Augustinos D. Saravanos

Postdoctoral Associate
Department of Aeronautics and Astronautics
Massachusetts Institute of Technology (MIT)
Cambridge, MA 02139
✉ asaravan@mit.edu

Personal

🌐 Website | G Google Scholar | ⬡ GitHub | in LinkedIn   Citizenship: US, Greek

Research Interests

Scalable and Reliable Algorithms for Large-Scale Decision-Making

Research: Optimization, machine learning, stochastic control, robust optimization, learning-to-optimize.
Applications: multi-agent autonomy, robotics, networked systems, operations research

Education

Georgia Institute of Technology   Atlanta, GA
Ph.D. in Machine Learning   2025
Thesis: Distributed Optimization Architectures for Large-Scale Decision Making
Advisor: Prof. Evangelos A. Theodorou
Committee: Profs. Arkadi S. Nemirovski, Yao Xie, Justin Romberg, Efstathios Bakolas

Georgia Institute of Technology   Atlanta, GA
M.Sc. in Aerospace Engineering   2024

University of Patras   Patras, Greece
Diploma in Electrical and Computer Engineering   2019
Thesis: Nonlinear Model Predictive Control for Space Robotic Systems
Co-advisors: Profs. Evangelos Papadopoulos, Nick Koussoulas
Class Rank: 2nd out of 211 (top 1%), GPA: 8.77/10

Research Experience

Massachusetts Institute of Technology (MIT)   Cambridge, MA
Postdoctoral Associate   Aug 2025-present
Supervisor: Prof. Chuchu Fan
Focus: Foundation models for decision-making, safe reinforcement learning

Georgia Institute of Technology   Atlanta, GA
Graduate Research Assistant   Aug 2020-Jul 2025
Supervisor: Prof. Evangelos A. Theodorou
Focus: Distributed optimization, large-scale decision-making, learning-to-optimize

BOSCH Center for Artificial Intelligence   Pittsburgh, PA
Machine Learning Research Intern   May-Aug 2023
Supervisor: Dr. Wan-Yi Lin
Focus: Federated learning, model alignment

PUBLICATIONS

(*Equal contribution)

Books

[B1]   Dynamic Optimization,
E.A. Theodorou and **A.D. Saravanos**,
In preparation, 2025.

Journal Publications

[J6]   Deep Large-Scale Quadratic Optimization,
A.D. Saravanos, A. Oshin, A.T. Abdul, V. Pacelli and E.A. Theodorou,
IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), 2025. In submission.

[J5]   Distributed Covariance Steering via ADMM for Large-Scale Multi-Agent Stochastic Systems,
A.D. Saravanos, I.M. Balci, A.T. Abdul, E. Bakolas and E.A. Theodorou,
IEEE Transactions on Automatic Control (TAC), 2025. In submission.

[J4]   Asynchronous Distributed Multi-Robot Motion Planning Under Imperfect Communication,
A. Tajbakhsh, **A.D. Saravanos**, J. Zhu, E.A. Theodorou, L.T. Biegler and A.M. Johnson
IEEE Robotics and Automation Letters (RA-L), 2025. In submission.

[J3]   Scaling Robust Optimization for Swarms: A Distributed Perspective,
A.T. Abdul*, **A.D. Saravanos*** and E.A. Theodorou,
IEEE Transactions on Automatic Control (TAC), 2025. Submitted. [Link]

[J2]   Second-Order Constrained Dynamic Optimization,
Y. Aoyama, O. So, **A.D. Saravanos** and E.A. Theodorou,
International Journal of Robotics Research (IJRR), 2025. Under minor revision. [Link]

[J1]   Distributed Differential Dynamic Programming Architectures for Large-Scale Multi-Agent Control,
A.D. Saravanos, Y. Aoyama, H. Zhu and E.A. Theodorou,
IEEE Transactions on Robotics (T-RO), 2023. [Link] [Video]

Conference Publications

[C14]   Deep FlexQP: Accelerated Nonlinear Programming via Deep Unfolding,
A. Oshin, R. Ghosh, **A.D. Saravanos** and E.A. Theodorou,
International Conference on Learning Representations (ICLR), 2026. Submitted.

