

THE UNIVERSITY OF TEXAS AT AUSTIN
Cockrell School of Engineering
Resume

FULL NAME: David Fridovich-Keil **TITLE:** Assistant Professor

DEPARTMENT: Aerospace Engineering and Engineering Mechanics

CONTACT INFORMATION

Department of Aerospace Engineering and Engineering Mechanics
The University of Texas at Austin
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Austin, TX 78712
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EDUCATION

University of California, Berkeley	Electrical Engineering & Computer Sciences	Ph.D.	2020
Princeton University	Electrical Engineering	B.S.E.	2015

CURRENT AND PREVIOUS ACADEMIC POSITIONS

Assistant Professor, The University of Texas at Austin	August 2021 - present
Post-Doctoral Researcher, Stanford University	September 2020 - June 2021
Post-Doctoral Researcher, University of California, Berkeley	June 2020 - August 2020

OTHER PROFESSIONAL EXPERIENCE

Advisor, AeroVect Technologies Inc. Motion planning, prediction, and control for autonomous airport vehicles.	August 2023 - present
Software Engineering Intern, Nuro Inc. Motion planning and prediction algorithm development for autonomous driving.	Summer 2018

HONORS AND AWARDS

Peter O'Donnell, Jr., Distinguished Research Award (Oden Institute)	2026
Hi! PARIS Starting Career Chair (Paris Artificial Intelligence for Society Center)	2026
CAREER Award (National Science Foundation)	2024
Demetri Angelakos Memorial Achievement Award (UC Berkeley)	2020
Robotics: Science & Systems Pioneer (RSS conference)	2019
Top Reviewer (NeurIPS conference)	2019
Outstanding Graduate Student Instructor (UC Berkeley)	2018
Charles Ira Young Memorial Prize (Princeton University)	2015
G. David Forney Jr. Prize (Princeton University)	2015
James Hayes-Edger Palmer Prize (Princeton University)	2015
Graduate Research Fellowship (National Science Foundation)	2015

MEMBERSHIPS IN PROFESSIONAL AND HONORARY SOCIETIES

Senior Member, The Institute of Electrical and Electronics Engineers (IEEE)

Member, The American Institute of Aeronautics and Astronautics (AIAA)

PUBLICATIONS

Google Scholar profile: <https://scholar.google.com/citations?user=gqyTnpQAAAAJ&hl=en&oi=ao>

Refereed Journal Publications in Rank as Assistant Professor¹

- J1 N. Ly, C. Tatsuoka, J. Nagaraj, J. Levy, F. Palafox, D. Fridovich-Keil, and H. Lu, “Data-Driven Modeling and Correction of Vehicle Dynamics,” *Journal of Machine Learning for Modeling and Computing*, vol. 7, February 2026. doi: 10.1615/JMachLearnModelComput.2026062908 [pdf](#)
- J2 X. Liu*, C. Neary*, K. Gupta, W. Suttle, C. Ellis, U. Topcu, and D. Fridovich-Keil, “A Multi-Fidelity Control Variate Approach for Policy Gradient Estimation,” *Transactions on Machine Learning Research*, February 2026 [pdf](#) [Awarded J2C certification, given to top 10% of accepted papers]
- J3 M. Choi, Y. Yang, N. P. Bhatt, K. Gupta, S. Shah, A. Rai, D. Fridovich-Keil, U. Topcu, and S. P. Chinchali, “Real-time privacy preservation for robot visual perception,” *Transactions on Machine Learning Research*, December 2025 [pdf](#)
- J4 M. O. Karabag, S. Smith, N. Mehr, D. Fridovich-Keil, and U. Topcu, “When Should a Leader Act Sub-optimally? The Role of Inferability in Repeated Stackelberg Games,” *IEEE Transactions on Automatic Control*, p. 1–16, October 2025. doi: 10.1109/tac.2025.3623435 [pdf](#)
- J5 C. Armstrong*, R. Park*, X. Liu, K. Gupta, and D. Fridovich-Keil, “Inferring Foresightedness in Dynamic Noncooperative Games,” *Robotics and Automation Letters*, vol. 10, pp. 13193–13200, December 2025. doi: 10.1109/LRA.2025.3625521 [pdf](#)
- J6 D. H. Lee, L. Peters, and D. Fridovich-Keil, “You Can’t Always Get What You Want: Games of Ordered Preference,” *Robotics and Automation Letters*, vol. 10, pp. 7182–7189, July 2025. doi: 10.1109/LRA.2025.3575324 [pdf](#)
- J7 D. H. Lee, K. Donnell, M. Z. Li, and D. Fridovich-Keil, “A Convex Formulation of Game-theoretic Hierarchical Routing,” *Control Systems Letters*, vol. 9, pp. 318–323, June 2025. doi: 10.1109/LC-SYS.2025.3571655 [pdf](#)
- J8 K. Gupta, R. Allen, D. Fridovich-Keil, and U. Topcu, “More Information is Not Always Better: Connections between Zero-Sum Local Nash Equilibria in Feedback and Open-Loop Information Patterns,” *Control Systems Letters*, vol. 9, pp. 1405–1410, June 2025. doi: 10.1109/LCSYS.2025.3583329 [pdf](#)
- J9 S. Agarwal*, H. Khan*, S. Chinchali, and D. Fridovich-Keil, “A Framework for Finding Local Saddle Points in Two-Player Zero-Sum Black-Box Games,” *Transactions on Machine Learning Research*, June 2025 [pdf](#)
- J10 S. Chen, Y. E. Bayiz, D. Fridovich-Keil, and U. Topcu, “Relationship design for socially-aware behavior in static games,” *Journal of Autonomous Agents and Multi-Agent Systems*, vol. 39, March 2025. doi: 10.1007/s10458-025-09699-4 [pdf](#)
- J11 J. Li, S. Sojoudi, C. Tomlin, and D. Fridovich-Keil, “The Computation of Approximate Feedback Stackelberg Equilibria in Multi-Player Nonlinear Constrained Dynamic Games,” *SIAM Journal on Optimization*, vol. 34, pp. 3723–3749, December 2024. doi: 10.1137/24M1634709 [pdf](#)
- J12 T. Qiu and D. Fridovich-Keil, “Inferring occluded agent behavior in dynamic games from noise-corrupted observations,” *Robotics and Automation Letters*, vol. 9, pp. 11489–11496, November 2024. doi: 10.1109/LRA.2024.3490398 [pdf](#)
- J13 J. Im, Y. Yu, D. Fridovich-Keil, and U. Topcu, “Coordination in Noncooperative Multiplayer Matrix Games via Reduced Rank Correlated Equilibria,” *Control Systems Letters*, vol. 8, pp. 1637–1642, June 2024. doi: 10.1109/LCSYS.2024.3414976 [pdf](#)

