

TAO ZHONG

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EDUCATION

Princeton University 08/2023 - Present
Degree: Ph.D. in MAE (Robotics Track) *cGPA:* 4.0/4.0
Committee: Christine Allen-Blanchette (*Chair*), Felix Heide, Ryan P. Adams

University of Toronto 09/2018 - 06/2023
Degree: B.A.Sc. in Engineering Science (with High Honour) *cGPA:* 3.81/4.0
Major: Robotics Engineering *Minor:* Artificial Intelligence
Advisor: Animesh Garg

EXPERIENCE

CAB Lab, Princeton University 2023 - Present
Graduate Research Student, Advisor: Prof. Christine Allen-Blanchette
Topics: physics- and geometry-aware deep learning for scientific discovery [C6, U2, U3], robot learning [C4, C5, U1], and generative foundation models [U4].

People, AI, & Robots Lab, Vector Institute & University of Toronto 2022 - 2023
Undergraduate Research Student, Advisor: Prof. Animesh Garg
Topics: differentiable physics for dexterous grasp synthesis [C2]

Noah's Ark Lab, Huawei Research Canada 2021 - 2022
Machine Learning Research Intern, Advisor: Prof. Yang Wang
Topics: OOD generalization via prompt learning [C3] and test-time adaptation [C1] for foundation models

aUToronto, The University of Toronto Self-Driving Car Team 2020 - 2022
Mapping & Localization Team Lead, Team Advisors: Prof. Tim Barfoot, Prof. Steven Waslander, Prof. Angela Schoellig, Prof. Jonathan Kelly
Topics: semantic mapping and SLAM optimization for autonomous driving.

Shenzhen Institute of Artificial Intelligence and Robotics for Society, CUHK(SZ) 2020
Visiting Research Student, Advisor: Prof. Huihuan Qian
Topics: web-based testing platform, state estimation, and control for marine robotics

PUBLICATIONS

* denotes equal contribution.

Papers in Submission

- [U4] **Tao Zhong**, Dongzhe Zheng, Christine Allen-Blanchette. HodgeCover: Higher-Order Topological Coverage Drives Compression of Sparse Mixture-of-Experts. *Preprint, 2026.*
- [U3] Zhixuan Zhao*, **Tao Zhong***, Yixun Hu, Nathalie P. de Leon, Christine Allen-Blanchette. Neural Fields for NV-Center Inverse Sensing. *Preprint, 2026.*
- [U2] **Tao Zhong**, Yixun Hu, Dongzhe Zheng, Aditya Sood, Christine Allen-Blanchette. Neural Field Thermal Tomography: A Differentiable Physics Framework for Non-Destructive Evaluation. *Preprint, 2026.*
- [U1] Keqin Wang*, **Tao Zhong***, David Chang, Christine Allen-Blanchette. Local-Canonicalization Equivariant Graph Neural Networks for Sample-Efficient and Generalizable Swarm Robot Control. *Preprint, 2025.*

Refereed Conference Proceedings

- [C6] Dongzhe Zheng, **Tao Zhong**, Christine Allen-Blanchette. Topology-Preserving Neural Operator Learning via Hodge Decomposition. In *Proceedings of the International Conference on Machine Learning (ICML), 2026.*
- [C5] **Tao Zhong**, Jonah Buchanan, Christine Allen-Blanchette. Grasp2Grasp: Vision-Based Dexterous Grasp Translation via Schrödinger Bridges. In *Advances in Neural Information Processing Systems (NeurIPS), 2025.*

- [C4] **Tao Zhong** and Christine Allen-Blanchette. GAGrasp: Geometric Algebra Diffusion for Dexterous Grasping. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, 2025.
- [C3] Zhixiang Chi*, Li Gu*, **Tao Zhong**, Huan Liu, Yuanhao Yu, Konstantinos N Plataniotis, Yang Wang. Adapting to Distribution Shift by Visual Domain Prompt Generation. In *Proceedings of the International Conference on Learning Representations (ICLR)*, 2024.
- [C2] Dylan Turpin, **Tao Zhong**, Shutong Zhang, Guanglei Zhu, Eric Heiden, Miles Macklin, Stavros Tsogkas, Sven Dickinson, Animesh Garg. Fast-Grasp'D: Dexterous Multi-finger Grasp Generation Through Differentiable Simulation. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, 2023.
- [C1] **Tao Zhong***, Zhixiang Chi*, Li Gu*, Yang Wang, Yuanhao Yu, Jin Tang. Meta-DMoE: Adapting to Domain Shift by Meta-Distillation from Mixture-of-Experts. In *Advances in Neural Information Processing Systems (NeurIPS)*, 2022.

Refereed Non-archival Publications

- [W1] **Tao Zhong** and Christine Allen-Blanchette. Geometric Algebra Grasp Diffusion for Dexterous Manipulators. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) Workshop on Equivariant Robotics*, 2024.

Patents

- [P1] Zhixiang Chi, Li Gu, **Tao Zhong**, Yuanhao Yu, Yang Wang, Jin Tang. Systems and Methods for Artificial-intelligence Model Training Using Unsupervised Domain Adaptation with Multi-source Meta-distillation. *US Patent Application No. 17/966,568*.

AWARDS & HONORS

Princeton MAE Second Year Departmental Fellowship (2 / 25+)	2024
Princeton University First Year Fellowship in Natural Sciences and Engineering	2023
NeurIPS 2022 Scholar Award	2022
SAE Autodrive Challenge: 1st Place Winner (As a team)	2020, 2021, 2022
University of Toronto Dean's Honours List (All 8 terms)	2018 - 2023

INVITED TALKS

Vision-Based Dexterous Grasp Translation via Schrödinger Bridges
GRASP Lab, UPenn, Oct 2025

TEACHING

MAE 206 Introduction to Engineering Dynamics (Undergraduate) Teaching Assistant, Princeton University	Spring 2026
MAE 433 Automatic Control Systems (Undergraduate) Teaching Assistant, Princeton University	Fall 2025

MENTORING

Jonah Buchanan (with Christine Allen-Blanchette)	2024 - 2025
David Chang (with Christine Allen-Blanchette and Kevin Wang)	2024 - 2025
Kaison Fong (with Christine Allen-Blanchette)	2025
Zhixuan Zhao (with Christine Allen-Blanchette)	2026

SERVICE

Conference Refereeing	
International Conference on Machine Learning (ICML)	2026
Neural Information Processing Systems (NeurIPS)	2025 - 2026
International Conference on Learning Representations (ICLR)	2025 - 2026
Annual Learning for Dynamics & Control Conference (L4DC)	2024, 2026

Journal Refereeing

IEEE Robotics and Automation Letters (RA-L)

2025

Transactions on Machine Learning Research (TMLR)

2025 - 2026

SKILLS

Programming Languages:

Python, C/C++, MATLAB/Simulink, Bash, SQL, Assembly

Libraries & Tools:PyTorch, NumPy, OpenCV, scikit-learn, ROS, Git, Docker, L^AT_EX