Dian Wang

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Research Interests

Robot Learning, Geometric Deep Learning, Robotic Manipulation and Grasping, Reinforcement Learning

Education

Northeastern University — Boston, MA, USA
Ph.D. in Computer Science. Advisors: Prof. Robert Platt, Prof. Robin Walters — *Jan. 2020 – Present*
M.S. in Computer Science; GPA: 4.00/4.00 — *Sept. 2017 – Dec. 2019*

Sichuan University — Chengdu, China
B.Eng. in Computer Science and Engineering; GPA: 3.56/4.00 — *Sept. 2013 – June 2017*

Experience

Boston Dynamics AI Institute — Cambridge, MA, USA
Research Intern — *May 2023 – Aug. 2023; May 2024 – Aug. 2024*

Publications

Conference Papers

C19 **D. Wang**, S. Hart, D. Surovik, T. Kelestemur, H. Huang, H. Zhao, M. Yeatman, J. Wang, R. Walters, and R. Platt. Equivariant diffusion policy. In *Conference on Robot Learning (CoRL)*, 2024. **Best Paper Award Finalist**. Link

C18 B. Hu, X. Zhu*, **D. Wang***, Z. Dong*, H. Huang*, C. Wang*, R. Walters, and R. Platt. Orbitgrasp: Se(3)-equivariant grasp learning. In *Conference on Robot Learning (CoRL)*, 2024. Link

C17 H. Huang, K. Schmeckpeper*, **D. Wang***, O. Biza, Y. Qian, H. Liu, M. Jia, R. Platt, and R. Walters. Imagination policy: Using generative point cloud models for learning manipulation policies. In *Conference on Robot Learning (CoRL)*, 2024. Link

C16 H. Huang, O. L. Howell*, **D. Wang***, X. Zhu*, R. Platt†, and R. Walters†. Fourier transporter: Bi-equivariant robotic manipulation in 3d. In *International Conference on Learning Representations (ICLR)*, 2024. Link

C15 **D. Wang**, X. Zhu, J. Y. Park, R. Platt, and R. Walters. A general theory of correct, incorrect, and extrinsic equivariance. In *Conference on Neural Information Processing Systems (NeurIPS)*, 2023. Link

C14 H. H. Nguyen, D. Klee, A. Baisero, **D. Wang**, R. Platt, and C. Amato. Equivariant reinforcement learning under partial observability. In *Conference on Robot Learning (CoRL)*, 2023. Link

C13 **D. Wang**, J. Y. Park, N. Sortur, L. L. Wong, R. Walters†, and R. Platt†. The surprising effectiveness of equivariant models in domains with latent symmetry. In *International Conference on Learning Representations (ICLR)*, 2023. **Spotlight**. Link

C12 M. Jia*, **D. Wang***, G. Su, D. Klee, X. Zhu, R. Walters, and R. Platt. Seil: Simulation-augmented equivariant imitation learning. In *International Conference on Robotics and Automation (ICRA)*, 2023. Link

C11 H. Huang, **D. Wang**, X. Zhu, R. Walters, and R. Platt. Edge grasp network: A graph-based SE(3)-invariant approach to grasp detection. In *International Conference on Robotics and Automation (ICRA)*, 2023. Link

C10 **D. Wang**, M. Jia, X. Zhu, R. Walters, and R. Platt. On-robot learning with equivariant models. In *Conference on Robot Learning (CoRL)*, 2022. Link

C9 H. H. Nguyen, A. Baisero, **D. Wang**, C. Amato, and R. Platt. Leveraging fully observable policies for learning under partial observability. In *Conference on Robot Learning (CoRL)*, 2022. Link

C8 **D. Wang***, C. Kohler*, X. Zhu, M. Jia, and R. Platt. Bulletarm: An open-source robotic manipulation benchmark and learning framework. In *The International Symposium on Robotics Research (ISRR)*, 2022. Link