¹Underlines identify myself, *italics* mark students and postdocs I supervise(d) or co-supervise(d) at UT, and **bold** marks PhD and postdoc advisors. Asterisks* indicate equal contribution.

- J14 R. S. *Thakkar*, A. S. Samyal, D. [Fridovich-Keil](#), Z. Xu, and U. Topcu, “Hierarchical control for cooperative teams in competitive autonomous racing,” *IEEE Transactions on Intelligent Vehicles*, vol. 9, pp. 4845–4860, May 2024. doi: 10.1109/TIV.2024.3363177 [pdf](#)
- J15 H. *Khan* and D. [Fridovich-Keil](#), “Leadership inference for multi-agent interactions,” *Robotics and Automation Letters*, vol. 9, pp. 4671–4678, March 2024. doi: 10.1109/LRA.2024.3381469 [pdf](#)
- J16 R. S. *Thakkar*, A. S. Samyal, D. [Fridovich-Keil](#), Z. Xu, and U. Topcu, “Hierarchical control for head-to-head autonomous racing,” *Journal of Field Robotics*, vol. 4, pp. 46–69, February 2024. doi: 10.55417/fr.2024002 [pdf](#)
- J17 L. Peters, A. Bajcsy, C.-Y. Chiu, D. [Fridovich-Keil](#), F. Laine, L. Ferranti, and J. Alonso-Mora, “Contingency games for multi-agent interaction,” *Robotics and Automation Letters*, vol. 9, pp. 2208–2215, January 2024. doi: 10.1109/LRA.2024.3354548 [pdf](#) [Finalist for [Best Paper on Robot Control \(2025\)](#).]
- J18 L. Peters, V. Rubies-Royo, C. J. **Tomlin**, L. Ferranti, J. Alonso-Mora, C. Stachniss, and D. [Fridovich-Keil](#), “Online and offline learning of player objectives from partial observations in dynamic games,” *International Journal of Robotics Research*, vol. 42, pp. 917–937, June 2023. doi: 10.1177/02783649231182453 [pdf](#)
- J19 F. Laine, D. [Fridovich-Keil](#), C.-Y. Chiu, and C. **Tomlin**, “The computation of approximate generalized feedback Nash equilibria,” *SIAM Journal on Optimization*, vol. 33, pp. 294–318, March 2023. doi: 10.1137/21M142530X [pdf](#)
- J20 Y. Yu, J. *Salfity*, D. [Fridovich-Keil](#), and U. Topcu, “Inverse matrix games with unique quantal response equilibrium,” *Control Systems Letters*, vol. 7, pp. 643–648, October 2022. doi: 10.1109/LC-SYS.2022.3214857 [pdf](#)

Refereed Journal Publications in Submission

- SJ1 D. *SeWell*, X. Li, S. Tretiakov, K. Kumar, and D. [Fridovich-Keil](#), “Neural Operators for Multi-Task Control and Adaptation,” *Transactions on Machine Learning Research*, Submitted April 2026 [pdf](#)
- SJ2 T. *Qiu*, E. *Ouano*, F. *Palafos*, C. Ellis, and D. [Fridovich-Keil](#), “A Player Selection Network for Scalable Game-Theoretic Prediction and Planning,” in *Transactions on Machine Learning Research*, Submitted April 2026 [pdf](#)
- SJ3 D. H. *Lee*, J. *Li*, L. Peters, G. Bakirtzis, and D. [Fridovich-Keil](#), “Breaking Exponential Complexity in Games of Ordered Preference: A Tractable Reformulation,” *SIAM Journal on Optimization*, Submitted March 2026 [pdf](#)
- SJ4 J. Boh, S. Prokott, D. [Fridovich-Keil](#), A. G. Buitrago, and M. Akella, “Pure-Strategy Nash Equilibria for Illumination-Driven Cislunar Proximity Operations,” *Journal of Guidance, Control, and Dynamics*, Submitted March 2026
- SJ5 R. Park, L.-h. Shen, J. Milzman, N. Mehr, and D. [Fridovich-Keil](#), “A Robust Approach to Belief Mismatch in Noncooperative Dynamic Games,” *Control Systems Letters*, Submitted March 2026
- SJ6 T. *Qiu*, F. Fotiadis, X. *Liu*, C. Ellis, J. Milzman, W. Suttle, U. Topcu, and D. [Fridovich-Keil](#), “Linear-Quadratic Gaussian Games with Distributed Sparse Estimation,” *Control Systems Letters*, Submitted March 2026 [pdf](#)
- SJ7 J. *Im*, U. Topcu, and D. [Fridovich-Keil](#), “Chance-Constrained Correlated Equilibria for Robust Noncooperative Coordination,” *Control Systems Letters*, Submitted March 2026 [pdf](#)
- SJ8 Y. *Jain**, X. *Liu**, L. Peters*, D. [Fridovich-Keil](#), and U. Topcu, “Bayesian Inverse Games with High-Dimensional Multi-Modal Observations,” *International Journal of Robotics Research*, Submitted December 2025 [pdf](#)
- SJ9 J. *Im*, J.-P. Clarke, U. Topcu, and D. [Fridovich-Keil](#), “Iterative Negotiation and Oversight: A Case Study in Decentralized Air Traffic Management,” *Transportation Research Part C*, Submitted December 2025 [pdf](#)
- SJ10 H. *Khan* and D. [Fridovich-Keil](#), “Act Natural! Extending Naturalistic Projection to Multimodal Behavior Scenarios,” *Transactions on Intelligent Transportation Systems*, Submitted November 2025 [pdf](#)

