Dian Wang

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Education

Northeastern University — Boston, MA, USA
Ph.D. in Computer Science — *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

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

- Conduct research in solving long-horizon robotic manipulation tasks using geometric deep learning.

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. Link

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. *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. **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 Torname, Amelia Sinclaire, 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

The Surprising Effectiveness of Equivariant Models in Domains with Latent Symmetry — Kigali, Rwanda
International Conference on Learning Representations (ICLR) 2023 — *May 2023*

Equivariant Learning for Robotic Manipulation — Providence, RI, USA
Department of Computer Science, Brown University — *Apr. 2023*

Equivariant Learning for Robotic Manipulation — Boston, MA, USA
Boston Robotics Speaker Series, presented by Universal Robots — *Mar. 2023*

On-Robot Learning with Equivariant Models — Auckland, New Zealand
Conference on Robot Learning (CoRL) 2022 — *Dec. 2022*

Graph-Based SE(3)-invariant Approach to Grasp Detection — Auckland, New Zealand
CoRL 2022 Workshop on Sim-to-Real Robot Learning — *Dec. 2022*

SEIL: Simulation-augmented Equivariant Imitation Learning — Auckland, New Zealand
CoRL 2022 Workshop on Sim-to-Real Robot Learning — *Dec. 2022*

Equivariant Reinforcement Learning for Robotic Manipulation — Providence, RI, USA
The Multi-disciplinary Conference on Reinforcement Learning and Decision Making 2022 — *June 2022*

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*

SO(2)-Equivariant Reinforcement Learning — Online
International Conference on Learning Representations (ICLR) 2022 — *Apr. 2022*

Equivariant Q Learning in Spatial Action Spaces — Online
Conference on Robot Learning (CoRL) 2021 — *Nov. 2021*

Policy Learning in SE(3) Action Spaces — Online
Conference on Robot Learning (CoRL) 2020 — *Nov. 2020*

Imitation Learning with Pixel-Wise Action Parametrization Boston, MA, USA
M.S. Thesis Defense, Khoury College of Computer Sciences, Northeastern University *Dec. 2019*

Towards Assistive Robotic Pick and Place in Open World Environments Hanoi, Vietnam
The International Symposium on Robotics Research (ISRR) 2019 *Dec. 2019*

Teaching

Guest Lecture on Leveraging SE(2) Symmetries in Robot Learning
Robotics Science and Systems (Northeastern CS5335), Prof. Robert Platt *Mar. 2022*

Guest Lecture on Equivariant Learning for Robotic Manipulation
Geometric Deep Learning (Northeastern CS7180), Prof. Robin Walters *Apr. 2023*

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

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

Last updated June 13, 2023.