Tairan He

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Education

Carnegie Mellon University — *Pittsburgh, USA*
PH.D. IN ROBOTICS — *Aug. 2023 - Present*

Shanghai Jiao Tong University — *Shanghai, China*
B.ENG. IN COMPUTER SCIENCE — *Aug. 2018 - Jun. 2023*

Publications (*equal contribution)

CONFERENCE PROCEEDINGS

[C14] 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.
CoRL, 2024 [Paper]

[C13] WoCoCo: Learning Whole-Body Humanoid Control with Sequential Contacts.
Chong Zhang*, Wenli Xiao*, **Tairan He**, Guanya Shi.
CoRL, 2024 [Paper]

[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, 2021 (Oral) [Paper]

Professional Services

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, 2024
Reviewer **Conference on Robot Learning (CoRL)**, 2022, 2023, 2024
Reviewer **IEEE-RAS International Conference on Humanoid Robots (Humanoids)**, 2024

Skills

Programming Python, C/C++, LaTeX, JAVA, Node.js, Wolfram Language, SQL, Linux, MATLAB, PHP
Frameworks PyTorch, Tensorflow, NumPy, Flask, MySQL, Git, Anaconda, OpenCV, ROS.
Platforms Kinova, Rosbot. Unitree Go1, Unitree H1, Fourier GR-1

Research Experience

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)

SJTU Anonymous Forum *Shanghai, China*
Founder & Developer. [Android Code] / [iOS Code] / [Farewell Video] *Feb. 2020 - Apr. 2021*
- Develoed 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)

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.