Chongkai Gao 高崇凯

✉ chongkai@stanford.edu https://chongkaigao.com/ Google Scholar

Education

- **Ph.D. in School of Computing** — Singapore
  National University of Singapore — Jan. 2024 – present
  Advisor: Prof. Lin Shao
- **Master in Automation** — Beijing, China
  Department of Automation, Tsinghua University — Aug. 2020 – Jun. 2023
  Advisor: Prof. Feng Chen
- **B.Eng. in Automation** — Beijing, China
  Department of Automation, Tsinghua University — Aug. 2016 – Jul. 2020

Experience

- **Visiting Scholar** — Stanford University
  Stanford Vision and Learning Lab (SVL) — Feb. 2026 – present
  Advisor: Prof. Fei-Fei Li
  Hierarchical Foundation Model for Robot Manipulation
- **Research Assistant** — Tsinghua University
  Tsinghua Embodied AI Lab (TEA Lab) — Jun. 2023 – Jan. 2024
  Advisor: Prof. Huazhe Xu
  Equivariant Robot Learning for Manipulation Tasks
- **Remote Research Intern** — University of Texas at Austin
  Robot Perception and Learning Lab — May 2022 – Feb. 2023
  Advisor: Prof. Yuke Zhu
  Robot Learning, Lifelong Robot Learning Benchmark
- **Visiting Scholar** — University of Southern California
  Interaction Lab — Jun. 2019 – Aug. 2019
  Advisor: Prof. Maja Mataric
  Non-Verbal Communication Game for Cerebral Palsy

Awards

- Best Paper Award on Robot Manipulation and Locomotion, ICRA 2025. 2025
- Best System Paper Nomination, CoRL 2022. 2022
- Best Paper Award Finalist, CoRL workshop on Compositional and Modular Learning in Robotics. 2026
- Outstanding Paper Award, IROS workshop on Rethinking Bimanual Manipulation. 2026
- Outstanding Paper Award, NeurIPS 2025 Embodied World Models for Decision Making Workshop. 2025
- Best Paper Award, ICRA 2025 Human-Centric Multilateral Teleoperation Workshop. 2025
- Best Robotics Paper Award, CoRL 2024 Workshop on MAPoDeL. 2024
- Research Achievement Award, NUS School of Computing. 2025
- President’ s Graduate Fellowship, National University of Singapore 2024
- Excellent Graduates, Tsinghua University 2020
- Philobiblion Scholarship, Tsinghua University 2019
- Scientific and Technological Innovation Award, Tsinghua University 2019
- Third Place Award, Southern California Software Pioneer Hackathon 2019
- Best Team Culture Award, International Aerial Robotics Competition (Asia-Pacific Venue) 2019

Publication

∗ Equal contribution; † equal advising

[18] **ManiLadder: Benchmarking Robot Manipulation Through a Categorized and Multi-Difficulty Level Task Ladder**
Chongkai Gao*, Jieao Shi*, Zhaoyu Mu*, Yudi Lin*, Xuanwei Liu, Wei Ken Ng, Baiye Cheng, Anqi Chen, Kerun Liu, Zhuoran Li, Xuchuan Huang, Haoyang Li, Shengjia Zhu, Nga Teng Chan, Yuxuan Zhang, Xingyu Chen, Lin Shao
arXiv preprint, 2026, Outstanding Paper Award, IROS workshop on Rethinking Bimanual Manipulation, [paper][website]

[17] **Dream What I Can: Sparse Visual Planning for Long-Horizon Robot Manipulation**
Chongkai Gao, Wenlong Huang, Haonan Chen, Lin Shao, Yilun Du, Jiajun Wu, Ruohan Zhang, Li Fei-Fei
arXiv preprint, 2026, Best Paper Award Finalist, CoRL workshop on Compositional and Modular Learning in Robotics, [paper][website]

[16] **VLA-OS: Structuring and Dissecting Planning Representations and Paradigms in Vision-Language-Action Models**
Chongkai Gao, Zixuan Liu, Zhenghao Chi, Junshan Huang, Xin Fei, Yiwen Hou, Yuxuan Zhang, Yudi Lin, Zhirui Fang, Zeyu Jiang, Lin Shao
in NeurIPS 2025, Outstanding Paper Award in NeurIPS 2025 Embodied World Models for Decision Making Workshop, [paper][website]

[15] **FLIP: Flow-Centric Generative Planning for General-Purpose Manipulation Tasks**
Chongkai Gao, Haozhuo Zhang, Zhixuan Xu, Zhehao Cai, Lin Shao
in ICLR 2025, Oral Presentation in CoRL 2024 LEAP Workshop, [paper][website]

[14] **ET-SEED: Efficient Trajectory-Level SE(3) Equivariant Diffusion Policy**
Chenrui Tie*, Yue Chen*, Ruihai Wu, Boxuan Dong, Zeyi Li, **Chongkai Gao**†, Hao Dong†
in ICLR 2025, [paper][website]

