, M., Frazzoli, E., Rus, D.
  IEEE.2013: 2362–2367
- **Robotic load balancing for mobility-on-demand systems** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Pavone, M., Smith, S. L., Frazzoli, E., Rus, D.
  2012; 31 (7): 839-854
- **Cost Bounds for Pickup and Delivery Problems with Application to Large-Scale Transportation Systems** *American Control Conference (ACC)*
  Treleaven, K., Pavone, M., Frazzoli, E.
  IEEE COMPUTER SOC.2012: 2120–2127
- **Models and Asymptotically Optimal Algorithms for Pickup and Delivery Problems on Roadmaps**
  Treleaven, K., Pavone, M., Frazzoli, E.
  2012
- **Observational Strategies for the Exploration of Small Solar System Bodies**
  Castillo, M., Pavone, M., Nesnas, I., Hoffman, J.
  2012
- **A Risk-Constrained Multi-Stage Decision Making Approach to the Architectural Analysis of Mars Missions**
  Kuwata, Y., Pavone, M., Balaram, J.
  2012
- **Spacecraft/Rover Hybrids for the Exploration of Small Solar System Bodies.** *Final Report for NASA NIAC 2011 Program.*
  Pavone, M., Castillo, J., Hoffman, J., Nesnas, I.
  2012
- **A Risk-Constrained Multi-Stage Decision Making Approach to the Architectural Analysis of Planetary Missions** *51st IEEE Annual Conference on Decision and Control (CDC)*
  Kuwata, Y., Pavone, M., Balaram, J. (.
  IEEE.2012: 2102–2109
- **Models and Efficient Algorithms for Pickup and Delivery Problems on Roadmaps** *51st IEEE Annual Conference on Decision and Control (CDC)*
  Treleaven, K., Pavone, M., Frazzoli, E.
  IEEE.2012: 5691–5698
- **Dynamic Vehicle Routing for Robotic Systems** *PROCEEDINGS OF THE IEEE*
  Bullo, F., Frazzoli, E., Pavone, M., Savla, K., Smith, S. L.
  2011; 99 (9): 1482-1504
- **Distributed Algorithms for Environment Partitioning in Mobile Robotic Networks** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*
  Pavone, M., Arsie, A., Frazzoli, E., Bullo, F.
  2011; 56 (8): 1834-1848
- **Adaptive and Distributed Algorithms for Vehicle Routing in a Stochastic and Dynamic Environment** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*
  Pavone, M., Frazzoli, E., Bullo, F.
  2011; 56 (6): 1259-1274
- **An Asymptotically Optimal Algorithm for Pickup and Delivery Problems** *50th IEEE Conference of Decision and Control (CDC)/European Control Conference (ECC)*
  Treleaven, K., Pavone, M., Frazzoli, E.
  IEEE.2011: 584–590

