

Fengze Xie

Ph.D. Candidate, Computing & Mathematical Sciences, California Institute of Technology

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RESEARCH INTERESTS

My research interests mainly focus on the intersection between machine learning and robotics, including control and planning.

EDUCATION

- **California Institute of Technology** Sep 2021 – Present
Ph.D. in Computing and Mathematical Sciences Advisors: Yisong Yue, Soon-Jo Chung
- **California Institute of Technology** Sep 2020 – Jun 2021
M.S. in Electrical Engineering Advisor: Yisong Yue
- **University of Illinois, Urbana-Champaign** Aug 2016 – May 2020
B.S. in Computer Engineering; B.S. in Engineering Physics GPA: 3.98 / 4.00

JOURNAL PUBLICATIONS

- [1] Elena Sorina Lupu*, **Fengze Xie***, James A. Preiss, Matthew Anderson, Jedidiah Alindogan, Soon-Jo Chung, “MAGIC^{VM}: Meta-learning Adaptation for Ground Interaction Control with Visual Foundation Models,” *IEEE Transactions on Robotics (T-RO)*. [pdf] [video]
🏆 Best Paper Award Nominee, FMNS Workshop (ICRA 2025)
🏆 Best Poster Runner-up Award, ROAR Workshop (RSS 2025)
- [2] Dženan Lapandić, **Fengze Xie**, Christos K Verginis, Soon-Jo Chung, Dimos V Dimarogonas, Bo Wahlberg, “Meta-Learning Augmented MPC for Disturbance-Aware Motion Planning and Control of Quadrotors,” *IEEE Control Systems Letters (L-CSS)*. [pdf]

CONFERENCE PUBLICATIONS

- [3] **Fengze Xie***, Xiaozhou Fan*, Jacob Schuster, Yisong Yue, Morteza Gharib, “A Narwhal-Inspired Sensing-to-Control Framework for Small Fixed-Wing Aircraft,” *IEEE International Conference on Robotics and Automation (ICRA)*, 2026. [pdf] [video]
- [4] **Fengze Xie***, Sizhe Wei*, Yue Song, Yisong Yue, Lu Gan, “Morphological-Symmetry-Equivariant Heterogeneous Graph Neural Network for Robotic Dynamics Learning,” *7th Annual Learning for Dynamics & Control Conference (L4DC)*, 2025. [pdf] [website] [code]
- [5] Yiheng Lin, James A. Preiss, **Fengze Xie**, Emile Anand, Soon-Jo Chung, Yisong Yue, Adam Wierman, “Online Policy Optimization in Unknown Nonlinear Systems,” *Conference on Learning Theory (COLT)*, 2024. [pdf]
- [6] **Fengze Xie**, Guanya Shi, Michael O’Connell, Yisong Yue, Soon-Jo Chung, “Hierarchical Meta-learning-based Adaptive Controller,” *IEEE International Conference on Robotics and Automation (ICRA)*, 2024. [pdf] [website] [video]

PREPRINTS

- [7] Sizhe Wei, Xulin Chen, **Fengze Xie**, Garrett Ethan Katz, Zhenyu Gan, Lu Gan, “MS-PPO: Morphological-Symmetry-Equivariant Policy for Legged Robot Locomotion,” *In Preparation for Submission*. [pdf]
- [8] James A. Preiss, **Fengze Xie**, Yiheng Lin, Adam Wierman, Yisong Yue, “Fast Non-Episodic Adaptive Tuning of Robot Controllers with Model-Based Online Policy Optimization,” *In Preparation for Submission*. [pdf]

HONORS & AWARDS

- Simoudis Discovery Prize, Computing & Mathematical Sciences, Caltech 2023 – 2024
- Dean’s List, The Grainger College of Engineering, UIUC 2016 – 2020
- Bronze Tablet (Grainger, Top 3%), UIUC 2020
- Graduation with Highest Honors, Computer Engineering, UIUC 2020
- Graduation with Highest Honors, Engineering Physics, UIUC 2020
- Chancellor’s Scholar, UIUC 2017 – 2018
- Edmund J. James Scholar, The Grainger College of Engineering, UIUC 2017 – 2018

TEACHING

- **Winter 2026**, Caltech | Teaching Assistant for CMS 155, Machine Learning & Data Mining.
Lectures: Latent Factor Models [video], Embeddings [video], Hidden Markov Models [video][video], Reinforcement Learning [video][slides].
- **Spring 2024**, Caltech | Teaching Assistant for CDS 212, Optimal Control and Estimation.
Lectures: CVX/CVXPY [slides], Reinforcement Learning [notes].

SERVICE

- Summer 2024, Caltech, Co-organizer for SURF Program at ARCL lab.
- **Conference Reviewer:** CDC, IROS, CoRL.
- **Journal Reviewer:** IEEE RA-L, IEEE L-CSS, IEEE TAC.

MENTORSHIP

- Summer 2024, **Adam Johansson** (co-mentored with John Lathrop), “Identifying Constraints From Safe Demonstration Trajectories Using Gaussian Processes.”
- Summer 2024, **Leonid Pototskiy** (co-mentored with John Lathrop), “CrazyPong.”