

Zhuoheng Wang

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Education

Tsinghua University

BS in Mechanics & Interdisciplinary Engineering

Aug 2022 – Present

- **GPA:** 3.9/4.0
- **Main Honors:** National Scholarship, Academic Excellence Scholarship, Taihu Scholarship for Future Technology, Science and Technology Innovation Excellence Scholarship

Georgia Institute of Technology

Visiting Student at George W. Woodruff School of Mechanical Engineering

Jun 2025 – Sep 2025

Research Interests

Legged Robotics, Humanoid Robot, Reinforcement Learning and Optimal Control

Publications

* denotes equal contribution

- [1] SEEC: Stable End-Effector Control with Model-Enhanced Residual Learning for Humanoid Loco-Manipulation
Jaehwi Jang*, **Zhuoheng Wang***, Ziyi Zhou, Feiyang Wu, Ye Zhao
Submitted to ICRA 2026
- [2] Dribble Master: Learning Agile Humanoid Dribbling Through Legged Locomotion
Zhuoheng Wang*, Jinyin Zhou*, Qi Wu
Submitted to ICRA 2026

Research Experience

Stable Humanoid Loco-Manipulation with Model-Enhanced Reinforcement Learning

LIDAR Lab, Georgia Institute of Technology

Advisor: Prof. Ye Zhao
Jun 2025 – Sep 2025

- To minimize end-effector acceleration for humanoid loco-manipulation tasks
- Built RL training environments for upper-body end-effector tracking and stabilization and lower-body robust locomotion
- Implemented RL-based sim-to-sim and sim-to-real transfer pipelines for the T1 robot
- Developed MuJoCo-based environment for end-effector stability evaluation
- Our method outperforms all the baselines and shows better robustness to diverse and demanding loco-manipulation scenarios

Humanoid Soccer Dribbling with Reinforcement Learning and Active Sensing

Robot Control Lab, Tsinghua University

Advisor: Prof. Mingguo Zhao
and Prof. Li Liu
Aug 2024 – Apr 2025

- To enable dexterous robot-object interactions with active sensing
- Designed dribbling-related rewards and utilized Isaac Gym for training policies
- Transferred policies trained in Isaac Gym to MuJoCo for sim-to-sim validation
- Deployed trained policies on the Booster T1 robot for sim-to-real experiments
- Our dribbling policy accurately tracks the ball with only 2.69% error in direction and 10.4% error in speed

SkyRover: Air-Ground Robots for Low-Altitude Air Delivery Scenarios

DISCOVER Lab, Tsinghua University

Advisor: Prof. Guyue Zhou
Jan 2024 – Aug 2024

- Created the ROS Gazebo simulation of the SkyRover, a versatile robot with the ability to perform both rover and drone locomotion
- Demonstrated SkyRover's ability of sensing, navigation and control to complete simple delivery tasks and verify the feasibility of low-altitude air delivery
- Studied hybrid motion planning algorithms based on 2.5D risk maps

- Led the team as the captain to show exceptional performance and win the Urban Air Transportation Challenge Championship

Peter: A Fully Automatic Fruit and Vegetable Peeling Machine Based on Arduino and Traditional Control Theory

DISCOVER Lab, Tsinghua University

Advisor: Prof. Guyue Zhou
Apr 2023 – Sep 2023

- Invented the mechanical structure of the self-cleaning module and the material transferring part in the peeling machine with SolidWorks
- Successfully built the prototype via 3D printing
- Our project was successfully accepted as a cultivation project of Tsinghua X-Lab

Internship

Booster Robotics

- Established communication between the motion capture system around a soccer field and the humanoid robot, enabling the robot to perceive the position and orientation of any rigid body in the soccer field

Motion Control Engineer
Nov 2024 – Mar 2025

Department of Mechanical Engineering, Tsinghua University

- Solved students' problems, corrected assignments, and organized penalty shootout & 1v1 competition in the course Humanoid Soccer Robot
- Our course has been selected as a model project of Tsinghua University for the combination of competition and teaching

Teaching Assistant
Aug 2024 – Jan 2025
Sep 2025 - Present

Honors and Awards

Excellent Poster in Tsinghua University's Undergraduate Academic Advancement Program, Tsinghua University

Dec 2024

National Scholarship, Tsinghua University (5/147)

Oct 2024

Academic Excellence Scholarship, Tsinghua University

Oct 2024

Top Eight in RoboCup 2024 Humanoid League KidSize Soccer Competition, Eindhoven, Netherlands (Team Leader)

Jul 2024

1st Place in RoboCup China 2024 Humanoid League KidSize Soccer Competition, Fujian, China (Team Leader)

May 2024

4th Place in RoboCup Asia-Pacific 2023 Humanoid League KidSize Soccer Competition, Pyeongchang, South Korea

Dec 2023

Taihu Scholarship for Future Technology, Tsinghua University

Dec 2023

Science and Technology Innovation Excellence Scholarship, Tsinghua University

Dec 2023

1st Prize in the 39th National Undergraduate Physics Competition, Beijing, China

Dec 2023

2nd Place in RoboCup China 2023 Humanoid League KidSize Soccer Competition, Fujian, China

Oct 2023

Activities

Tsinghua University TH-MOS Robot Soccer Team, Team Leader

Jan 2024 – Dec 2024

- Led the team to win the first championship in team history and become a world-class contender
- Designed the goalkeeper's saving skill and created its decision-making framework to enhance the team's defensive ability
- Corrected the striker's shooting direction based on global localization, significantly increasing the team's number of goals

Tsinghua University TH-MOS Robot Soccer Team, Team Member

Oct 2023 – Jan 2024

- Optimized gait parameters to improve the robot's walking stability
- Optimized the parameters of the robot's kicking action to improve shooting skills