C7 H. Huang, **D. Wang**, R. Walters, and R. Platt. Equivariant transporter network. In *Robotics: Science and Systems (RSS)*, 2022. Link

C6 X. Zhu, **D. Wang**, O. Biza, G. Su, R. Walters, and R. Platt. Sample efficient grasp learning using equivariant models. In *Robotics: Science and Systems (RSS)*, 2022. Link

C5 **D. Wang**, R. Walters, and R. Platt. SO(2)-equivariant reinforcement learning. In *International Conference on Learning Representations (ICLR)*, 2022. **Spotlight**. Link

C4 **D. Wang**, R. Walters, X. Zhu, and R. Platt. Equivariant Q learning in spatial action spaces. In *Conference on Robot Learning (CoRL)*, 2021. Link

C3 O. Biza, **D. Wang**, R. Platt, J.-W. van de Meent, and L. L. Wong. Action priors for large action spaces in robotics. In *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2021. Link

C2 **D. Wang**, C. Kohler, and R. Platt. Policy learning in SE(3) action spaces. In *Conference on Robot Learning (CoRL)*, 2020. Link

C1 **D. Wang**, C. Kohler, A. ten Pas, A. Wilkinson, M. Liu, H. Yanco, and R. Platt. Towards assistive robotic pick and place in open world environments. In *The International Symposium on Robotics Research (ISRR)*, 2019. Link

Journal Papers

J3 H. Huang, **D. Wang**, A. Tangri, R. Walters, and R. Platt. Leveraging pick and place symmetries. *The International Journal of Robotics Research (IJRR)*, 2024. Link

J2 X. Zhu, **D. Wang**, G. Su, O. Biza, R. Walters, and R. Platt. On robot grasp learning using equivariant models. *Autonomous Robots*, 2023. Link

J1 A. Wilkinson, M. Gonzales, P. Hoey, D. Kontak, **D. Wang**, N. Torname, A. Sinclaire, Z. Han, J. Allspaw, R. Platt, and H. Yanco. Design guidelines for human-robot interaction with assistive robot manipulation systems. *Paladyn, Journal of Behavioral Robotics*, 2021. Link

Preprints

P3 H. Huang, H. Liu, **D. Wang**, R. Walters†, and R. Platt†. Match policy: A simple pipeline from point cloud registration to manipulation policies. Under review. Link

P2 A. Tangri, O. Biza, **D. Wang**, D. Klee, O. L. Howell, and R. Platt. Equivariant offline reinforcement learning. Under review. Link

P1 M. Jia, H. Huang, C. W. Zhewen Zhang, L. Zhao, **D. Wang**, J. X. Liu, R. Walters, R. Platt, and S. Tellex. Open-vocabulary pick and place via patch-level semantic maps. Under review. Link

Honors and Awards

Best Paper Award Finalist	Conference on Robot Learning (CoRL) 2024	*Nov. 2024*
2023 JPMorgan Chase Ph.D. Fellowship	JPMorgan Chase	*June 2023*
Best Paper Award Finalist	ICRA 2022 Scaling Robot Learning Workshop	*May 2022*
Khoury College Graduate Research Fellowship	Northeastern University	*Aug. 2019*

Teaching

Teaching Assistant
Reinforcement Learning and Sequential Decision Making (Northeastern CS5180), Prof. Chris Amato — *Fall 2024*

Guest Lecture on Equivariant Policy Learning for Robotic Manipulation
Algorithmic Robotics (Rice University Comp550), Prof. Lydia Kavraki — *Nov. 2024*

Guest Lecture on Equivariant Reinforcement Learning for Robotic Manipulation
Reinforcement Learning and Sequential Decision Making (Northeastern CS5180), Prof. Lawson Wong — *Apr. 2024*

Guest Lecture on Equivariant Learning for Robotic Manipulation
Geometric Deep Learning (Northeastern CS7180), Prof. Robin Walters — *Apr. 2023*