[13] **ManiFoundation Model for General-Purpose Robotic Manipulation of Contact Synthesis with Arbitrary Objects and Robots**
Zhixuan Xu*, **Chongkai Gao***, Zixuan Liu*, Gang Yang*, Chenrui Tie, Haozhuo Zheng, Haoyu Zhou, Weikun Peng, Debang Wang, Tianyi Chen, Zhouliang Yu, Lin Shao
in IROS, 2024, Oral Presentation, [paper][website]

[12] **RiEMann: Near Real-Time SE(3)-Equivariant Robot Manipulation without Point Cloud Segmentation**
Chongkai Gao, Zhengrong Xue, Shuying Deng, Tianhai Liang, Siqi Yang, Lin Shao, Huazhe Xu
in CoRL 2024, [paper][website]

[11] **LIBERO: Benchmarking Knowledge Transfer in Lifelong Robot Learning**
Bo Liu*, Yifeng Zhu*, **Chongkai Gao***, Yihao Feng, Qiang Liu, Peter Stone, Yuke Zhu
NeurIPS Track Datasets and Benchmarks 2023, [paper][website]

[10] **Iterative Interactive Modeling for Knotting Plastic Bags**
Chongkai Gao, Zekun Li, Haichuan Gao, Feng Chen
in CoRL 2022, Best Systems Paper Nomination, [paper][website]

[9] **Transfering Hierarchical Structure with Dual Meta Imitation Learning**
Chongkai Gao, Yizhou Jiang, Feng Chen
in CoRL 2022, [paper]

[8] **CRIL: Continual Robot Imitation Learning via Generative and Prediction Model**
Chongkai Gao, Haichuan Gao, Shangqi Guo, Tianren Zhang, Feng Chen
in IROS, 2021, [paper]

[7] **ManiLong-Shot: Interaction-Aware One-Shot Imitation Learning for Long-Horizon Manipulation**
Zixuan Chen, **Chongkai Gao**, Lin Shao, Jieqi Shi, Jing Huo, Yang Gao
in AAAI 2026, [paper]

[6] **DexSinGrasp: Learning a Unified Policy for Dexterous Object Singulation and Grasping in Cluttered Environments**
Lixin Xu*, Zixuan Liu*, Zhewei Gui, Jingxiang Guo, Zeyu Jiang, Zhixuan Xu, **Chongkai Gao**, Lin Shao
in RA-Letters, 2025, [paper][website]

[5] **$\mathcal{D}(\mathcal{R},\mathcal{O})$-Grasp: A Unified Representation of Robot and Object Interaction for Cross-Embodiment Dexterous Grasping**
Zhenyu Wei*, Zhixuan Xu*, Jingxiang Guo, Yiwen Hou, **Chongkai Gao**, Zhehao Cai, Jiayu Luo, Lin Shao
in ICRA 2025, Best Paper Award on Robot Manipulation and Locomotion, Best Robotics Paper in CoRL 2024 MAPoDeL Workshop, [paper][website]

[4] **MetaFold: Language-Guided Multi-Category Garment Folding Framework via Trajectory Generation and Foundation Model**
Haonan Chen*, Junxiao Li*, Ruihai Wu, Yiwei Liu, Yiwen Hou, Zhixuan Xu, Jingxiang Guo, **Chongkai Gao**, Zhenyu Wei, Shensi Xu, Jiaqi Huang, Lin Shao
in IROS 2025, [paper][website]

[3] **SteerAct: Unlocking Action Models through Few-Shot Temporal Steering**
Kaichen Zhou*, Zhiyan Li*, **Chongkai Gao**, Yuhan Wang, Wenlong Huang, Maggie Wang, Fangneng Zhan, Manling Li, Qianqian Wang, Mac Schwager, Zhuang Liu, Li Fei-Fei, Mengyu Wang†, Paul Pu Liang†
arXiv preprint, 2026, [paper][website]

[2] **Contact Coverage-Guided Exploration for General-Purpose Dexterous Manipulation**
Zixuan Liu*, Ruoyi Qiao*, Chenrui Tie, Xuanwei Liu, Yunfan Lou, **Chongkai Gao**, Zhixuan Xu, Lin Shao
in Arxiv, 2026, [paper][website]

[1] **TelePreview: A User-Friendly Teleoperation System with Virtual Arm Assistance for Enhanced Effectiveness**
Jingxiang Guo*, Jiayu Luo*, Zhenyu Wei*, Yiwen Hou, Zhixuan Xu, Xiaoyi Lin, **Chongkai Gao**, Lin Shao
in Arxiv 2025, Best Paper Award on ICRA 2025 Human-Centric Multilateral Teleoperation Workshop, [paper][website]

