YANDONG JI

◇ yandong@mit.edu ◇ Phone: 510-934-8620 ◇ Website: https://yandongji.github.io

EDUCATION

University of California at Berkeley, USA Aug 2021 - May 2022
- MEng in Mechanical Engineering

Nankai University, China Aug 2017 - June 2021
- BEng in Intelligent Science and Technology
- Awards: Innovation and Entrepreneurship Scholarship, Academic Excellence Scholarship, Global Nankai Scholarship.

University of California at Berkeley, USA Jan 2020 - Aug 2020
- Exchange Student

SKILLS

Development Languages: C++, Python, MATLAB, Verilog HDL
Tools: OpenCV, TensorFlow, Keras, PyTorch, MFC, ROS, SOLIDWORKS
Simulators: Raisim, MuJoCo, IsaacGym

RESEARCH EXPERIENCE

Reinforcement Learning for Soccer Dribbling Skills using Quadrupedal Robots May 2022 - Present
Improbable AI Laboratory, Massachusetts Institute of Technology
- Trained a policy in IsaacGym with domain randomization such as ball position detection delay, ball radius difference and terrain friction to control the robot to dribble a soccer ball on both flat ground and grass land following a parameterized velocity command.
- Deployed a color based segmentation method to detect a soccer ball leveraging onboard cameras.

Reinforcement Learning for Soccer Shooting Skills using Legged Robots Aug 2021 - May 2022
Hybrid Robotics Laboratory, University of California at Berkeley
- Developed a bipedal robot control method in MuJoCo using imitation learning to balance with one foot and track an arbitrary foot trajectory in simulation.
- Developed a hierarchical quadrupedal robotic soccer shooting framework that consists of a low-level controller to track an arbitrary foot curves and a high-level planner to output the desired curve parameters.
- Fine-tuned the high-level planner in the real world to improve the shooting performance.

Collaborative Quadrupedal Manipulation of a Payload March 2020 - March 2021
Hybrid Robotics Laboratory, University of California at Berkeley
- Trained a policy to control 4 quadrupedal robots to collaboratively manipulate a payload to travel straightly and in a desired curve using PPO in Raisim.
- Compared the performance of centralized and decentralized RL control architectures to manipulate a payload following random command velocities over challenging terrain.

Research on metabolic costs & Human ankle detection May 2019 - Dec 2020
Human-Computer Interaction and Gait Simulation Lab, NKU
- Led and conducted an experiment to investigate the relationship between the metabolic cost and speed, ramp angle and payload weight on human subjects.
- Participated in measuring electromyography-based metrics of five lower leg muscles to systematically evaluate the exoskeleton assistance performance.
- Helped detect the position of the human ankle and knee before and after surgery by applying Huff transformation and median filtering on human lower limb images using MATLAB.

PUBLICATIONS

Yandong Ji*, Gabriel Margolis*, Pulkit Agrawal. Reinforcement Learning for Quadrupedal Dribbling in the Wild. *International Conference on Robotics and Automation (ICRA)* 2023, *Workshop on Sim-to-Real Learning at CoRL* 2022

Yandong Ji*, Zhongyu Li*, Yinan Sun, Xue Bin Peng, Sergey Levine, Glen Berseth, Koushil Sreenath. Hierarchical Reinforcement Learning for Precise Soccer Shooting Skills using a Quadrupedal Robot. *IEEE International Conference on Intelligent Robots and System (IROS)* 2022, **Best RoboCup Paper Award Finalist**.

Yandong Ji, Bike Zhang, Koushil Sreenath. Reinforcement learning for collaborative quadrupedal manipulation of a payload over challenging terrain. *IEEE International Conference on Automation Science and Engineering (CASE)* 2021.

Wei Wang, Jianyu Chen, **Yandong Ji**, Wei Jin, Jingtai Liu, Juanjuan Zhang. Evaluation of lower leg muscle activities of human walking assisted by an ankle exoskeleton. *IEEE Transactions on Industrial Informatics* 2020

Yandong Ji, Xunan Liu, Xiaoqing Zhu. Robot Autonomous Navigation Based on Program Learning in Dynamic Environment. *IEEE IMCEC* 2019

ACADEMIC SERVICE

IROS 2022, *reviewer*

SOCIAL SERVICE

Minister of Art Department June 2018 - June 2019
College of Artificial Intelligence

· Led the arrangement of 2018-2019 College New Year Gala and organized the activity "Guessing the Riddle" on Lantern Festival.