Haizhou Zhao

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🖱 Personal Page

Education

2019–2023 : **B.Eng Mechatronics and Robotic Systems**.
Xi'an Jiaotong-Liverpool University (XJTLU), Suzhou, China, GPA 3.87/4.0, First Class Honours
- Year 1 (2019-2020) rank 1. **University Academic Excellence Award**
- Year 2 (2020-2021) rank 2. **University Academic Excellence Award**

Publications

Preprints

2023 Lei Yu, **Haizhou Zhao**, Siying Qin, and Yuqing Chen. "A Robot Leg with Compact Variable Stiffness Joint based on Leaf-Spring Mechanism". *arXiv preprint abs/1909.06586*, 2023.

2023 **Haizhou Zhao**, Lei Yu, Siying Qin, Yurui Jin, and Yuqing Chen. "Design and Control of a Bio-inspired Wheeled Bipedal Robot". *arXiv preprint abs/2308.13205 (working paper)*, 2023.

In Conference Proceedings

2022 **Haizhou Zhao** and Yuqing Chen. "Constrained Iterative Nonlinear Optimization for Robot Control Applications". In *2022 27th International Conference on Automation and Computing (ICAC)*, 2022.

Research and Work Experience

Work/Intern

2023/06 – present **Control Engineer (co-founder)**, *ARX INFINITY Robotics* .
Bipedal Robot Hardware Design and Control
- DCM-WBC walking control with footstep and timing optimization.

2022/05 – 2022/12 **Research intern**, *Tsinghua AIR DISCOVER Lab*.
Bipedal Robot Controller Design
- HZD-based offline gait library walking control.
- Online foot placement optimization using NMPC (OCS2 based) with WBC for walking control.
- Asynchronous multi-threading modularized software system development.

Advisor : *Dr. Guyue Zhou, Associate Professor, Institute for AI Industry Research (AIR)*, Tsinghua

XJTLU

2021/08 - 2023/03 **Undergraduate Research Assistant**, *XJTLU Robotics Laboratory*.
Bionic Wheeled Bipedal Robot
- Bionic design to improve torque efficiency inspired by human deep squat.
- CLF-WBC controller design based on wheeled linear inverted pendulum model (wLIP).

Parallel Variable Stiffness Actuator
- Compact hardware implementation of a leaf-spring based parallel variable stiffness actuator with a mathematical model for realistic humanoid leg applications to improve torque efficiency and increase joint output power.

Advisor : *Dr. Yuqing Chen, Assistant Professor, Department of Mechatronics and Robotics*, XJTLU

Competition

DJI RoboMaster Robotics Competition

2020/08 - **Control System Group Leader**, *XJTLU GMaster Team*.
2021/09
- Improved and tuned highly dynamic control scheme for the robot motors based on classical control theory.
- On-board vision servo framework integrating IMU, camera and Kalman filter state estimation for automatic target tracking.

2019/08 - **C++ Software Development**, *XJTLU GMaster Team*.
2020/08   Designed C++ software framework for CV task, including interfaces and communication.

Advisor : *Dr. Chun Zhao, Associate Professor, Department of Electrical and Electronic Engineering*, XJTLU

Software Skills

- **Programming:** Python, C, C++, STM32, Matlab
- **Simulation:** Simulink, Simscape Multibody, RaiSim, MUJOCO
- **Libraries:** ROS, CasADi, ACADOS, Pinocchio, OCS2, ...
- **Mechanical Design:** Solidworks, Ansys