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Puhao Li

Education

2023–Present **Tsinghua University (THU)**, *Beijing, China*
Ph.D. Student, Department of Automation
- Advisor: Prof. Song-Chun Zhu

2019–2023 **Tsinghua University (THU)**, *Beijing, China*
Undergraduate, Department of Automation

Research Interests

Computer Vision: 3D Scene Understanding and Human-Scene Interaction

Robotics: Dexterous Grasping, Manipulation, and Planning

Long-term Goal: To develop intelligent systems capable of naturally interacting with novel environments through scene understanding, reasoning, planning, and manipulation.

Research Experience

Sep 2021 –Present **Beijing Institution for General Artificial Intelligence (BIGAI)**, *Beijing, China*
Research Intern, General Vision Lab
- Advisor: Dr. Tengyu Liu & Dr. Siyuan Huang

Publications

arXiv **ControlVLA: Few-shot Object-centric Adaptation for Pre-trained VLA Models**
Puhao Li, Yingying Wu, Ziheng Xi, Wanlin Li, Yuzhe Huang, Zhiyuan Zhang, Yinghan Chen, Jianan Wang, Song-Chun Zhu, Tengyu Liu, Siyuan Huang
Preprint, under review

arXiv **Taccel: Scaling Up Vision-based Tactile Robotics via High-performance GPU Simulation**
Yuyang Li*, Wenxin Du*, Chang Yu*, **Puhao Li**, Zihang Zhao, Tengyu Liu, Chenfanfu Jiang, Yixin Zhu, Siyuan Huang
Preprint, under review

ICCV 2025 **GWM: Towards Scalable Gaussian World Models for Robotic Manipulation**
Guanxing Lu*, Baoxiong Jia*, **Puhao Li***, Yixin Chen, Ziwei Wang, Yansong Tang, Siyuan Huang
IEEE International Conference on Computer Vision, 2025

IROS 2025 **Ag2x2: Robust Agent-Agnostic Visual Representations for Zero-Shot Bimanual Manipulation**
Ziyin Xiong*, Yinghan Chen*, Puhao Li, Yixin Zhu, Tengyu Liu, Siyuan Huang
IEEE/RSJ International Conference on Intelligent Robots and Systems, 2025

CVPR 2025 **ManipTrans: Efficient dexterous bimanual manipulation transfer via residual learning**
Kailin Li, **Puhao Li**, Tengyu Liu, Yuyang Li, Siyuan Huang
IEEE Conference on Computer Vision and Pattern Recognition, 2025

CVPR 2025 **MetaScenes: Towards Automated Replica Creation for Real-world 3D Scans**
Huangyue Yu*, Baoxiong Jia*, Yixin Chen*, Yandan Yang*, **Puhao Li***, Rongpeng Su*, Jiaxin Li, Qing Li, Wei Liang, Song-Chun Zhu, Tengyu Liu, Siyuan Huang
IEEE Conference on Computer Vision and Pattern Recognition, 2025

ICRA 2025 **PhysPart: Physically plausible part completion for interactable objects**
Rundong Luo*, Haoran Geng*, Congyue Deng, **Puhao Li**, Zan Wang, Baoxiong Jia, Leonidas Guibas, Siyuan Huang
IEEE International Conference on Robotics and Automation, 2025

NeurIPS 2024 **PhyRecon: Physically Plausible Neural Scene Reconstruction**
Junfeng Ni*, Yixin Chen*, Bohan Jing, Nan Jiang, Bing Wang, Bo Dai, **Puhao Li**, Yixin Zhu, Song-Chun Zhu, Siyuan Huang
Conference on Neural Information Processing Systems, 2024

IROS 2024 Oral Pitch **Ag2Manip: Learning Novel Manipulation Skills with Agent-Agnostic Visual and Action Representations**
Puhao Li*, Tengyu Liu*, Muzhi Han, Haoran Geng, Shu Wang, Yixin Zhu, Song-Chun Zhu, Siyuan Huang
IEEE/RSJ International Conference on Intelligent Robots and Systems, 2024

RA-L **Grasp Multiple Objects with One Hand**
Yuyang Li, Bo Liu, Yiran Geng, **Puhao Li**, Yaodong Yang, Yixin Zhu, Tengyu Liu, Siyuan Huang
IEEE Robotics and Automation Letters
Presented at *IROS* 2024 (Oral Presentation)

CVPR 2024 **Move as You Say, Interact as You Can: Language-guided Human Motion Generation with Scene Affordance**
Zan Wang, Yixin Chen, Baoxiong Jia, **Puhao Li**, Jinlu Zhang, Jingze Zhang, Tengyu Liu, Yixin Zhu, Wei Liang, Siyuan Huang
IEEE Conference on Computer Vision and Pattern Recognition, 2024

ICML 2024 **An Embodied Generalist Agent in 3D World**
Jiangyong Huang*, Silong Yong*, Xiaojian Ma*, Xiongkun Linghu*, Puhao Li, Yan Wang, Qing Li, Song-Chun Zhu, Baoxiong Jia, Siyuan Huang
International Conference on Machine Learning, 2024

CVPR 2023 **Diffusion-based Generation, Optimization, and Planning in 3D Scenes**
Siyuan Huang*, Zan Wang*, **Puhao Li**, Baoxiong Jia, Tengyu Liu, Yixin Zhu, Wei Liang, Song-Chun Zhu
IEEE Conference on Computer Vision and Pattern Recognition, 2023

ICRA 2023 **GenDexGrasp: Generalizable Dexterous Grasping**
Puhao Li*, Tengyu Liu*, Yuyang Li, Yiran Geng, Yixin Zhu, Yaodong Yang, Siyuan Huang
IEEE International Conference on Robotics and Automation, 2023

ICRA 2023 Oral **DexGraspNet: A Large-Scale Robotic Dexterous Grasp Dataset for General Objects Based on Simulation**
Ruicheng Wang*, Jialiang Zhang*, Jiayi Chen, Yinzhen Xu, **Puhao Li**, Tengyu Liu, He Wang
IEEE International Conference on Robotics and Automation, 2023
Outstanding Manipulation Paper Finalist

Professional Community Activities

Reviewer of Conference and Journal

ICRA, IROS, CoRL, CVPR, ECCV, NeurIPS; RA-L.

Open Source Contribution

Simulately (simulately.wiki), earned 400+ stars in Github

Awards and Scholarships

2023 Outstanding Graduation Thesis, Beijing, China
2023 Outstanding Graduation Thesis, Tsinghua University
2022 Scholarship of Excellent Academic Performance, Tsinghua University
2021 Scholarship of Social Work, Tsinghua University