- SJ11 J. *Im*, D. Delahaye, D. [Fridovich-Keil](#), and U. Topcu, “Game-theoretic Decentralized Coordination for Airspace Sector Overload Mitigation,” *Transportation Research Part C*, Submitted November 2025 [pdf](#)
- SJ12 K. *Gupta*, X. *Liu*, R. Allen, U. Topcu, and D. [Fridovich-Keil](#), “Second-Order Algorithms for Finding Local Nash Equilibria in Zero-Sum Games,” *Journal of Machine Learning Research*, Submitted September 2025 [pdf](#)
- SJ13 X. *Liu*, F. Fotiadis, J. Li, M. Karabag, J. Milzman, D. [Fridovich-Keil](#), and U. Topcu, “Approximate Feedback Nash Equilibria with Sparse Inter-Agent Dependencies,” *IEEE Transactions on Automatic Control*, Submitted April 2025 [pdf](#)
- SJ14 J. *Im*, F. Fotiadis, D. Delahaye, U. Topcu, and D. [Fridovich-Keil](#), “Noncooperative Equilibrium Selection via a Trading-based Auction,” *IEEE Transactions on Automatic Control*, Submitted February 2025 [pdf](#)

Refereed Journal Publications Prior to Joining UT Austin

- PJ1 E. Rolf*, D. [Fridovich-Keil](#)*, M. Simchowicz, B. Recht, and C. J. **Tomlin**, “A successive-elimination approach to adaptive robotic sensing,” *IEEE Transactions on Robotics*, vol. 37, pp. 34–47, July 2020. doi: 10.1109/TRO.2020.3005537 [pdf](#)
- PJ2 R. Dobbe, O. Sondermeijer, D. [Fridovich-Keil](#), D. Arnold, D. Callaway, and C. J. **Tomlin**, “Towards distributed energy services: Decentralizing optimal power flow with machine learning,” *IEEE Transactions on Smart Grid*, vol. 11, pp. 1296–1306, August 2019. doi: 10.1109/TSG.2019.2935711 [pdf](#)
- PJ3 D. [Fridovich-Keil](#)*, A. Bajcsy*, J. F. Fisac, S. L. Herbert, S. Wang, A. D. Dragan, and C. J. **Tomlin**, “Confidence-aware motion prediction for real-time collision avoidance,” *International Journal of Robotics Research*, vol. 29, p. 250–265, June 2019. doi: 10.1177/0278364919859436 [pdf](#)

Refereed Conference Proceedings in Rank as Assistant Professor

- C1 J. *Levy**, T. Westenbroek*, K. Huang, P. *Palafox*, P. Yin, S. Omidshafiei, D.-K. Kim, A. Gupta, and D. [Fridovich-Keil](#), “Simulation Distillation: Pretraining World Models in Simulation for Rapid Real-World Adaptation,” in *Robotics: Science and Systems (RSS)*, Accepted April 2026 [pdf website](#)
- C2 P. de las Heras Molins, B. Yalcinkaya, L. Peters, D. [Fridovich-Keil](#), and G. Bakirtzis, “Controllability in preference-conditioned multi-objective reinforcement learning,” in *International Conference on Neuro-Symbolic Systems (NeuS)*, Accepted April 2026
- C3 H. *Khan*, D. H. *Lee*, J. *Li*, T. *Qiu*, C. Ellis, J. Milzman, W. Suttle, and D. [Fridovich-Keil](#), “Efficiently Solving Mixed-Hierarchy Games with Quasi-Policy Approximations,” in *World Symposium on the Algorithmic Foundations of Robotics (WAFR)*, Accepted April 2026 [pdf](#)
- C4 N. Käfer*, A. Khalil*, E. Huynh*, E. Bakolas, and D. [Fridovich-Keil](#), “Game-Theoretic Autonomous Driving: A Graphs of Convex Sets Approach,” in *World Symposium on the Algorithmic Foundations of Robotics (WAFR)*, Accepted April 2026 [pdf](#)
- C5 B. *Barkley*, P. Culbertson, and D. [Fridovich-Keil](#), “SCOPED: Score–Curvature Out-of-distribution Proximity Evaluator for Diffusion,” in *International Conference on Learning Representations (ICLR)*, Accepted January 2026 [pdf](#)
- C6 R. *Ogden*, D. [Fridovich-Keil](#), and T. Tanaka, “Rate-Distortion Analysis of Optically Passive Vision Compression,” in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Accepted January 2026 [pdf](#)
- C7 N. P. Bhatt*, P.-h. Li*, K. *Gupta**, R. Siva, D. Milan, A. T. Hogue, S. P. Chinchali, D. [Fridovich-Keil](#), Z. Wang, and U. Topcu, “UNCAP: Uncertainty-Guided Neurosymbolic Planning Using Natural Language Communication for Cooperative Autonomous Vehicles,” in *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, Accepted December 2025 [pdf](#)
- C8 K. *Gupta**, S. Murthy*, M. Karabag, U. Topcu, and D. [Fridovich-Keil](#), “Cooperative Bargaining Games Without Utilities: Mediated Solutions from Direction Oracles,” in *Conference on Neural Information Processing Systems (NeurIPS)*, December 2025 [pdf](#)

