AREC JAMGOCHIAN

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EDUCATION

Ph.D. in Aeronautics and Astronautics w/ Minor in Computer Science *June 2024*
M.S. in Aeronautics and Astronautics *June 2020*
Stanford University, Stanford, CA, USA GPA: 4.04/4.00
Advisor: Dr. Mykel Kochenderfer, Emphasis: AI, Robotics
Thesis: *Planning Under Uncertainty in Safety-Critical Systems*
B.S. in Mechanical Engineering w/ Minor in Int'l. Eng., *Summa Cum Laude* *May 2016*
B.S. in Physics, *Magna Cum Laude* *May 2016*
University of Maryland, College Park, MD, USA GPA: 3.98/4.00

SELECTED GRADUATE COURSEWORK

AI: *Decision Making, Optimization, Machine Learning, Generative Models, Perception, Graphs*
Robotics: *Robotic Autonomy, Optimal Control, State Estimation, Dynamics, Multi-Robot Control*

SKILLS

Programming Languages *Proficient*: Python, Julia, C/C++, MatLab
Frameworks ROS (*proficient*), PyTorch (*proficient*), TensorFlow (*knowledgeable*)

WORK AND RESEARCH EXPERIENCE

***AI/ML Scientist*, Terra AI** *Aug 2024 - Present*
· Conducting and productionizing ML research at the intersection of 3D modeling, optimization under uncertainty, and Earth science.

***Graduate Researcher*, Stanford Intelligent Systems Lab** *Sep 2018 - Mar 2024*
· Researched safe data-driven decision-making under uncertainty using techniques from machine learning, planning, controls, and optimization.
· Trained generative models to imitate safe human driving in simulation.
· Developed methods for constrained planning under dynamics uncertainty and imperfect information.
· Published in top AI and robotics conferences.

***Teaching Assistant*, Stanford University** *Jan 2022 - Mar 2024*
· Head TA for *Advanced Topics in Sequential Decision Making* (AA229/CS239, W24 and W22)
· Head TA for *Engineering Design Optimization* (AA222/CS361, Sp23)
· TA for *Decision Making Under Uncertainty* (AA228/CS238, F23)

***Research Intern*, BlackRock AI Labs under Prof. Stephen Boyd** *Jun 2023 - Mar 2024*
· Investigated data-driven financial decision-making problems.
· Prototyped a document search and alert engine using generative models and recommender systems.
· Developed a novel probabilistic model for high-dimensional time-series data.

***Autonomous Vehicle Software Intern*, Renault-Nissan-Mitsubishi** *Jun 2019 - Sep 2019*
· Implemented scalable decision-making logic leveraging POMDPs on an autonomous vehicle, contributing to a paper and multiple patents.

***Flight Engineer*, Systems Engineering Group, Inc.** *Jun 2016 - Jun 2018*
· Modeled and simulated launch-to-impact rocket dynamics with high fidelity.
· Implemented optimization and machine learning algorithms to improve a variety of processes.

***Researcher*, NIST Thermodynamic Metrology Group** *May 2013 - Aug 2014*
· Worked in the development of next-generation photonic temperature and pressure sensors.

***Researcher*, MD Center for Fundamental Physics** *May 2011 - Aug 2012*
· Assisted in theorizing and enumerating the behavior of certain limits of Quantum Chromodynamics.

International Academic and Research Stays

- Virtual Vehicle GmbH under Dr. Bernhard Brandstätter, Graz, Austria — *Sep 2021 - Dec 2021*
- MRT Lab under Dr. Christof Stiller, KIT, Karlsruhe, Germany — *Jun 2021 - Sep 2021*
- Universitat Politècnica de València, Valencia, Spain — *Jan 2015 - Jul 2015*

LEADERSHIP EXPERIENCE

- *Accel Leadership Program*, Stanford STVP — *Jan 2023 - Jun 2023*
  - Took part in entrepreneurial workshops and mentorship from top VCs and high-growth tech CEOs. (16 accepted out of 150 applicants.)
- *Community Assistant*, Rains Graduate Housing Community — *Jun 2019 - Dec 2023*
  - Organized over 100 graduate student community events.
- *Controls Working Group Leader*, Systems Engineering Group, Inc. — *Mar 2017 - Jun 2018*
  - Led a group to manage tools for simulating rocket control systems.
- *Treasurer*, Stanford Armenian Student Association — *Jun 2019 - Dec 2022*
- *President*, UMD Armenian Student Union — *Sep 2013 - May 2016*
- *Vice President*, UMD Society for Physics Students — *Sep 2013 - May 2014*

