

# Tairan He

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## Education

### Carnegie Mellon University

PH.D. IN ROBOTICS

Pittsburgh, USA

Aug. 2023 - Present

### Shanghai Jiao Tong University

B.ENG. IN COMPUTER SCIENCE

Shanghai, China

Aug. 2018 - Jun. 2023

## Publications (\*equal contribution)

### PREPRINTS

#### [P2] OmniH2O: Universal and Dexterous Human-to-Humanoid Whole-Body Teleoperation and Learning.

Tairan He\*, Zhengyi Luo\*, Xialin He\*, Wenli Xiao, Chong Zhang, Kris Kitani, Weinan Zhang, Changliu Liu, Guanya Shi.  
Under review, 2024 [Paper]

#### [P1] WoCoCo: Learning Whole-Body Humanoid Control with Sequential Contacts.

Chong Zhang\*, Wenli Xiao\*, Tairan He, Guanya Shi.  
Under review, 2024 [Paper]

### CONFERENCE PROCEEDINGS

#### [C12] Learning Human-to-Humanoid Real-Time Whole-Body Teleoperation.

Tairan He\*, Zhengyi Luo\*, Wenli Xiao, Chong Zhang, Kris Kitani, Changliu Liu, Guanya Shi.  
IROS, 2024 (Oral Presentation) [Paper]

#### [C11] Progressive Adaptive Chance-Constrained Safeguards for Reinforcement Learning.

Zhaorun Chen, Binhao Chen, Tairan He, Liang Gong, Chengliang Liu.  
IROS, 2024 (Oral Pitch) [Paper]

#### [C10] Agile But Safe: Learning Collision-Free High-Speed Legged Locomotion.

Tairan He\*, Chong Zhang\*, Wenli Xiao, Guanqi He, Changliu Liu, Guanya Shi.  
RSS, 2024 (Outstanding Student Paper Award Finalist - Top 3) [Paper]

#### [C9] Safe Deep Policy Adaptation.

Wenli Xiao\*, Tairan He\*, John Dolan, Guanya Shi.  
ICRA, 2024 [Paper]

#### [C8] State-wise Safe Reinforcement Learning: A Survey.

Weiye Zhao, Tairan He, Rui Chen, Tianhao Wei, Changliu Liu.  
IJCAI (Survey Track), 2023. [Paper]

#### [C7] Probabilistic Safeguard for Reinforcement Learning Using Safety Index Guided Gaussian Process Models.

Weiye Zhao\*, Tairan He\*, Changliu Liu.  
L4DC, 2023. [Paper]

#### [C6] Visual Imitation Learning with Patch Rewards.

Minghuan Liu, Tairan He, Weinan Zhang, Shuicheng Yan, Zhongwen Xu.  
ICLR, 2023. [Paper]

#### [C5] Safety Index Synthesis via Sum-of-Squares Programming.

Weiye Zhao\*, Tairan He\*, Tianhao Wei, Simin Liu, Changliu Liu.  
ACC, 2023. [Paper]

#### [C4] AutoCost: Evolving Intrinsic Cost for Zero-violation Reinforcement Learning.

Tairan He, Weiye Zhao, Changliu Liu.  
AAAI, 2023. [Paper]

#### [C3] Reinforcement Learning with Automated Auxiliary Loss Search.

Tairan He, Yuge Zhang, Kan Ren, Minghuan Liu, Che Wang, Weinan Zhang, Yuqing Yang, Dongsheng Li.  
NeurIPS, 2022. [Paper]

#### [C2] Model-free Safe Control for Zero-Violation Reinforcement Learning.

Weiye Zhao, Tairan He, Changliu Liu.  
CoRL, 2021. [Paper]

#### [C1] Energy-Based Imitation Learning.

Minghuan Liu, Tairan He, Minkai Xu, Weinan Zhang.  
AAMAS (Oral), 2021. [Paper]

## Professional Services

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Reviewer **International Conference on Machine Learning (ICML)**, 2024  
Reviewer **International Conference on Learning Representations (ICLR)**, 2024  
Reviewer **IEEE Conference on Decision and Control (CDC)**, 2023  
Reviewer **Conference on Neural Information Processing Systems (NeurIPS)**, 2023  
Reviewer **Learning for Dynamics & Control Conference (L4DC)**, 2023, 2024  
Reviewer **AAAI Conference on Artificial Intelligence (AAAI)**, 2022, 2023  
Reviewer **Conference on Robot Learning (CoRL)**, 2022, 2023, 2024

## Skills

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**Programming** C/C++, Python,  $\LaTeX$ , JAVA, Node.js, Wolfram Language, SQL, Linux, MATLAB, PHP  
**Frameworks** PyTorch, Tensorflow, NumPy, Flask, MySQL, Git, Anaconda, OpenCV.  
**Platforms** Kinova, Rosbot. Unitree Go1

## Research Experience

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### NVIDIA Research

*Santa Clara, USA*

RESEARCH INTERN AT **GEAR LAB**, ADVISED BY **JIM FAN** AND **YUKE ZHU**

*Jun. 2024 - Present*

- **Research Topics:** humanoid whole-body control, dexterous bimanual manipulation.

### Carnegie Mellon University

*Pittsburgh, USA*

PHD STUDENT, ADVISED BY **PROF. GUANYA SHI** AND **PROF. CHANGLIU LIU**

*Aug. 2023 - Present*

- **Research Topics:** reinforcement learning, humanoid teleoperation, agile legged robots.

### Carnegie Mellon University

*Pittsburgh, USA*

RESEARCH ASSISTANT AT **INTELLIGENT CONTROL LAB**, ADVISED BY **PROF. CHANGLIU LIU**

*Jan. 2022 - Jan. 2023*

- **Research Topics:** safe reinforcement learning, safe control, control theory.

### Microsoft Research

*Shanghai, China*

RESEARCH INTERN, ADVISED BY **KAN REN** AND **YUGE ZHANG**

*Mar. 2021 - Dec. 2021*

- **Research Topics:** auto ML, reinforcement learning.

### Shanghai Jiao Tong University

*Shanghai, China*

RESEARCH ASSISTANT AT **APEX LAB**, ADVISED BY **PROF. WEINAN ZHANG**

*Jul. 2019 - Jan. 2023*

- **Research Topics:** reinforcement learning, imitation learning.

## Project Portfolio (Selected)

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### SJTU Anonymous Forum

*Shanghai, China*

FOUNDER & DEVELOPER. [\[ANDROID CODE\]](#) / [\[IOS CODE\]](#) / [\[FAREWELL VIDEO\]](#)

*Feb. 2020 - Apr. 2021*

- Developed a care-free forum platform for SJTU students to share and talk using anonymous identities.
- More than **10000+** users used this app in the SJTU campus.

## Honors and Awards (Selected)

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- 2024 **Outstanding Student Paper Award Finalist - Top 3**, Robotics: Science and Systems.
- 2021 **Microsoft Star of Tomorrow**, top-performing interns at Microsoft.
- 2020 **Shanghai Jiao Tong University Excellent Scholarship**, top 10% students in SJTU.
- 2019 **Zhiyuan Honorary Scholarship**, top 5% students in SJTU.