JUNJIA LIU 刘浚嘉

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PERSONAL STATEMENT

My research interest lies primarily in learning humanoid robot whole-body loco-manipulation skills for domestic tasks.

EDUCATION

01/08/2021-01/09/2025 The Chinese University of Hong Kong Hong Kong SAR, CN
Doctor of Philosophy in Mechanical and Automation Engineering

01/09/2018-01/06/2021 Shanghai Jiao Tong University Shanghai, CN
Master of Engineering in Robotics GPA: 3.65/4.0

01/09/2014-01/06/2018 Southwest Jiaotong University (Mao Yisheng Honors College) Chengdu, CN
Bachelor of Engineering in Mechatronic Engineering GPA: 3.71/4.0 Rank: 1/22

Awards and honors

2019 SJTU School Scholarship for Technological Innovation
2019 Best Technology Award, Deecamp 2019 Deep Learning Summer Camp
2019 Silver Medal Winner, RoboMaster Competition
2017 1st Prize in Sichuan Province, "Challenge Cup" for Academic and Technology Contest
2017 National Scholarship for undergraduate students
2016 National Scholarship for undergraduate students
2015 1st Prize in Sichuan Province, National Mathematical Modelling Contest for University Students

PUBLICATIONS

Journal Papers

1. **Junjia Liu**, Zhipeng Dong, Fei Chen. **Human-Humanoid Loco-manipulation Skill Transfer based on Instruction-driven Human Motion Generation.** *IEEE Transactions on Robotics (T-RO)*. (In preparation)
2. **Junjia Liu**, Zhuo Li, Minghao Yu, Zhipeng Dong, Sylvain Calinon, Darwin Caldwell, Fei Chen. **Human-Humanoid Robots' Cross-Embodiment Behavior-Skill Transfer Using Decomposed Adversarial Learning from Demonstration.** *IEEE Robotics & Automation Magazine (RAM), vol. 32, no. 1, pp. 68-78, 2025.*
3. **Junjia Liu**, Yiting Chen, Zhipeng Dong, Shixiong Wang, Sylvain Calinon, Miao Li, Fei Chen. **Robot Cooking With Stir-Fry: Bimanual Non-Prehensile Manipulation of Semi-Fluid Objects.** *IEEE Robotics and Automation Letters (RA-L), 2022, 7(2): 5159-5166. Paper Link*
4. **Junjia Liu**, Huimin Zhang, Zhuang Fu, Yao Wang. **Learning Scalable Multi-Agent Coordination by Spatial Differentiation for Traffic Signal Control**, *Engineering Applications of Artificial Intelligence (EAAI): 104165*. *Paper Link*
5. Zhuo Li, **Junjia Liu**, Zhihao Li, Zhipeng Dong, Tao Teng, Yongsheng Ou, Darwin Caldwell, Fei Chen. **Language-Guided Dexterous Functional Grasping by LLM Generated Grasp Functionality and Synergy for Humanoid Manipulation.** *IEEE Transactions on Automation Science and Engineering (T-ASE), vol. 22, pp. 10506–10519, 2025.*
6. Hengyi Sim, **Junjia Liu**, Donatien Delehelle, Xingyu Wu, Darwin Caldwell, and Fei Chen. **Learning Robot Dynamic Cloth Manipulation Based on Differentiable Dynamics Optimization and Motion Transfer.** *IEEE Transactions on Emerging Topics in Computational Intelligence (TETCI), 2025*