- C9 P. De Las Heras Molins*, E. Roy-Almonacid*, D. H. Lee, L. Peters, D. [Fridovich-Keil](#), and G. Bakirtzis, “Approximate solutions to games of ordered preference,” in *IEEE International Conference on Intelligent Transportation Systems (ITSC)*, November 2025 [pdf](#)
- C10 L. Yang, B. Werner, R. Cosner, D. [Fridovich-Keil](#), P. Culbertson, and A. Ames, “SHIELD: Safety on Humanoids via CBFs In Expectation on Learned Dynamics,” in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, October 2025 [pdf](#) [video](#)
- C11 B. [Barkley](#) and D. [Fridovich-Keil](#), “Stealing That Free Lunch: Exposing the Limits of Dyna-Style Reinforcement Learning,” in *International Conference on Machine Learning (ICML)*, July 2025 [pdf](#)
- C12 J. [Levy](#), J. Gibson, B. Vlahov, E. Tevere, E. Theodorou, D. [Fridovich-Keil](#), and P. Spieler, “Meta-learning online dynamics model adaptation in off-road autonomous driving,” in *Robotics: Science and Systems (RSS)*, June 2025. doi: 10.15607/rss.2025.xxi.139 [pdf](#)
- C13 S. Swanbeck, D. I. Meza, J. Rosenbaum, D. [Fridovich-Keil](#), and M. Pryor, “GaTORS: A Game-Theoretic Tool for Optimal Robot Selection and Design in Surface Coverage Applications,” in *International Conference on Ubiquitous Robots (UR)*, p. 477–483, July 2025. doi: 10.1109/UR65550.2025.11078089 [pdf](#)
- C14 W. Ward, Y. Yu, J. [Levy](#), N. Mehr, D. [Fridovich-Keil](#), and U. Topcu, “Active Inverse Learning in Stackelberg Trajectory Games,” in *American Control Conference (ACC)*, p. 1547–1553, IEEE, July 2025. doi: 10.23919/ACC63710.2025.11107834 [pdf](#)
- C15 I. Remy, D. [Fridovich-Keil](#), and K. Leung, “Learning responsibility allocations for multi-agent interactions: A differentiable optimization approach with control barrier functions,” in *American Control Conference (ACC)*, p. 3213–3220, July 2025. doi: 10.23919/ACC63710.2025.11107831 [pdf](#)
- C16 A. [López](#) and D. [Fridovich-Keil](#), “Decomposing Control Lyapunov Functions for Efficient Reinforcement Learning,” in *American Control Conference (ACC)*, pp. 180–187, July 2025. doi: 10.23919/ACC63710.2025.11107452 [pdf](#)
- C17 J. [Hsin](#), S. Agarwal, A. Thorpe, L. Sentis, and D. [Fridovich-Keil](#), “Symbolic Regression on Sparse and Noisy Data with Gaussian Processes,” in *American Control Conference (ACC)*, pp. 3170–3175, July 2025. doi: 10.23919/ACC63710.2025.11107978 [pdf](#)
- C18 C. Koprulu*, P. Li*, T. [Qiu](#)*, R. Zhao, T. Westenbroek, D. [Fridovich-Keil](#), S. Chinchali, and U. Topcu, “Dense dynamics-aware reward synthesis: Integrating prior experience with demonstrations,” in *International Conference on Learning for Dynamics & Control (L4DC)*, June 2025 [pdf](#)
- C19 F. [Palafox](#)*, J. Milzman*, D. H. Lee, R. Park, and D. [Fridovich-Keil](#), “Smooth information gathering in two-player noncooperative games,” in *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pp. 1595–1603, May 2025. doi: 10.65109/dtfv7914 [pdf](#)
- C20 H. [Khan](#), A. Thorpe, and D. [Fridovich-Keil](#), “Act Natural! Projecting Autonomous System Trajectories Into Naturalistic Behavior Sets,” in *IFAC Workshop on Cyber-Physical Human Systems (CPHS)*, pp. 151–156, December 2024. doi: 10.1016/j.ifacol.2025.01.172 [pdf](#)
- C21 Y. Yu, A. Thorpe, J. Milzman, D. [Fridovich-Keil](#), and U. Topcu, “Sensing resource allocation against data-poisoning attacks in traffic routing,” in *IEEE Conference on Decision and Control (CDC)*, pp. 8396–8402, December 2024. doi: 10.1109/cdc56724.2024.10886061 [pdf](#)
- C22 J. [Levy](#)*, T. Westenbroek*, and D. [Fridovich-Keil](#), “Learning to walk from three minutes of real-world data with semi-structured dynamics models,” in *Conference on Robot Learning (CoRL)*, November 2024 [pdf](#)
- C23 X. [Liu](#)*, L. Peters*, J. Alonso-Mora, U. Topcu, and D. [Fridovich-Keil](#), “Auto-Encoding Bayesian Inverse Games,” in *World Symposium on the Algorithmic Foundations of Robotics (WAFR)*, October 2024 [pdf](#)
- C24 F. [Palafox](#), Y. Yu, and D. [Fridovich-Keil](#), “Learning hyperplanes for multi-robot collision avoidance in space,” in *AAS/AIAA Astrodynamics Specialist Conference*, August 2024 [pdf](#)
- C25 B. [Barkley](#), A. Zhang, and D. [Fridovich-Keil](#), “An investigation of time reversal symmetry in reinforcement learning,” in *International Conference on Learning for Dynamics & Control (L4DC)*, pp. 68–79, PMLR, July 2024 [pdf](#)