Invited Talks

- **RoboPapers** Nov. 2026
  DreamCan: Sparse Visual Planning for Long-Horizon Robot Manipulation
- **Stanford University, Prof. Jiajun Wu's Group** Oct. 2026
  DreamCan: Sparse Visual Planning for Long-Horizon Robot Manipulation
- **Stanford University, Vision and Learning Lab (SVL)** Feb. 2026
  Hierarchical Foundation Models for General-Purpose Robot Manipulation
- **3D Vision Workshop** Aug. 2025
  Structuring and Dissecting Planning Representations and Paradigms in Vision-Language-Action Models
- **Tsinghua University, Institute for AI Industry Research (AIR)** Aug. 2025
  Structuring and Dissecting Planning Representations and Paradigms in Vision-Language-Action Models
- **Lumina Embodied AI Community** Aug. 2025
  Structuring and Dissecting Planning Representations and Paradigms in Vision-Language-Action Models
- **NeurIPS 2025, Embodied World Models Workshop** Aug. 2025
  Structuring and Dissecting Planning Representations and Paradigms in Vision-Language-Action Models
- **National University of Singapore, Show Lab** Jul.–Sep. 2025
  Foundation Model for Robotics
- **Shanghai Jiao Tong University, Prof. Chuan Wen's Group** Jul.–Sep. 2025
  Foundation Model for Robotics
- **National University of Singapore, CVML Group** Jul.–Sep. 2025
  Foundation Model for Robotics
- **TechBeat AI Community** May 2025
  FLIP: Flow-Centric Generative Planning for General-Purpose Manipulation Tasks
- **Tsinghua University, VIP Lab** Feb.–Apr. 2025
  Hierarchical Foundation Model for Manipulation
- **Tsinghua University, Leap Lab** Feb.–Apr. 2025
  Hierarchical Foundation Model for Manipulation

- **Shenlan Xueyuan** Feb.–Apr. 2025
  Hierarchical Foundation Model for Manipulation
- **DAI 2024, Embodied AI Workshop** Dec. 2024
  Hierarchical Foundation Model for Manipulation
- **RL China** Dec. 2024
  FLIP: Flow-Centric Generative Planning for General-Purpose Manipulation Tasks
- **DeepTimber Community** Jul. 2024
  ManiFoundation Model for General-Purpose Robotic Manipulation
- **Shanghai AI Lab** Oct. 2023
  LIBERO: Benchmarking Knowledge Transfer in Lifelong Robot Learning
- **Tsinghua University, IIIS, TEA Lab** Jun. 2023
  Skill Based Robot Learning
- **RL China** Feb. 2023
  Iterative Interactive Modeling (IIM) for Knotting Plastic Bags

Student Mentored

- **Zhenyu Wei**, Shanghai Jiaotong University, Visiting Undergraduate at NUS → UNC PhD Jun. 2024 - Feb. 2025
- **Shuying Deng**, Undergraduate at Tsinghua University → UC Berkeley PhD Aug. 2023 - Feb. 2024
- **Haoyu Zhou**, Master at NUS → University of Oxford PhD Nov. 2023 - May. 2024
- **Xuchuan Huang**, Peking University, Visiting Undergraduate at NUS → ICL PhD May. 2025 - Sep. 2025
- **Nga Teng Chan**, Tsinghua University, Visiting Undergraduate at NUS → HKUST Master May. 2025 - Sep. 2025
- **Ruoyi Qiao**, East China Normal University, Visiting Undergraduate at NUS → CMU Master May. 2025 - Jan. 2026
- **Junshan Huang**, USTC, Visiting Undergraduate at NUS → Rutgers University PhD Nov. 2024 - Jun. 2025
- **Yudi Lin**, Master at NUS → NTU PhD Nov. 2024 - Nov. 2026
- **Zhaoyu Mu**, Undergraduate at NUS → USCD Master Feb. 2025 - Feb. 2026
- **Jingxiang Guo**, NUS Master → NUS PhD Apr. 2024 - Sep. 2025
- **Lixin Xu**, Georgia Institute of Technology, Visiting Master at NUS → HKUST PhD Jul. 2024 - May. 2025
- **Haozhuo Zhang**, Undergraduate at Peking University → University of Manchester PhD May. 2024 - Oct. 2024
- **Weikun Peng**, Master at NUS → Simon Fraser University PhD Nov. 2023 - July. 2024
- **Tianyi Chen**, Shanghai Jiao Tong University, Visiting Undergraduate at NUS → GaTech PhD Nov. 2023 - Feb. 2024
- **Jieao Shi**, NUS Master May. 2025 - present
- **Liting Wen**, CMU Master Sep. 2026 - present
- **Howard Ji**, Stanford Undergraduate July. 2026 - present

Academic Service

- **Conference Reviewer**: CoRL, RSS, ICRA, IROS, NeurIPS, ICML, ICLR, CVPR, ICCV, and ECCV
- **Journal Reviewer**: IJRR, IEEE T-RO, IEEE RA-L

Teaching Experience

- Teaching Assistant, Advanced Topics in Robotics, NUS. Lecturer: Prof. David Hsu. 2025 Spring
- Teaching Assistant, Intelligent Robots: Algorithms and Systems, NUS. Lecturer: Prof. Lin Shao. 2024 Fall
- Teaching Assistant, Matrix Analysis and Applications, Tsinghua University 2021 Spring & 2022 Fall