[C13]   Distributed Stochastic Search for Multi-Agent Model Predictive Control,
T. Yoon, **A.D. Saravanos** and E.A. Theodorou,
American Control Conference (ACC), 2026. Submitted.

[C12]   Momentum Multi-Marginal Schrödinger Bridge Matching,
P. Theodoropoulos, **A.D. Saravanos**, E.A. Theodorou and G.H. Liu,
Neural Information Processing Systems (NeurIPS) 2025. [Link]

[C11]   Nonlinear Robust Optimization for Planning and Control,
A.T. Abdul, **A.D. Saravanos** and E.A. Theodorou,
IEEE Conference on Decision and Control (CDC), 2025. [Link]

[C10]   Operator Splitting Covariance Steering for Safe Stochastic Nonlinear Control,
A. Ratheesh, V. Pacelli, **A.D. Saravanos** and E.A. Theodorou,
IEEE Conference on Decision and Control (CDC), 2025. [Link] [Video]

[C9]   Deep Distributed Optimization for Large-Scale Quadratic Programming,
A.D. Saravanos, H. Kuperman, A. Oshin, A.T. Abdul, V. Pacelli and E.A. Theodorou,
International Conference on Learning Representations (ICLR), 2025. [Link]

[C8]   Scalable Robust Optimization for Safe Multi-Agent Control Under Unknown Deterministic Uncertainty,
A.T. Abdul*, **A.D. Saravanos*** and E.A. Theodorou,
American Control Conference (ACC), 2025. [Link]

[C7]   Distributed Model Predictive Covariance Steering,
A.D. Saravanos, I.M. Balci, E. Bakolas, E.A. Theodorou,
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2024. [Link] [Video]

[C6]   A Robust Differential Neural ODE Optimizer,
P. Theodoropoulos, G.H. Liu, T. Chen, **A.D. Saravanos** and E.A. Theodorou,
International Conference on Learning Representations (ICLR), 2024. [Link]

[C5]   Distributed Hierarchical Distribution Control for Very-Large-Scale Clustered Multi-Agent Systems,
A.D. Saravanos, Y. Li and E.A. Theodorou,
Robotics: Science and Systems (RSS), 2023. [Link] [Video]

[C4]   Improved Exploration for Safety-Embedded Differential Dynamic Programming Using Tolerant Barrier States,
J.E. Kuperman, H. Almubarak, **A.D. Saravanos** and E.A. Theodorou,
International Conference on Advanced Robotics (ICAR), 2023. [Link] [Video]

[C3]   Decentralized Safe Multi-Agent Stochastic Optimal Control using Deep FBSDEs and ADMM,
M.A. Pereira*, **A.D. Saravanos***, O. So and E.A. Theodorou,
Robotics: Science and Systems (RSS), 2022. [Link] [Video]

[C2]   Receding Horizon Differential Dynamic Programming Under Parametric Uncertainty,
Y. Aoyama, **A.D. Saravanos** and E.A. Theodorou,
IEEE Conference on Decision and Control (CDC), 2021. [Link]

[C1]   Distributed Covariance Steering with Consensus ADMM for Stochastic Multi-Agent Systems,
A.D. Saravanos, A.G. Tsolovikos, E. Bakolas and E.A. Theodorou,
Robotics: Science and Systems (RSS), 2021. [Link]

Workshop Papers / Technical Reports

[O2]   Sim2Real on the Robotarium Platform Using Decentralized Multi-Agent Safe Deep FBSDEs,
M.A. Pereira*, **A.D. Saravanos***, E.A. Theodorou,
Robotics: Science and Systems (RSS), Workshop on Scaling Robot Learning, 2022.
[Link] [Video 1] [Video 2]

[O1]   Sampling-Based Optimization for Multi-Agent Model Predictive Control,
Z. Wang, **A.D. Saravanos**, H. Almubarak, O. So, E.A. Theodorou,
Technical Report, 2022. [Link] [Video]

Theses

[T2]   Distributed Optimization Architectures for Large-Scale Decision-Making,
A.D. Saravanos
Ph.D. Thesis, Georgia Institute of Technology, 2025.

[T1]   Nonlinear Model Predictive Control for Space Robotic Systems,
A.D. Saravanos
Diploma Thesis, University of Patras, 2019.