- C26 M. O. Karabag, S. Smith, D. [Fridovich-Keil](#), and U. Topcu, “Encouraging Inferable Behavior for Autonomy: Repeated Bimatrix Stackelberg Games with Observations,” in *American Control Conference*, pp. 360–366, July 2024. doi: 10.23919/acc60939.2024.10644936 [pdf](#)
- C27 T. Wolf, D. [Fridovich-Keil](#), and B. A. Jones, “Mutual information-based trajectory planning for cislunar space object tracking using successive convexification,” in *AIAA SCITECH Forum*, January 2024. doi: 10.2514/6.2024-0626 [pdf](#)
- C28 J. Li, C.-Y. Chiu, L. Peters, F. *Palafox*, M. Karabag, J. Alonso-Mora, S. Sojoudi, C. **Tomlin**, and D. [Fridovich-Keil](#), “Scenario-game ADMM: A parallelized scenario-based solver for stochastic noncooperative games,” in *IEEE Conference on Decision and Control (CDC)*, pp. 8093–8099, December 2023. doi: 10.1109/CDC49753.2023.10383423 [pdf](#)
- C29 S. Chen, Y. Yu, D. [Fridovich-Keil](#), and U. Topcu, “Soft-Bellman Equilibrium in Affine Markov Games: Forward Solutions and Inverse Learning,” in *IEEE Conference on Decision and Control (CDC)*, pp. 2202–2207, December 2023. doi: 10.1109/CDC49753.2023.10384097 [pdf](#)
- C30 A. Patil, Y. *Zhou*, D. [Fridovich-Keil](#), and T. Tanaka, “Risk-minimizing two-player zero-sum stochastic differential game via path integral control,” in *IEEE Conference on Decision and Control (CDC)*, pp. 3095–3101, December 2023. doi: 10.1109/CDC49753.2023.10383399 [pdf](#)
- C31 T. *Westenbroek*, J. *Levy*, and D. [Fridovich-Keil](#), “Enabling efficient, reliable real-world reinforcement learning with approximate physics-based models,” in *Conference on Robot Learning (CoRL)*, pp. 2478–2497, PMLR, November 2023 [pdf](#)
- C32 J. Sun, S. Kousik, D. [Fridovich-Keil](#), and M. **Schwager**, “Connected autonomous vehicle motion planning with video predictions from smart, self-supervised infrastructure,” in *IEEE International Conference on Intelligent Transportation Systems (ITSC)*, pp. 1721–1726, September 2023. doi: 10.1109/itsc57777.2023.10422061 [pdf](#)
- C33 J. Li, C.-Y. Chiu, L. Peters, S. Sojoudi, C. J. **Tomlin**, and D. [Fridovich-Keil](#), “Cost inference for feedback dynamic games from noisy partial state observations and incomplete trajectories,” in *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pp. 1062–1070, June 2023. doi: 10.65109/ayet2783 [pdf](#)
- C34 P. Washington, D. [Fridovich-Keil](#), and M. **Schwager**, “GrAVITree: Graph-based approximate value function in a tree,” in *American Control Conference (ACC)*, p. 4611–4618, IEEE, June 2023. doi: 10.23919/acc55779.2023.10156366 [pdf](#)
- C35 Y. Yu, S. Chen, D. [Fridovich-Keil](#), and U. Topcu, “Cost design in atomic routing games,” in *American Control Conference (ACC)*, p. 1704–1709, June 2023. doi: 10.23919/acc55779.2023.10156307 [pdf](#)
- C36 S. Agarwal, D. [Fridovich-Keil](#), and S. P. Chinchali, “Robust forecasting for robotic control: A game-theoretic approach,” in *IEEE International Conference on Robotics and Automation (ICRA)*, pp. 5566–5573, June 2023. doi: 10.1109/icra48891.2023.10160721 [pdf](#)
- C37 C.-Y. Chiu and D. [Fridovich-Keil](#), “GTP-SLAM: Game-theoretic priors for simultaneous localization and mapping in multi-agent scenarios,” in *IEEE Conference on Decision and Control (CDC)*, p. 247–252, December 2022. doi: 10.1109/cdc51059.2022.9992656 [pdf](#)
- C38 J. Sun, S. Kousik, D. [Fridovich-Keil](#), and M. **Schwager**, “Self-supervised traffic advisors: Distributed, multi-view traffic prediction for smart cities,” in *IEEE International Conference on Intelligent Transportation Systems (ITSC)*, p. 917–922, October 2022. doi: 10.1109/itsc55140.2022.9922340 [pdf](#)
- C39 M. O. Karabag, D. [Fridovich-Keil](#), and U. Topcu, “Alternating direction method of multipliers for decomposable saddle-point problems,” in *Allerton Conference on Communication, Control, and Computing*, pp. 1–8, IEEE, September 2022. doi: 10.1109/allerton49937.2022.9929349 [pdf](#)
- C40 L. Peters, D. [Fridovich-Keil](#), L. Ferranti, C. Stachniss, J. Alonso-Mora, and F. Laine, “Learning mixed strategies in trajectory games,” in *Robotics: Science and Systems (RSS)*, July 2022. doi: 10.15607/rss.2022.xviii.051 [pdf](#)

- C41 D. R. Anthony, D. P. Nguyen, D. [Fridovich-Keil](#), and J. F. Fisac, “Back to the future: Efficient, time-consistent solutions in reach-avoid games,” in *IEEE International Conference on Robotics and Automation (ICRA)*, p. 6830–6836, May 2022. doi: 10.1109/icra46639.2022.9812243 [pdf](#)
- C42 J. Li, D. [Fridovich-Keil](#), S. Sojoudi, and C. **Tomlin**, “Augmented Lagrangian method for instantaneously constrained reinforcement learning problems,” in *IEEE Conference on Decision and Control (CDC)*, p. 2982–2989, December 2021. doi: 10.1109/cdc45484.2021.9683088 [pdf](#)