Guest Lecture on Leveraging SE(2) Symmetries in Robot Learning
Robotics Science and Systems (Northeastern CS5335), Prof. Robert Platt — *Mar. 2022*

Mentoring

Haibo Zhao	M.S. at Northeastern		*Nov. 2023 - Present*
Mingxi Jia	M.S. at Northeastern	Now Ph.D. Student at Brown	*Dec. 2021 - May 2023*
Guanang Su	M.S. at Northeastern	Now Ph.D. Student at Univ. of Minnesota	*Dec. 2021 - May 2023*
Neel Sortur	Undergrad. at Northeastern	Now M.S. Student at Northeastern	*May 2021 - Oct. 2022*
Zhengyi Ou	M.S. at Northeastern	Now Software Engineer at Medtronic	*Sept. 2020 - Dec. 2021*
Yida Niu	M.S. at Northeastern	Now Ph.D. Student at Peking University	*Sept. 2020 - Aug. 2021*

Professional Service

Lead Organizer, RSS 2023 Workshop on Symmetries in Robot Learning

Organizer, RSS 2024 Workshop on Geometric and Algebraic Structure in Robot Learning

Reviewer: IJRR2024. ICML 2024. ICLR 2023-2025. NeurIPS 2023. ICRA 2019, 2022-2024. CoRL 2022-2024. IROS 2021, 2023. RAL 2022-2024. T-RO 2022.

Media Coverage

Khoury Story: Dian on Researching Machine Learning and Robotics, Link	*June 2024*
Institute for Experiential Robotics Newsletter, Dian Wang - CoRL 2022 Presentation	*Jan. 2023*
Northeastern Global News, photo by Matthew Modoono, Link	*Sept. 2020*
IEEE Spectrum Video Friday, Link	*Sept. 2019*

Outreach

AI in Action - Everyday Robotics, presentation and demo at Northeastern University	*Apr. 2024*

Talks and Oral Presentations

Equivariant Policy Learning for Robotic Manipulation

McGill University	*Nov. 2024*
WPI	*Nov. 2024*
UT Austin	*Nov. 2024*
Texas A&M University	*Nov. 2024*
TU Munich	*Nov. 2024*
Next-Gen Robot Learning Symposium at TU Darmstadt	*Nov. 2024*
Stanford University	*Oct. 2024*
University of California, San Diego	*Oct. 2024*
Boston University	*Oct. 2024*
GRASP SFI Seminar, University of Pennsylvania	*Sept. 2024*
University of Washington	*Sept. 2024*
Carnegie Mellon University	*June 2024*
Brown University	*June 2024; Apr. 2023*
Boston Robotics Speaker Series, presented by Universal Robots	*Mar. 2023*

Equivariant Diffusion Policy — Munich, Germany
Conference on Robot Learning (CoRL) 2024 — *Nov. 2024*

Pushing the Limits of Equivariant Neural Networks (with Robin Walters) — Cambridge, MA, USA
NeurReps Global Speaker Series at MIT — *Oct. 2024*

Equivariant Models for Long-Horizon Manipulation — Cambridge, MA, USA
Boston Dynamics AI Institute — *Mar. 2024*

The Surprising Effectiveness of Equivariant Models in Domains with Latent Symmetry — Kigali, Rwanda
International Conference on Learning Representations (ICLR) 2023 — *May 2023*

Equivariant Q Learning in Spatial Action Spaces — New York City, NY, USA
RSS 2022 Workshop on Scaling Robot Learning — *June 2022*

SO(2)-Equivariant Reinforcement Learning for Robotic Manipulation — Philadelphia, PA, USA
ICRA 2022 Workshop on Scaling Robot Learning — *May 2022*

Towards Assistive Robotic Pick and Place in Open World Environments — Hanoi, Vietnam
The International Symposium on Robotics Research (ISRR) 2019 — *Dec. 2019*