JIANXIANG ZHOU

Department of Mechanical and Energy Engineering (MEE)
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EDUCATION

Hongkong University of Science and Technology (Guangzhou) – HKUST(GZ) Guangzhou, China
Mphil Student Aug 2023 – present

Southern University of Science and Technology (SUSTech) Shenzhen, China
Bachelor of Engineering in Robotics Engineering Aug. 2019 – Jul. 2023

- **GPA: 3.78/4.00**
- SUSTech Merit Scholarship (top 5%, 2020-2022)
- Department of Mechanical and Energy Engineering

PUBLICATIONS

- C. Dai*, X. Liu*, **J. Zhou***, Z. Liu, and Z. Jia, "SWheg: A Wheel-Leg Transformable Robot with Minimalist Actuator Realization", *Journal of Field Robotics (JFR)*, submitted Aug 2023. (under review) (*Co-First Author)
- C. Dai, X. Liu, **J, Zhou**, Z. Liu, Z. Zhu, and Z. Jia, "SWhegPro: A Novel Robust Wheel-Leg Transformable Robot," *IEEE International Conference on Robotics and Biomimetics (ROBIO)*, 2022.
- Z. Liu, C. Dai, X. Liu, **J. Zhou**, and Z. Jia, "A Hybrid Wheel-Leg Transformable Robot with Minimal Actuator Realization," *2022 IEEE International Conference on Advanced Robotics and Mechatronics (ICARM)*, 2022, pp. 731-736, doi.org/10.1109/ICARM54641.2022.9959370.

RESEARCH EXPERIENCE

SUSTech Institute of Robotics (SIR) Shenzhen, China
Undergraduate Researcher under Prof. Kemi Ding Nov. 2022 – Jun. 2023

➢ **Graph Learning for Crowd Navigation**

- Developed a policy based on Graph Convolutional Networks (GCNs) and Deep Reinforcement Learning (Deep RL) for robot to navigate through crowds safely and efficiently.
- Introduce self-attention module into the model for overall higher performance.
- Completed the undergraduate thesis at SUSTech and received the Excellent Thesis Award.

Undergraduate Researcher under Prof. Zhenzhong Jia Nov. 2021 – Dec. 2022

➢ **Wheel-Leg Transformable Robot**

- Developed wheel-leg transformable robots with different actuation methodologies, integrating the advantages of wheels and legs seamlessly on a single platform.
- **SWheg robot**: A tendon-driven wheel-leg transformable robot with minimalist actuation, using only one actuator to power the transformation of all wheels. Submitted a journal paper to *Journal of Field Robotics (JFR)* as the co-first author. Published a paper at the *2022 IEEE International Conference on Advanced Robotics and Mechatronics (IEEE ARM)*.
- **SWhegPro robot**: A novel robust wheel-leg transformable robot using electric push rods. Paper published at the *2022 IEEE International Conference on Robotics and Biomimetics (ROBIO)*.

Tsinghua University (Department of Automation) Beijing, China
Undergraduate Research Assistant under Prof. Mingguo Zhao Jun. 2021 – Jul. 2021

➢ **Kinematics Optimization for Redundant Manipulators**

- Develop simulation environment for LBR iiwa (KUKA 7DoF robot arm) based on the MATLAB & Simscape Multibody.
- Develop trajectory planning of end effector and kinematic optimization of arm joints based on quadratic programming, making it 20% faster for object tracking.

SELECTED PROJECTS AND INTERNSHIPS

The 20th CURC ROBOCON Robot Competition Shenzhen, China
Team member, Electronic Control Dec. 2020 – Aug. 2021

- Robocon is a well-known robot competition in Aisa area. The engineering vehicle is a high-payload platform equipped with auto-aiming aided by computer vision, competing for arrow shooting.
- Responsible for movement control of Throwing Robot's chassis and SPI inter-board communication.

Robocom World Robot Developer Competition - Duo Bao Qi Bing Shenzhen, China
Team leader Sep. 2021 – Dec. 2021

- Robocom is a robot combat competition with the aim of object grasping. The engineering vehicle is a differential-wheel platform equipped with auto-aiming aided by computer vision, pneumatically actuated graspers.
- Design a keyboard program for simultaneously multi-operation. Optimize movement speed of the manipulator for grasping task. (fastest in that year)

Simulated Cassie Robot with Gait Design and Path Planning Shenzhen, China
Course Project, (Walking Robot. Advisor: Prof. Chenglong Fu) Mar. 2022 – May. 2022

- Develop simulation environment based on PyBullet. Responsible for gait design based on 3D Linear Inverted Pendulum Model.

Simulated Robot with Autonomous Waste Sorting Shenzhen, China
Course Project, (Collaborative Robot Learning. Advisor: Prof. Chaoyang Song) Mar. 2022 – May. 2022

- Develop simulation environment based on PyRep and program kinematic picking code. Train neural network for autonomous waste sorting.

SELECTED AWARDS AND SCHOLARSHIPS

- HKUST(GZ) Fellowship (Full-year scholarship, ￥100,000/year) 2023
- Excellent Thesis Award at SUSTech 2023
- SUSTech Merit Scholarship (Top 5% at SUSTech) 2020-2023
- Third Prize of Robocom World Robot Developer Competition - Duo Bao Qi Bing 2021
- Third Prize of the 20th ROBOCON University Championship 2021
- National-level College Students' Innovative Entrepreneurial Training Program 2020

ADDITIONAL INFORMATION

Additional Professional and Extracurricular Experiences

- President of Community Committee (2020-2021)
- Volunteer of Community Service with 56h (2029-2021)

Interests

- Photographing with the equipment: Dji air 2s, Sony a6000 and Tamron 18-300.
- Sports: Working out, Badminton, Running.

Computer and Language Skills

- Programming Languages: C/C++, MATLAB, Python, Java
- Embedded System: STM32 MCU Development, Arduino Supported MCU Development
- Mechanical Skillsets: Solidworks, AutoCAD, 3D printing, Laser cutting
- Simulation: Solidworks, Gazebo, Rviz, Drake, PyRep, Simulink
- Languages: Chinese (native), English (TOEFL: 94 | GRE: 324)