Patents

[P3]   Collaborative learning with full model alignment   Sep 2023
A.D. Saravanos, F.J. Cabrita Condessa, W.-Y. Lin, Z. Li and M.R. Ganesh
U.S. Patent Application No. 18/371,596. [Link]

[P2]   Collaborative learning with full model alignment   Sep 2023
A.D. Saravanos, F.J. Cabrita Condessa, W.-Y. Lin, Z. Li and M.R. Ganesh
U.S. Patent Application No. 18/371,594. [Link]

[P1]   Collaborative learning with full model alignment   Sep 2023
A.D. Saravanos, F.J. Cabrita Condessa, W.-Y. Lin, Z. Li and M.R. Ganesh
U.S. Patent Application No. 18/371,587. [Link]

Fellowships/Awards

2021-2025	Onassis Foundation Scholar - Doctoral Fellowship
2022	Gerondelis Foundation - Doctoral Fellowship
2019	Skouras Foundation Scholarship – Top student of the Department of ECE and in top 10 students of the University of Patras for academic year 2018-19
2019	Salutatorian, Graduating Class of 2019, Department of ECE, University of Patras
2018	1st & 2nd places, Line Following Robots (Enhanced), Robotex International 2018, Estonia
2017	3rd place, Line Following Robots (Enhanced), Robotex International 2017, Estonia
2013	Bronze medal, European Science Olympiad (EUSO) 2013, Luxembourg
2013	Gold medal, National Science Olympiad 2013, Greece

Technical Skills

Coding Languages:	Python, C/C++, MATLAB, Julia
Packages:	PyTorch, Scikit-learn, NumPy, CVX/CVXPY, MOSEK, Gurobi
IDEs:	Visual Studio, Jupyter Notebook, PyCharm, Spyder

Peer Review Service

Journals

- IEEE Transactions on Robotics (T-RO)
- IEEE Transactions on Automatic Control (TAC)
- IEEE Transactions on Systems, Man and Cybernetics
- IEEE Control Systems Letters (L-CSS)
- International Journal of Robust and Nonlinear Control

Conferences

- Robotics: Science and Systems (RSS)
- International Conference on Learning Representations (ICLR)
- International Conference on Machine Learning (ICML)
- IEEE International Conference on Robotics and Automation (ICRA)
- International Conference on Intelligent Robots and Systems (IROS)
- International Conference on Advanced Robotics (ICAR)
- IEEE Conference on Decision and Control (CDC)
- American Control Conference (ACC)

Leadership and Volunteering

2017-2020	Member, Robotics Club of University of Patras
2018-2020	Volunteer teacher and trainer, Robots at MET, University of Patras - Taught and trained teams of elementary school students on LEGO Robotics
2016-2020	Member, IEEE Student Branch, University of Patras - TISP (Teacher In-Service Program) Volunteer, Coordinator of Introduction to Coding course for students of the "Skagiopouleio" Orphanage

Languages

English (Fluent), Greek (Native), French (Advanced)

References

Prof. Evangelos A. Theodorou
Georgia Institute of Technology
Atlanta, GA
🌐 Website | G Google Scholar
✉ evangelos.theodorou@gatech.edu
▌ +1 404-894-8197

Prof. Arkadi S. Nemirovski
Georgia Institute of Technology
Atlanta, GA
🌐 Website | G Google Scholar
✉ arkadi.nemirovski@isye.gatech.edu
▌ +1 404-385-0769

Prof. Efstathios Bakolas
University of Texas at Austin
Austin, TX
🌐 Website | G Google Scholar
✉ bakolas@austin.utexas.edu
▌ +1 512-471-4250

Dr. Wan-Yi Lin
BOSCH Center for Artificial Intelligence
Pittsburgh, PA
G Google Scholar
✉ wan-yi.lin@us.bosch.com

Prof. Evangelos Papadopoulos
National Technical University of Athens
Athens, Greece
🌐 Website | G Google Scholar
✉ egpapado@central.ntua.gr

Dr. Wan-Yi Lin
BOSCH Center for Artificial Intelligence
Pittsburgh, PA
G Google Scholar
✉ wan-yi.lin@us.bosch.com