

# Dian Wang

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## EDUCATION

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### Northeastern University

*Ph.D. in Computer Science*

*M.S. in Computer Science; GPA: 4.00/4.00*

### Sichuan University

*B.Eng. in Computer Science and Engineering; GPA: 3.56/4.00*

Boston, MA, USA

*Jan. 2020 – Present*

*Sept. 2017 – Dec. 2019*

Chengdu, China

*Sept. 2013 – June 2017*

## EXPERIENCE

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### The Helping Hands Lab, Northeastern University

*Research Assistant*

Boston, MA, USA

*Jan. 2018 – Present*

#### **Equivariant reinforcement learning in robotic manipulation**

- Defined the symmetric properties of reinforcement learning in robotic manipulation.
- Proposed neural network architectures for improving training efficiency in robotic manipulation tasks.

#### **BulletArm reinforcement learning environments**

- Implemented an open-sourced robotic reinforcement learning environment library using PyBullet.
- Built a real-world experimental platform using a UR5 arm.

#### **Policy learning in SE(3) action spaces**

- Designed a reinforcement learning framework for robotic manipulation tasks.
- Proposed an imitation learning algorithm for large action spaces.

#### **Assistive robotic pick-and-place system**

- Built an assistive robotic system to assist people with disabilities in household manipulation tasks.
- Conducted pick-and-place experiments in an open world environment.

### Boston Dynamics AI Institute

*Research Intern*

Cambridge, MA, USA

*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

*Research Intern*

Beijing, China

*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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- 19 Haojie Huang, Owen Lewis Howell, **Dian Wang**, Xupeng Zhu, Robert Platt, and Robin Walters. Fourier transporter: Bi-equivariant robotic manipulation in 3d. Under review
- 18 Haojie Huang, **Dian Wang**, Arsh Tangri, Robin Walters, and Robert Platt. Leveraging pick and place symmetries. *The International Journal of Robotics Research (IJRR)*, 2023. [Link](#)
- 17 **Dian Wang**, Xupeng Zhu, Jung Yeon Park, Robert Platt, and Robin Walters. A general theory of correct, incorrect, and extrinsic equivariance. In *Conference on Neural Information Processing Systems (NeurIPS)*, 2023. Acceptance Rate 26.1%
- 16 Hai Huu Nguyen, David Klee, Andrea Baisero, **Dian Wang**, Robert Platt, and Christopher Amato. Equivariant reinforcement learning under partial observability. In *Conference on Robot Learning (CoRL)*, 2023. Acceptance Rate 39.9%. [Link](#)
- 15 Xupeng Zhu, **Dian Wang**, Guanang Su, Ondrej Biza, Robin Walters, and Robert Platt. On robot grasp learning using equivariant models. *Autonomous Robots*, 2023. [Link](#)
- 14 **Dian Wang**, Jung Yeon Park, Neel Sortur, Lawson L.S. Wong, Robin Walters\*, and Robert Platt\*. The surprising effectiveness of equivariant models in domains with latent symmetry. In *International Conference on Learning Representations (ICLR)*, 2023. \*Equal advising. **Spotlight**. Acceptance Rate 8%. [Link](#)
- 13 Mingxi Jia\*, **Dian Wang**\*, Guanang Su, David Klee, Xupeng Zhu, Robin Walters, and Robert Platt. Seil: Simulation-augmented equivariant imitation learning. In *International Conference on Robotics and Automation (ICRA)*, 2023. \*Equal contribution. Acceptance Rate: 43%. [Link](#)

- 12 Haojie Huang, **Dian Wang**, Xupeng Zhu, Robin Walters, and Robert Platt. Edge grasp network: A graph-based SE(3)-invariant approach to grasp detection. In *International Conference on Robotics and Automation (ICRA)*, 2023. Acceptance Rate: 43%. [Link](#)
- 11 **Dian Wang**, Mingxi Jia, Xupeng Zhu, Robin Walters, and Robert Platt. On-robot learning with equivariant models. In *Conference on Robot Learning (CoRL)*, 2022. Acceptance Rate: 39%. [Link](#)
- 10 Hai Huu Nguyen, Andrea Baisero, **Dian Wang**, Christopher Amato, and Robert Platt. Leveraging fully observable policies for learning under partial observability. In *Conference on Robot Learning (CoRL)*, 2022. Acceptance Rate: 39%. [Link](#)
- 9 **Dian Wang\***, Colin Kohler\*, Xupeng Zhu, Mingxi Jia, and Robert Platt. Bulletarm: An open-source robotic manipulation benchmark and learning framework. In *The International Symposium on Robotics Research (ISRR)*, 2022. \*Equal contribution. Acceptance Rate 49%. [Link](#)
- 8 Haojie Huang, **Dian Wang**, Robin Walters, and Robert Platt. Equivariant transporter network. In *Robotics: Science and Systems (RSS)*, 2022. Acceptance Rate 32%. [Link](#)
- 7 Xupeng Zhu, **Dian Wang**, Ondrej Biza, Guanang Su, Robin Walters, and Robert Platt. Sample efficient grasp learning using equivariant models. In *Robotics: Science and Systems (RSS)*, 2022. Acceptance Rate 32%. [Link](#)
- 6 **Dian Wang**, Robin Walters, and Robert Platt. SO(2)-equivariant reinforcement learning. In *International Conference on Learning Representations (ICLR)*, 2022. **Spotlight**. Acceptance Rate 5%. [Link](#)
- 5 **Dian Wang**, Robin Walters, Xupeng Zhu, and Robert Platt. Equivariant  $Q$  learning in spatial action spaces. In *Conference on Robot Learning (CoRL)*, 2021. Acceptance Rate: 34%. [Link](#)
- 4 Alexander Wilkinson, Michael Gonzales, Patrick Hoey, David Kontak, **Dian Wang**, Noah Tormane, Amelia Sinclair, Zhao Han, Jordan Allspaw, Robert Platt, and Holly Yanco. Design guidelines for human-robot interaction with assistive robot manipulation systems. *Paladyn, Journal of Behavioral Robotics*, 2021. [Link](#)
- 3 Ondrej Biza, **Dian Wang**, Robert Platt, Jan-Willem van de Meent, and Lawson LS Wong. Action priors for large action spaces in robotics. In *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2021. Acceptance Rate: 25%. [Link](#)
- 2 **Dian Wang**, Colin Kohler, and Robert Platt. Policy learning in SE(3) action spaces. In *Conference on Robot Learning (CoRL)*, 2020. Acceptance Rate: 34.7%. [Link](#)
- 1 **Dian Wang**, Colin Kohler, Andreas ten Pas, Alexander Wilkinson, Maozhi Liu, Holly Yanco, and Robert Platt. Towards assistive robotic pick and place in open world environments. In *The International Symposium on Robotics Research (ISRR)*, 2019. [Link](#)

