

# Dian Wang

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## RESEARCH INTERESTS

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

## EDUCATION

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### 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

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### 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*

- 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

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- 22 **D. Wang**, S. Hart, D. Surovik, T. Kelestemur, H. Huang, H. Zhao, J. Wang, R. Walters, and R. Platt. Equivariant diffusion policy. Under review
- 21 X. Zhu, D. Klee, **D. Wang**, B. Hu, H. Huang, A. Tangri, R. Walters, and R. Platt. SE(3) keyframe action transporter. Under review
- 20 M. Jia, H. Huang, C. W. Zhewen Zhang, L. Zhao, **D. Wang**, J. X. Liu, R. Walters, R. Platt, and S. Tellex. Open-world language-conditioned pick and place. Under review
- 19 H. Huang, O. L. Howell\*, **D. Wang\***, X. Zhu\*, R. Platt<sup>†</sup>, and R. Walters<sup>†</sup>. 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<sup>†</sup>, and R. Platt<sup>†</sup>. 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. Tornare, 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

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

## TALKS AND ORAL PRESENTATIONS

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

## TEACHING

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<b>Guest Lecture on Equivariant Reinforcement Learning for Robotic Manipulation</b> <i>Reinforcement Learning and Sequential Decision Making (Northeastern CS5180), Prof. Lawson Wong</i>	<i>Apr. 2024</i>
<b>Guest Lecture on Equivariant Learning for Robotic Manipulation</b> <i>Geometric Deep Learning (Northeastern CS7180), Prof. Robin Walters</i>	<i>Apr. 2023</i>
<b>Guest Lecture on Leveraging SE(2) Symmetries in Robot Learning</b> <i>Robotics Science and Systems (Northeastern CS5335), Prof. Robert Platt</i>	<i>Mar. 2022</i>

## MENTORING

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

## PROFESSIONAL SERVICE

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**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

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Institute for Experiential Robotics Newsletter, Dian Wang - CoRL 2022 Presentation	<i>Jan. 2023</i>
Northeastern Global News, photo by Matthew MODOONO, <a href="#">Link</a>	<i>Sept. 2020</i>
IEEE Spectrum Video Friday, <a href="#">Link</a>	<i>Sept. 2019</i>

## OUTREACH

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AI in Action - Everyday Robotics, presentation and demo at Northeastern University	<i>Apr. 2024</i>
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## SKILLS

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**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