

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

- Proposed symmetric neural network architectures for improving training efficiency in robotic manipulation tasks.
- Implemented an open-sourced robotic reinforcement learning environment library using PyBullet.
- Built an assistive robotic system to assist people with disabilities in household manipulation tasks.

Boston Dynamics AI Institute

Cambridge, MA, USA

Research Intern

May 2023 – Aug. 2023; May 2024 – Present

- Proposed algorithms for solving long-horizon robotic manipulation tasks using geometric deep learning.

Institute of Computing Technology, Chinese Academy of Sciences

Beijing, China

Research Intern

July 2016 – Aug. 2016

- Led team of 4 interns to implement a user dynamic detection app based on data from gravity sensor.

PUBLICATIONS

- 26 **D. Wang**, S. Hart, D. Surovik, T. Kelestemur, H. Huang, H. Zhao, M. Yeatman, J. Wang, R. Walters, and R. Platt. Equivariant diffusion policy. Under review
- 25 B. Hu, X. Zhu, **D. Wang**, Z. Dong, H. Huang, C. Wang, R. Walters, and R. Platt. Orbitgrasp: Se(3)-equivariant grasp learning. Under review
- 24 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. Under review
- 23 A. Tangri, O. Biza, **D. Wang**, D. Klee, O. L. Howell, and R. Platt. Equivariant offline reinforcement learning. Under review
- 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
- 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. Tormane, A. Sinclair, 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](#)

HONERS AND AWARDS

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

TALKS AND ORAL PRESENTATIONS

Equivariant Models for Long-Horizon Manipulation <i>Boston Dynamics AI Institute</i>	Boston, MA, USA <i>Mar. 2024</i>
The Surprising Effectiveness of Equivariant Models in Domains with Latent Symmetry <i>International Conference on Learning Representations (ICLR) 2023</i>	Kigali, Rwanda <i>May 2023</i>
Equivariant Learning for Robotic Manipulation <i>Department of Computer Science, Brown University</i>	Providence, RI, USA <i>Apr. 2023</i>
Equivariant Learning for Robotic Manipulation <i>Boston Robotics Speaker Series, presented by Universal Robots</i>	Boston, MA, USA <i>Mar. 2023</i>
Equivariant Q Learning in Spatial Action Spaces <i>RSS 2022 Workshop on Scaling Robot Learning</i>	New York City, NY, USA <i>June 2022</i>
SO(2)-Equivariant Reinforcement Learning for Robotic Manipulation <i>ICRA 2022 Workshop on Scaling Robot Learning</i>	Philadelphia, PA, USA <i>May 2022</i>
Towards Assistive Robotic Pick and Place in Open World Environments <i>The International Symposium on Robotics Research (ISRR) 2019</i>	Hanoi, Vietnam <i>Dec. 2019</i>

TEACHING

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		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 2022-2023. IROS 2021, 2023. RAL 2022-2024. T-RO 2022.

MEDIA COVERAGE

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
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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