AWARDS

- Hive Ventures 30 Under 30 Armenians in Tech — *Jul 2020*
- National Science Foundation Graduate Research Fellowship (Stanford, 3 years) — *Apr 2019*
- RISE Engineering Leadership Citation (UMD) — *May 2016*
- Honors College Citation (UMD) — *May 2014*
- Banneker-Key Scholarship (UMD, 4 years) — *Sep 2012*
- Intel Science Talent Search Semifinalist — *2012*
- Siemens Competition Semifinalist — *2011*

PUBLICATIONS

- A. Tzikas, L. Fiechtner, **A. Jamgochian**, M. J. Kochenderfer, "Distributionally robust control with constraints on linear unidimensional projections," in *IEEE International Conference on Control, Decision and Information Technologies (CoDIT)*, 2025
- M. Ho, **A. Jamgochian**, M. J. Kochenderfer, "Model identification adaptive control with ρPOMDP planning," in *IEEE International Conference on Control, Decision and Information Technologies (CoDIT)*, 2025
- R. Moss, **A. Jamgochian**, J. Fischer, M. J. Kochenderfer, "ConstrainedZero: Chance-constrained POMDP planning using learned probabilistic failure surrogates and adaptive safety constraints," in *International Joint Conference on Artificial Intelligence (IJCAI)*, 2024
- P. Stocco, S. Chundi, **A. Jamgochian**, M. J. Kochenderfer, "Addressing myopic constrained POMDP planning with recursive dual ascent" in *International Conference on Automated Planning and Scheduling (ICAPS)*, 2024
- **A. Jamgochian**, H. Buurmeijer, A. Corso, K. H. Wray, and M. J. Kochenderfer, "Constrained hierarchical Monte Carlo belief-state planning" in *IEEE International Conference on Robotics and Automation (ICRA)*, 2024
- **A. Jamgochian**, A. Corso, and M. J. Kochenderfer, "Online planning for constrained POMDPs with continuous spaces through dual ascent," in *International Conference on Automated Planning and Scheduling (ICAPS)*, 2023
- **A. Jamgochian**, E. Buehrle, J. Fischer, and M. J. Kochenderfer, "SHAIL: safety-aware hierarchical adversarial imitation learning for autonomous driving in urban environments," in *IEEE International Conference on Robotics and Automation (ICRA)*, 2023
- J. Park, F. Berto, **A. Jamgochian**, M. J. Kochenderfer, and J. Park, "First-order context-based adaptation for generalizing to new dynamical systems," in *Under review*, 2023

- **A. Jamgochian**, D. Wu, K. Menda, S. Jung, M. J. Kochenderfer, "Conditional approximate normalizing flows for joint multi-step probabilistic electricity demand forecasting," in *arXiv:2201.02753*, 2022
- **A. Jamgochian**, K. Menda, and M. J. Kochenderfer, "Multi-vehicle control in roundabouts using decentralized game-theoretic planning," in *Artificial Intelligence for Autonomous Driving Workshop at the International Joint Conference on Artificial Intelligence (IJCAI)*, 2021
- K. H. Wray, B. Lange, **A. Jamgochian**, S. J. Witwicki, A. Kobashi, S. Hagaribommanahalli, and D. Ilstrup, "POMDPs for safe visibility reasoning in autonomous vehicles," in *IEEE International Conference on Intelligence and Safety for Robotics (ISR)*, 2021
- **A. Jamgochian** and M. J. Kochenderfer, "Stochastic model predictive control for scheduling charging of electric vehicle fleets with market power," in *IEEE International Conference on Connected Vehicles and Expo (ICCVE)*, 2019

PATENTS

- K. H. Wray, S. Witwicki, S. Zilberstein, O. Bentahar, A. Jamgochian, "Explainability of Autonomous Vehicle Decision Making", US 2021/0240190 A1
- O. Bentahar, A. Jamgochian, K. H. Wray, S. Witwicki, "Apparatus and Method for Post-Processing a Decision-Making Model of an Autonomous Vehicle Using Multivariate Data", US 2021/0294323 A1

INVITED TALKS AND GUEST LECTURES

- *Disciplined Convex Programming*, Stanford AA222/CS361 Engineering Design Optimization, April 2025
- *Learning Safe Plans under Uncertainty*, YSU AI Lab, August 2024
- *Data-driven Planning*, UIUC Advanced Controls Research Lab, December 2022
- *Data-driven Decision Making*, DataFest Yerevan, September 2022

SERVICE

Selected Venues for Peer Review

- *Journals*: JAIR, RA-L; *Conferences*: ICRA, IROS, RSS, IJCAI
- "Top Reviewer" at 2022 ICML Workshop on Safe Learning for Autonomous Driving

Conference Volunteering

- 2022 Learning for Dynamics and Control Conference (L4DC), Stanford, CA
- 2022 STARMUS Conference, hosted Kip Thorne, Lia Halloran, and their friends for a week in Armenia