# Dian Wang

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### **EDUCATION**

Northeastern University

Ph.D. in Computer Science

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

Sichuan University

B.Enq. 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

# The Helping Hands Lab, Northeastern University

Boston, MA, USA

Research Assistant

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.

# Institute of Computing Technology, Chinese Academy of Sciences

Beijing, China

Research Intern

July. 2016 - Aug. 2026

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

#### **Publications**

- 18 **Dian Wang**, Xupeng Zhu, Jung Yeon Park, Robert Platt, and Robin Walters. A general theory of correct, incorrect, and extrinsic equivariance. Under review. <u>Link</u>
- 17 Hai Huu Nguyen, David Klee, Andrea Baisero, **Dian Wang**, Robert Platt, and Christopher Amato. Equivariant reinforcement learning under partial observability. Under review
- 16 Haojie Huang, **Dian Wang**, Arsh Tangri, Robin Walters, and Robert Platt. Leveraging pick and place symmetries. Under review
- 15 Xupeng Zhu, **Dian Wang**, Guanang Su, Ondrej Biza, Robin Walters, and Robert Platt. On robot grasp learning using equivariant models. Under review
- 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. **Spotlight**. Acceptance Rate 8%. <u>Link</u>
- 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%. <u>Link</u>
- 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%. <u>Link</u>
- 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%. <u>Link</u>
- 8 Haojie Huang, **Dian Wang**, Robin Walters, and Robert Platt. Equivariant transporter network. In *Robotics: Science and Systems (RSS)*, 2022. Acceptance Rate 32%. <u>Link</u>
- 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%. <u>Link</u>
- 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%. <u>Link</u>
- 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 Torname, Sam Laderoute, 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. <u>Link</u>
- 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%. <u>Link</u>
- 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%. <u>Link</u>
- 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. <u>Link</u>

### Presentations

Boston, MA, USA
Mar. 2023
Auckland, New Zealand
Dec. 2022
Auckland, New Zealand
Dec. 2022
Auckland, New Zealand
Dec. 2022
Providence, RI, USA
June 2022
New York City, NY, USA
June~2022
Philadelphia, PA, USA
May~2022
Online
Apr. 2022
Online
Nov. 2021
Online
Nov. 2020
Boston, MA, USA
Dec. 2019
Hanoi, Vietnam
Dec. 2019

### Teaching

# Mentoring

Mingxi Jia	M.S. Student at Northeastern University	Dec. 2021 - Present
Guanang Su	M.S. Student at Northeastern University	Dec. 2021 - Present
Neel Sortur	Undergraduate Student at Northeastern University	May 2021 - Oct. 2022
Zhengyi Ou	M.S. Student at Northeastern University	Sept. 2020 - Dec. 2021
Yida Niu	M.S. Student at Northeastern University	Sept. 2020 - Aug. 2021

# PROFESSIONAL SERVICE

Lead Organizer, RSS 2023 Workshop on Symmetries in Robot Learning

Reviewer: ICRA 2023, CoRL 2022, RAL 2022, T-RO 2022, ICRA 2022, IROS 2021, ICRA 2019

# Honers & Awards

Best Paper Award Finalist	ICRA 2022 Workshop on Scaling Robot Learning	May 2022
Khoury College Graduate Research Fellowship	Northeastern University	Aug. 2019
First Place of Outstanding Bachelor's Thesis	Sichuan University	$June\ 2017$

# 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