Refereed Conference Publications: In Submission

- SC1 H. *Khan**, J. *Li**, and D. [Fridovich-Keil](#), “Level-2 Inverse Games for Inferring Agents’ Estimates of Others’ Objectives,” in *IEEE Conference on Decision and Control (CDC)*, Submitted March 2026 [pdf](#)
- SC2 J. *S K**, K. *Gupta**, U. Topcu, and D. [Fridovich-Keil](#), “Interleaved Information Structures in Dynamic Games: A General Framework with Application to the Linear-Quadratic Case,” in *IEEE Conference on Decision and Control (CDC)*, Submitted March 2026 [pdf](#)
- SC3 J. *Im*, D. [Fridovich-Keil](#), and U. Topcu, “Scalable Coordination with Chance-Constrained Correlated Equilibria via Reduced-Rank Structure,” in *IEEE Conference on Decision and Control (CDC)*, Submitted March 2026 [pdf](#)
- SC4 I. A. Vurankaya, M. O. Karabag, W. A. Suttle, J. Milzman, D. [Fridovich-Keil](#), and U. Topcu, “Stealthy Exploration in Multi-armed Bandits Under Thompson Sampling,” in *Conference on Uncertainty in Artificial Intelligence (UAI)*, Submitted February 2026 [pdf](#)
- SC5 B. *Barkley* and D. [Fridovich-Keil](#), “A Forensic Analysis of Synthetic Data in RL: Diagnosing and Solving Algorithmic Failures in Model-Based Policy Optimization,” in *International Conference on Machine Learning (ICML)*, Submitted January 2026 [pdf](#)
- SC6 S. Murthy*, K. *Gupta**, D. [Fridovich-Keil](#), and U. Topcu, “Monotonic Transformation Invariant Multi-task Learning,” in *International Conference on Machine Learning (ICML)*, Submitted January 2026 [pdf](#)

Refereed Conference Proceedings Prior to Joining UT Austin

- PC1 L. Peters, D. [Fridovich-Keil](#), V. Rubies-Royo, C. **Tomlin**, and C. Stachniss, “Inferring objectives in continuous dynamic games from noise-corrupted partial state observations,” in *Robotics: Science and Systems (RSS)*, July 2021. doi: 10.15607/rss.2021.xvii.030 [pdf](#)
- PC2 D. [Fridovich-Keil](#) and C. J. **Tomlin**, “Approximate solutions to a class of reachability games,” in *IEEE International Conference on Robotics and Automation (ICRA)*, p. 12610–12617, June 2021. doi: 10.1109/icra48506.2021.9561655 [pdf](#)
- PC3 C.-Y. Chiu*, D. [Fridovich-Keil](#)*, and C. J. **Tomlin**, “Encoding defensive driving as a dynamic Nash game,” in *IEEE International Conference on Robotics and Automation (ICRA)*, p. 10749–10756, June 2021. doi: 10.1109/icra48506.2021.9560788 [pdf](#)
- PC4 F. Laine, D. [Fridovich-Keil](#), C.-Y. Chiu, and C. J. **Tomlin**, “Multi-hypothesis interactions in game-theoretic motion planning,” in *IEEE International Conference on Robotics and Automation (ICRA)*, p. 8016–8023, June 2021. doi: 10.1109/icra48506.2021.9561695 [pdf](#)
- PC5 T. Westenbroek, E. Mazumdar, D. [Fridovich-Keil](#), V. Prabhu, C. J. **Tomlin**, and S. S. Sastry, “Adaptive control for linearizable systems using on-policy reinforcement learning,” in *IEEE Conference on Decision and Control (CDC)*, p. 118–125, December 2020. doi: 10.1109/cdc42340.2020.9304242 [pdf](#)
- PC6 D. [Fridovich-Keil](#)*, V. Rubies-Royo*, and C. J. **Tomlin**, “An iterative quadratic method for general-sum differential games with feedback linearizable dynamics,” in *IEEE International Conference on Robotics and Automation (ICRA)*, p. 2216–2222, June 2020. doi: 10.1109/icra40945.2020.9196517 [pdf](#)
- PC7 D. [Fridovich-Keil](#), E. Ratner, L. Peters, A. D. Dragan, and C. J. **Tomlin**, “Efficient iterative linear-quadratic approximations for nonlinear multi-player general-sum differential games,” in *IEEE International Conference on Robotics and Automation (ICRA)*, p. 1475–1481, June 2020. doi: 10.1109/icra40945.2020.9197129 [pdf](#)

