JIANXIANG ZHOU

Data Science and Analytics
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EDUCATION

The Hong Kong University of Science and Technology (Guangzhou) – HKUST(GZ) Guangzhou, China
Master of Philosophy in Data Science and Analytics Aug 2023 – present

- **GPA: 4.03/4.00**
- Research: Spatio-temporal LLM, Urban Computing
- Postgraduate Studentship (PGS): CNY 120,000 per year

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), Excellent Thesis Award, Third Prize of the 20th ROBOCON University Championship

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)*. IEEE, 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)*. IEEE, 2022.

WORKING EXPERIENCE

Cainiao Group Hangzhou, China
Research Intern at Cainiao APP Jun. 2024 – Aug. 2024

➢ **Enhancing LLMs in Tabular QA**

- Based on the CodeQwen1.5-7B model, we conducted Supervised Fine-Tuning (SFT) on a traditional table QA dataset. We then use DPO to train the model with self-created dataset, which showed a 10% improvement in QA performance compared to the SFT version.
- Compared to other state-of-the-art (SOTA) closed-source models and models fine-tuned specifically for Table QA, TableQwen demonstrated superior performance. A first-author paper is being written on this.

RESEARCH EXPERIENCE

HKUST(GZ) CityMind Lab Guangzhou, China
Mphil Researcher under Prof. Yuxuan Liang Nov. 2023 – present

➢ **Graph-Enhanced Transformer for Traffic Forecasting**

- Leveraged Transformer architecture to explore spatio-temporal correlations in traffic flow data for more accurate traffic prediction and improved urban planning.
- Proposed the Graph-enhanced transformer with MoE-enhanced FNN to model spatio-temporal heterogeneity. First-author paper submitted to the 2025 WSDM (CCF B) conference.

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

TCM (Traditional Chinese Medicine) Chatbot Shenzhen, China
Course Project Dec. 2020 – Aug. 2021

- Top Ranking (5/39) in the project and was invited for project presentation.
- Used the TCM QA dataset to fine-tune the Qwen1.5-7B-chat model with LoRA, providing consultation answers from a TCM perspective in comparison to the original model.

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)

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 (2019-2021)

Interests

- Landscape and Drone Photography
- Sports: Working out, Badminton, Running.

Computer and Language Skills

- Programming Languages: C/C++, MATLAB, Python, Java
- Robotics: Mechanical Skillsets (SW, CAD, Laser cutting), Embedded Systems (STM32, Arduino, Raspberry), Simulation (Gazebo, Rviz, Simulink)
- Languages: Mandarin (native), English (TOEFL: 94 | GRE: 324)