## PRESENTATIONS

<b>A General Theory of Correct, Incorrect, and Extrinsic Equivariance</b>	New Orleans, USA
<i>Conference on Neural Information Processing Systems (NeurIPS) 2023</i>	<i>Dec. 2023</i>
<b>The Surprising Effectiveness of Equivariant Models in Domains with Latent Symmetry</b>	New Orleans, USA
<i>NeurIPS 2023 Workshop on Symmetry and Geometry in Neural Representations</i>	<i>Dec. 2023</i>
<b>Correct, Incorrect, and Extrinsic Equivariance</b>	New York City, NY, USA
<i>NSF-Simons Mathematical and Scientific Foundations of Deep Learning Annual Meeting</i>	<i>Sept. 2023</i>
<b>The Surprising Effectiveness of Equivariant Models in Domains with Latent Symmetry</b>	Kigali, Rwanda
<i>International Conference on Learning Representations (ICLR) 2023</i>	<i>May 2023</i>
<b>Equivariant Learning for Robotic Manipulation</b>	Providence, RI, USA
<i>Department of Computer Science, Brown University</i>	<i>Apr. 2023</i>
<b>Equivariant Learning for Robotic Manipulation</b>	Boston, MA, USA
<i>Boston Robotics Speaker Series, presented by Universal Robots</i>	<i>Mar. 2023</i>
<b>On-Robot Learning with Equivariant Models</b>	Auckland, New Zealand
<i>Conference on Robot Learning (CoRL) 2022</i>	<i>Dec. 2022</i>
<b>Graph-Based SE(3)-invariant Approach to Grasp Detection</b>	Auckland, New Zealand
<i>CoRL 2022 Workshop on Sim-to-Real Robot Learning</i>	<i>Dec. 2022</i>
<b>SEIL: Simulation-augmented Equivariant Imitation Learning</b>	Auckland, New Zealand
<i>CoRL 2022 Workshop on Sim-to-Real Robot Learning</i>	<i>Dec. 2022</i>
<b>Equivariant Reinforcement Learning for Robotic Manipulation</b>	Providence, RI, USA
<i>The Multi-disciplinary Conference on Reinforcement Learning and Decision Making 2022</i>	<i>June 2022</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>SO(2)-Equivariant Reinforcement Learning</b> <i>International Conference on Learning Representations (ICLR) 2022</i>	Online <i>Apr. 2022</i>
<b>Equivariant Q Learning in Spatial Action Spaces</b> <i>Conference on Robot Learning (CoRL) 2021</i>	Online <i>Nov. 2021</i>
<b>Policy Learning in SE(3) Action Spaces</b> <i>Conference on Robot Learning (CoRL) 2020</i>	Online <i>Nov. 2020</i>
<b>Imitation Learning with Pixel-Wise Action Parametrization</b> <i>M.S. Thesis Defense, Khoury College of Computer Sciences, Northeastern University</i>	Boston, MA, USA <i>Dec. 2019</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

<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>
<b>Guest Lecture on Equivariant Learning for Robotic Manipulation</b> <i>Geometric Deep Learning (Northeastern CS7180), Prof. Robin Walters</i>	<i>Apr. 2023</i>

## MENTORING

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

**Lead Organizer**, RSS 2023 Workshop on Symmetries in Robot Learning  
**Reviewer**: ICLR 2024, 2023. NeurIPS 2023. ICRA 2024, 2023, 2022, 2019. CoRL 2023, 2022. IROS 2023, 2021. RAL 2023, 2022. T-RO 2022.

## HONERS & AWARDS

<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>

## SKILLS

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