- **Load Balancing for Mobility-on-Demand Systems**
  Pavone, M., Smith, S., L., Frazzoli, E., Rus, D.
  2011
- **Distributed Control of Spacecraft Formations via Cyclic Pursuit: Theory and Experiments** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Ramirez-Riberos, J. L., Pavone, M., Frazzoli, E., Mille, D. W.
  2010; 33 (5): 1655-1669
- **DYNAMIC VEHICLE ROUTING WITH PRIORITY CLASSES OF STOCHASTIC DEMANDS** *SIAM JOURNAL ON CONTROL AND OPTIMIZATION*
  Smith, S. L., Pavone, M., Bullo, F., Frazzoli, E.
  2010; 48 (5): 3224-3245
- **Fundamental Performance Limits and Efficient Policies for Transportation-On-Demand Systems**
  Pavone, M., Treleaven, K., Frazzoli, E.
  2010
- **Dynamic Vehicle Routing with Stochastic Time Constraints** *IEEE International Conference on Robotics and Automation (ICRA)*
  Pavone, M., Frazzoli, E.
  IEEE.2010: 1460–1467
- **Fundamental Performance Limits and Efficient Polices for Transportation-On-Demand Systems** *49th IEEE Conference on Decision and Control (CDC)*
  Pavone, M., Treleaven, K., Frazzoli, E.
  IEEE.2010: 5622–5629
- **A Stochastic and Dynamic Vehicle Routing Problem with Time Windows and Customer Impatience** *1st International Conference on Robot Communication and Coordination (ROBOCOMM 2007)*
  Pavone, M., Bisnik, N., Frazzoli, E., Isler, V.
  SPRINGER.2009: 350–64
- **Sharing the Load Mobile Robotic Networks in Dynamic Environments** *IEEE ROBOTICS & AUTOMATION MAGAZINE*
  Pavone, M., Savla, K., Frazzoli, E.
  2009; 16 (2): 52-61
- **Equitable Partitioning Policies for Robotic Networks** *IEEE International Conference on Robotics and Automation*
  Pavone, M., Arsie, A., Frazzoli, E., Bullo, F.
  IEEE.2009: 3979–3984
- **Sharing the load** *IEEE Robotics & Automation Magazine*
  Pavone, M., Savla, K., Frazzoli, E.
  2009; 16 (2): 52-61
- **Distributed Control of Spacecraft Formation via Cyclic Pursuit: Theory and Experiments** *American Control Conference 2009*
  Ramirez, J. L., Pavone, M., Frazzoli, E., Miller, D. W.
  IEEE.2009: 4811–4817
- **Dynamic Multi-Vehicle Routing with Multiple Classes of Demands** *American Control Conference 2009*
  Pavone, M., Smith, S. L., Bullo, F., Frazzoli, E.
  IEEE.2009: 604–609
- **Distributed Policies for Equitable Partitioning: Theory and Applications** *47th IEEE Conference on Decision and Control*
  Pavone, M., Frazzoli, E., Bullo, F.
  IEEE.2008: 4191–4197
- **Dynamic vehicle routing with heterogeneous demands**
  Smith, S., L., Pavone, M., Bullo, F., Frazzoli, E.
  2008
- **Decentralized policies for geometric pattern formation and path coverage** *JOURNAL OF DYNAMIC SYSTEMS MEASUREMENT AND CONTROL-TRANSACTIONS OF THE ASME*

Pavone, M., Frazzoli, E.
2007; 129 (5): 633-643

- **Decentralized policies for geometric pattern formation** *26th American Control Conference*
  Pavone, M., Frazzoli, E.
  IEEE.2007: 5823–5828
- **Decentralized algorithms for stochastic and dynamic vehicle routing with general demand distribution**
  Pavone, M., Frazzoli, E., Bullo, F.
  2007
- **Decentralized Vehicle Routing in a Stochastic and Dynamic Environment with Customer Impatience**
  Pavone, M., N., B., Frazzoli, E., Isler, V.
  2007
- **Climbing Obstacle in Bio-robots via CNN and Adaptive Attitude Control** *International Journal of Circuit Theory and Applications*
  Pavone, M., Arena, P., Fortuna, L., Frasca, M., Patanè, L.
  2006; 34 (1): 109-125
- **An innovative mechanical and control architecture for a biomimetic hexapod for planetary exploration** *Space Technology*
  Pavone, M., Arena, P., Patanè, L.
  2006; 26 (1-2): 13-24
- **Realization of a CNN-Driven Cockroach-Inspired Robot**
  Arena, P., Fortuna, L., Frasca, M., Patanè, L.
  2006
- **Towards autonomous adaptive behavior in a bio-inspired CNN-controlled robot**
  Arena, P., Fortuna, L., Frasca, M., Patanè, L., Pavone, M.
  2006
- **An innovative mechanical and control architecture for a biomimetic hexapod for planetary exploration**
  Pavone, M., Arena, P., Patanè, L.
  2005
- **Climbing Obstacles via Bio-Inspired CNN-CPG and Adaptive Attitude Control**
  Arena, P., Fortuna, L., Frasca, M., Patanè, L., Pavone, M.
  2005
- **An Asymptotically-Optimal Sampling-Based Algorithm for Bi-directional Motion Planning.** *Proceedings of the ... IEEE/RSJ International Conference on Intelligent Robots and Systems. IEEE/RSJ International Conference on Intelligent Robots and Systems*
  Starek, J. A., Gomez, J. V., Schmerling, E. n., Janson, L. n., Moreno, L. n., Pavone, M. n.
  ; 2015: 2072–78