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 [U2, U3], generative dexterous manipulation [C4, C5], and multi-agent control [U1]

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

[U3] **Tao Zhong**, Yixun Hu, Dongzhe Zheng, Aditya Sood, Christine Allen-Blanchette. Neural Field Thermal Tomography: A Differentiable Physics Framework for Non-Destructive Evaluation. *Under Review, 2026*.

[U2] Dongzhe Zheng, **Tao Zhong**, Christine Allen-Blanchette. Topology-Preserving Neural Operator Learning via Hodge Decomposition. *Under Review, 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

[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) *Spring 2026*
Teaching Assistant, Princeton University
MAE 433 Automatic Control Systems (Undergraduate) *Fall 2025*
Teaching Assistant, Princeton University

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*

SERVICE

Conference Refereeing
International Conference on Machine Learning (ICML) *2026*
Neural Information Processing Systems (NeurIPS) *2025*
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*

SKILLS

Programming Languages: Python, C/C++, MATLAB/Simulink, Bash, SQL, Assembly
Libraries & Tools: PyTorch, NumPy, OpenCV, scikit-learn, ROS, Git, Docker, LaTeX