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

Northeastern University — Boston, MA, USA
Research Assistant — *Jan. 2018 – Present*

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

Publications

27 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. **Oral**. Link

26 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

25 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

24 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

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

22 X. Zhu, D. Klee, D. Wang, B. Hu, H. Huang, A. Tangri, R. Walters, and R. Platt. SE(3) keyframe action transporter. Under review

21 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

20 D. Klee, D. Wang, R. Platt, and R. Walters. Reducing symmetry mismatch caused by freely placed cameras in robotic learning. Under review

19 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

18 H. Huang, D. Wang, A. Tangri, R. Walters, and R. Platt. Leveraging pick and place symmetries. *The International Journal of Robotics Research (IJRR)*, 2023. Link

17 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

16 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

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

14 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

13 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

12 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

11 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

10 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

9 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

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

7 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

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

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

4 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

3 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

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

1 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

Honors and Awards

2023 JPMorgan Chase PhD Fellowship	JPMorgan Chase	*June 2023*
Best Paper Award Finalist	ICRA 2022 Workshop on Scaling Robot Learning	*May 2022*
Khoury College Graduate Research Fellowship	Northeastern University	*Aug. 2019*

Talks and Oral Presentations

Equivariant Learning for Robotic Manipulation
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 Models for Long-Horizon Manipulation — Boston, 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*

Teaching

Teaching Assistant
Reinforcement Learning and Sequential Decision Making (Northeastern CS5180), Prof. Christopher Amato *Fall 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		*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 2023-2024. 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*

Skills

Programming: Python, Java, C++
Tools: VSCode, PyCharm, IntelliJ IDEA, Git, LaTeX, Final Cut Pro
Robotics: Franka Emika, UR5, Baxter, Robotic Operating System (ROS), PyBullet, OpenRave
Machine Learning: PyTorch, NumPy