Conference Papers

1. **Junjia Liu**, Zhihao Li, Wanyu Lin, Sylvain Calinon, Kay Chen Tan, Fei Chen. **SoftGPT: Learn Goal-oriented Soft Object Manipulation Skills by Generative Pre-trained Heterogeneous Graph Transformer.** *IEEE/RSJ International Conference on Intelligent Robots (IROS 2023). Paper Link*
2. **Junjia Liu**, Hengyi Sim, Chenzui Li, Kay Chen Tan, Fei Chen. **BiRP: Learning Robot Generalized Bimanual Coordination using Relative Parameterization Method on Human Demonstration.** *IEEE Conference on Decision and Control (IEEE CDC 2023). Paper Link*
3. **Junjia Liu**, Chenzui Li, Shixiong Wang, Zhipeng Dong, Tin Lun Lam, Sylvain Calinon, and Fei Chen. **Learning Goal-oriented Bimanual Dough Rolling Using Dynamic Heterogeneous Graph Based on Human Demonstration**. *IEEE International Conference on Robotics and Biomimetics (ROBIO), pp. 925–930, 2024.*
4. Zhuo Li, **Junjia Liu**, Dianxi Li, Tao Teng, Miao Li, Sylvain Calinon, Darwin G. Caldwell, and Fei Chen. **ManiDP: Manipulability-Aware Diffusion Policy for Posture-Dependent Bimanual Manipulation.** *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2025.*
5. Chenzui Li, **Junjia Liu**, Tao Teng, Shixiong Wang, Sylvain Calinon, and Fei Chen. **Whole-Body Impedance Control of a Humanoid Robot Based on Human-Human Demonstration for Human-Robot Collaboration.** *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2025.*
6. Zixin Tang, Zhihao Li, **Junjia Liu**, Zhuo Li, and Fei Chen. **Open-World Task Planning for Humanoid Bimanual Dexterous Manipulation via Vision-Language Models.** *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2025.*
7. Zhihao Li, **Junjia Liu**, Zhuo Li, Minghao Yu, Tao Teng, Shunbo Zhou, Miao Li, Tin Lun Lam, and Fei Chen. **Instruction-Following Long-Horizon Manipulation by LLM Empowered Symbolic Planner.** *IEEE International Conference on Robotics and Biomimetics (ROBIO), pp. 913-918, 2024.*
8. Minghao Yu, Zhuo Li, Zhihao Li, **Junjia Liu**, Tao Teng, and Fei Chen. **A Deep Learning-based Grasp Pose Estimation Approach for Large-Size Deformable Objects in Clutter.** *IEEE International Conference on Robot and Human Interactive Communication (ROMAN), pp. 285-290, 2024.* **Best Paper Award Finalist**
9. Zheng Sun, Zhiqi Wang, **Junjia Liu**, Miao Li, and Fei Chen. **Mixline: A hybrid reinforcement learning framework for long-horizon bimanual coffee stirring task.** *International Conference on Intelligent Robotics and Applications (ICIRA), pp. 627-636, 2022. Paper Link*
10. W Jason Li, Zhuo Li, **Junjia Liu**, Zhipeng Dong, Zheng Sun, and Fei Chen. **Humanoid Pianist: Dexterous Piano Playing with Synergy-based Hand Representation.** *IEEE International Conference on Advanced Robotics and Its Social Impacts (ARSO), pp. 31-36, 2024.*
11. Huimin Zhang, Yafei Wang, **Junjia Liu**, Chengwei Li, Taiyuan Ma, Chengliang Yin. **A Multi-Modal States based Vehicle Descriptor and Dilated Convolutional Social Pooling for Vehicle Trajectory Prediction**, *SAE Technical Paper (2021): 10.4271. Paper Link*

Posters

1. **Junjia Liu**, Zhuo Li, Shixiong Wang, Zhipeng Dong, Fei Chen. **基於分解式對抗模仿學習的人與人形機器人跨具身行為技能遷移研究.** *The 6th Annual Conference of China Robotics Society (CCRS),* 第六屆中國機器人學術年會. **Best Poster Award**

Pre-print Papers

1. **Junjia Liu**, Jianfei Gu, Zehui Meng, Jingtao Xue. **ReVoLT: Relational Reasoning and Voronoi Local graph planning for Target-driven navigation**. *Arxiv. Paper Link*
2. **Junjia Liu**, Jiaying Shou, Zhuang Fu, Hangfei Zhou, Rongli Xie, Jun Zhang, Jian Fei, Yanna Zhao. **Efficient reinforcement learning control for continuum robots based on Inexplicit Prior Knowledge**. *Arxiv. Paper Link*