- PC8 T. Westenbroek*, D. [Fridovich-Keil](#)*, E. Mazumdar*, S. Arora, V. Prabhu, S. S. Sastry, and C. J. **Tomlin**, “Feedback linearization for unknown systems via reinforcement learning,” in *IEEE International Conference on Robotics and Automation (ICRA)*, p. 1364–1371, June 2020. doi: 10.1109/icra40945.2020.9197158 [pdf](#)
- PC9 L. Peters, D. [Fridovich-Keil](#), C. J. **Tomlin**, and Z. Sunberg, “Inference-based strategy alignment for general-sum differential games,” in *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, p. 1037–1045, May 2020. doi: 10.65109/luel2972 [pdf](#)
- PC10 V. Rubies-Royo, D. [Fridovich-Keil](#), S. L. Herbert, and C. J. **Tomlin**, “A classification-based approach for approximate reachability,” in *IEEE International Conference on Robotics and Automation (ICRA)*, p. 7697–7704, May 2019. doi: 10.1109/icra.2019.8793919 [pdf](#)
- PC11 A. Bajcsy*, S. L. Herbert*, D. [Fridovich-Keil](#), J. F. Fisac, S. Deglurkar, A. D. Dragan, and C. J. **Tomlin**, “A scalable framework for real-time multi-robot, multi-human collision avoidance,” in *IEEE International Conference on Robotics and Automation (ICRA)*, p. 936–943, May 2019. doi: 10.1109/icra.2019.8794457 [pdf](#)
- PC12 D. [Fridovich-Keil](#)*, J. F. Fisac*, and C. J. **Tomlin**, “Safely probabilistically complete real-time planning and exploration in unknown environments,” in *IEEE International Conference on Robotics and Automation (ICRA)*, p. 7470–7476, May 2019. doi: 10.1109/icra.2019.8793905 [pdf](#)
- PC13 J. F. Fisac*, A. Bajcsy*, S. L. Herbert, D. [Fridovich-Keil](#), S. Wang, C. J. **Tomlin**, and A. D. Dragan, “Probabilistically safe robot planning with confidence-based human predictions,” in *Robotics: Science and Systems (RSS)*, June 2018. doi: 10.15607/rss.2018.xiv.069 [pdf](#)
- PC14 D. [Fridovich-Keil](#)*, S. L. Herbert*, J. F. Fisac, S. Deglurkar, and C. J. **Tomlin**, “Planning, fast and slow: A framework for adaptive real-time safe trajectory planning,” in *IEEE International Conference on Robotics and Automation (ICRA)*, p. 387–394, May 2018. doi: 10.1109/icra.2018.8460863 [pdf](#)
- PC15 R. Dobbe*, D. [Fridovich-Keil](#)*, and C. J. **Tomlin**, “Fully decentralized policies for multi-agent systems: An information theoretic approach,” in *Conference on Neural Information Processing Systems (NeurIPS)*, pp. 2941–2950, December 2017 [pdf](#)
- PC16 D. [Fridovich-Keil](#), N. Hanford, M. P. Chapman, C. J. **Tomlin**, M. K. Farrens, and D. Ghosal, “A model predictive control approach to flow pacing for TCP,” in *Allerton Conference on Communication, Control, and Computation*, pp. 988–994, October 2017. doi: 10.1109/allerton.2017.8262845 [pdf](#)
- PC17 D. [Fridovich-Keil](#), E. Nelson, and A. Zakhor, “AtomMap: A probabilistic amorphous 3D map representation for robotics and surface reconstruction,” in *IEEE International Conference on Robotics and Automation (ICRA)*, pp. 3110–3117, June 2017. doi: 10.1109/icra.2017.7989355 [pdf](#)

Monographs

M1 D. [Fridovich-Keil](#), *Smooth Game Theory*. 2024

Software

S1 D. [Fridovich-Keil](#), “MixedComplementarityProblems.jl,” 2024 [code](#)

S2 D. [Fridovich-Keil](#), “ILQGames: Iterative linear-quadratic games,” 2019 [code](#)

S3 D. [Fridovich-Keil](#), “FaSTrack: Fast and safe tracking,” 2018 [code](#)

INVITED ORAL PRESENTATIONS²

O1 February 2026, “Variations on a Theme: Information Structure, Equilibria, and Dynamic Games,” Game On! Seminar, KTH Royal Institute of Technology [video slides](#)

O2 December 2025, “Variations on a Theme: Information Structure, Equilibria, and Dynamic Games,” Systems & Controls Seminar, UC San Diego

O3 October 2025, “Interaction-Aware Planning and Control for Robotic Navigation in the Crowd,” NSF FRR PI meeting (long talk)

²D. Fridovich-Keil was the sole presenter.

- O4 October 2025, “Interaction-Aware Planning and Control for Robotic Navigation in the Crowd,” Social Human Robot Interaction Workshop, NSF FRR PI meeting
- O5 September 2025, “Auto-Encoding Bayesian Inverse Games,” AI seminar, Cornell University
- O6 September 2025, “Variations on a Theme: Information Structure, Equilibria, and Dynamic Games,” Control seminar, University of Michigan
- O7 May 2025, “Variations on a Theme: Information Structure, Equilibria, and Dynamic Games,” Control seminar, Georgia Tech
- O8 May 2025, “Variations on a Theme: Information Structure, Equilibria, and Dynamic Games,” Guest lecture, UCLA
- O9 March 2025, “Auto-Encoding Bayesian Inverse Games,” Computer Science department seminar, Vanderbilt University
- O10 February 2025, “Auto-Encoding Bayesian Inverse Games,” Guest lecture, UC San Diego [video](#)
- O11 February 2025, “Auto-Encoding Bayesian Inverse Games,” Guest lecture, UC Berkeley
- O12 February 2025, “Auto-Encoding Bayesian Inverse Games,” Robotics Seminar, University of Utah
- O13 November 2024, “Auto-Encoding Bayesian Inverse Games,” Guest lecture, University of Washington
- O14 July 2024, “Information-Aware Algorithms for Smooth Dynamic Games,” Robotics seminar, NASA Jet Propulsion Laboratory
- O15 June 2024, “Information-Aware Algorithms for Smooth Dynamic Games,” Distinguished Webinar in AI/Cyber, University of North Dakota
- O16 May 2024, “Auto-Encoding Bayesian Inverse Games,” Neuro-Symbolic Systems (NeuS) Conference, UC Berkeley
- O17 April 2024, “Information-Aware Algorithms for Smooth Dynamic Games,” GRASP seminar, Penn
- O18 April 2024 “An Introduction to Trajectory Optimization,” RBT 350 Guest lecture, UT Austin
- O19 March 2024, “Inverse games: a MPEC by any other name...,” Interactive Robotics Guest lecture, CMU
- O20 December 2023, “Dynamic Game Models for Multi-Agent Interactions: The Role of Information in Designing Efficient Algorithms,” Workshop on Models and Algorithms for Path Planning, UT Austin
- O21 December 2023, “Differential Games: A Brief History and Modern Developments,” ASEN 6519 Guest lecture, CU Boulder
- O22 November 2023, “An Introduction to Trajectory Optimization,” RBT 350 Guest lecture, UT Austin
- O23 October 2023, “Nested Optimization and Feedback Games,” CMS 248 Guest lecture, Caltech
- O24 September 2023, “Regulating a Digitally-Transformed NAS: A Game-Theoretic Perspective,” Workshop on Clean Slate Approaches to Crewed and Uncrewed Air Traffic Operations, UC Berkeley
- O25 September 2023, “Dynamic Game Models for Multi-Agent Interactions: The Role of Information in Designing Efficient Algorithms,” Robotics Seminar, University of Illinois–Urbana Champaign
- O26 July 2023, “Dynamic Game Models for Multi-Agent Interactions: The Role of Information in Designing Efficient Algorithms,” Control-X Seminar, University of Washington
- O27 June 2023, “Dynamic Game Models for Multi-Agent Interactions: The Role of Information in Designing Efficient Algorithms,” Robotics Seminar, Northeastern University
- O28 May 2023, “Dynamic Game Models for Multi-Agent Interactions: The Role of Information in Designing Efficient Algorithms,” Robotics Seminar, TU Delft
- O29 May 2023, “Dynamic Game Models for Multi-Agent Interactions: The Role of Information in Designing Efficient Algorithms,” Robotics Seminar, Princeton University
- O30 April 2023, “Dynamic Game Models for Multi-Agent Interactions: Forward and Inverse Solutions,” Babuška Forum, Oden Institute, UT Austin

- O31 November 2022, “Dynamic Game Models for Multi-Agent Interactions: Forward and Inverse Solutions,” CMS/EC 248 Guest lecture, Caltech
- O32 October 2022, “Dynamic Game Models for Multi-Agent Interactions: Forward and Inverse Solutions,” Nuro [video](#)
- O33 September 2022, “Mixing Continuous Strategies: A Case Study in Trajectory Games,” Allerton, UIUC
- O34 May 2022, “Learning Mixed Strategies in Lifted Trajectory Games,” Autonomy Talks, ETH Zürich [video](#)
- O35 May 2022, “What is Feedback, Really?” EE290 Guest lecture, UC Berkeley
- O36 April 2022, “Learning to Compete: Efficient Solutions for Noncooperative Games,” Texas Robotics Symposium, UT Austin
- O37 April 2022, “Learning in Noncooperative Games: Efficient Algorithms and Open Challenges,” Amazon Robotics
- O38 November 2021, “A Brief Tour of Dynamic Games for Multi-Agent Modeling,” Aerospace Engineering and Engineering Mechanics External Advisory Committee, UT Austin
- O39 November 2021, “A Brief Tour of Dynamic Games for Multi-Agent Modeling,” Aerospace Engineering Department Seminar, CU Boulder
- O40 October 2021, “A Brief Tour of Dynamic Games for Multi-Agent Modeling,” Control, Autonomy, and Robotics Seminar, UT Austin
- O41 July 2021, “A Brief Tour of Dynamic Games for Multi-Agent Modeling,” Workshop on Perception and Control for Autonomous Navigation in Crowded, Dynamic Environments, Robotics: Science & Systems [video](#)
- O42 July 2021, Robotics Research Debate, Robotics: Science & Systems Pioneers Workshop.
- O43 July 2021, “A Brief Tour of Dynamic Games for Multi-Agent Modeling,” Semiautonomous Seminar, UC Berkeley.
- O44 April 2021, “Parallelizable Methods for Multimodal Stochastic Optimal Control,” NASA ULI Joint Meeting, Stanford.
- O45 2019, “A Scalable Framework for Real-Time Multi-Robot, Multi-Human Collision Avoidance,” Connected and Automated Vehicles, University of Michigan.
- O46 2019, “Iterative Linear Quadratic Approximations for Nonlinear Differential Games,” Robotic Manipulation and Interaction, UC Berkeley.
- O47 2019, “Iterative Linear Quadratic Approximations for Nonlinear Multi-Player General-Sum Differential Games,” Berkeley Artificial Intelligence Lab, UC Berkeley.
- O48 2019, “Toward Robust Autonomy in Multi-Agent Safety-Critical Systems,” DARPA Assured Autonomy Program, Northrop Grumman.
- O49 2019, “Toward Robust Autonomy in Uncertain Safety-Critical Systems,” Nuro.
- O50 2019, “Toward Robust Autonomy in Uncertain Safety-Critical Systems,” Postmates X.

PATENTS

Invention Disclosures

“Apparatus for optically passive spatiotemporal visual data encoding” (December 2025), Shwetadwip Chowdhury (UT ECE) and Takashi Tanaka (Purdue University) are co-inventors.

David Fridovich-Keil, Assistant Professor
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Dr. David Fridovich-Keil directs the Control and Learning for Autonomous Robotics (CLeAR) Laboratory, and is a core member of the Oden Institute for Computational Engineering and Sciences and Texas Robotics. He received his B.S.E. in Electrical Engineering from Princeton University and his Ph.D. in Electrical Engineering & Computer Sciences from the University of California, Berkeley. Fridovich-Keil's research spans optimization, game theory, machine learning, and robotics, with a substantial focus on establishing game-theoretic models of multi-agent strategic interactions, inverting those models to infer agents' intentions from data, and leveraging that information to guide future interactions. A key aim of Fridovich-Keil's recent work has been to integrate these capabilities with generative machine learning techniques by leveraging fundamental connections with optimization theory and differentiable programming. Fridovich-Keil is the recipient of an NSF Graduate Research Fellowship and an NSF CAREER award.