

Xuanlin (Simon) Li

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EDUCATION

University of California - San Diego

PhD in Computer Science and Engineering, 2021 - Now

Advisor: Prof. Hao Su

University of California - Berkeley

B.A. Computer Science (honors) & Mathematics (honors), 2017-2021

Technical GPA: 4.0

EXPERIENCE

- **UC San Diego Center for Visual Computing & Contextual Robotics Institute** San Diego, CA
PhD Student & Researcher Sep 2021 - Now
 - Primary interests: **Embodied AI, Vision-Language, Robotics.**
 - My major research interests include (1) building vision-language models and robotic agents with universal, open-world (2D & 3D) perception and reasoning capabilities that can be efficiently and effectively deployed for real world applications; (2) scaling up training data, learning-from-demonstration algorithms, and benchmarks for generalizable and robust robotic manipulation in the real world.
 - Major open-source contributions: SAPIEN Manipulation Skill Challenge (ManiSkill); Evaluating Real-World Robot Manipulation Policies in Simulation (Simpler-Env).
- **Hillbot.ai** San Diego, CA
Research Intern Feb 2024 - Jun 2024, Sep 2024 - Now
 - Open-world robotic manipulation and navigation system.
- **Boston Dynamics AI Institute** Cambridge, MA
Research Intern Jun 2024 - Sep 2024
 - Generalizable vision-based bimanual contact-rich manipulation.
- **Qualcomm AI Research** San Diego, CA
Research Intern Mar 2023 - Sep 2023
 - Worked on situated real-time interactions with large language models through multimodal (vision-audio) stream conditioning.
- **Berkeley Artificial Intelligence Research** Berkeley, CA
Undergraduate Researcher Mar 2019 - May 2021
 - Advised by Prof. Trevor Darrell. Worked on non-monotonic sequence generation on vision & language tasks, reinforcement learning, and neural network architecture learning.

PUBLICATIONS AND PROJECTS (* = EQUAL CONTRIBUTION)

As of Oct. 4, 2024

- **Planning-Guided Diffusion Policy Learning for Generalizable Contact-Rich Bimanual Manipulation**
X. Li*, T. Zhao, X. Zhu, J. Wang, T. Pang, K. Fang Preprint
Category: Robotics, Embodied AI
- **Evaluating Real-World Robot Manipulation Policies in Simulation**
X. Li*, K. Hsu*, J. Gu*, K. Pertsch[†], O. Mees[†], H. Walke, C. Fu, I. Lunawat, I. Sieh, S. Kirmani, S. Levine, J. Wu, C. Finn, H. Su[‡], Q. Vuong[‡], T. Xiao[‡] CoRL 2024
Category: Robotics, Embodied AI
- **Open X-Embodiment: Robotic Learning Datasets and RT-X Models**
Contributor and Author ICRA 2024 (Best paper)
Category: Robotics, Embodied AI
- **PartSLIP++: Enhancing Low-Shot 3D Part Segmentation via Multi-View Instance Segmentation and Maximum Likelihood Estimation**
Y. Zhou*, J. Gu*, X. Li, M. Liu, Y. Fang, H. Su Preprint
Category: Vision-Language
- **Unleashing the Creative Mind: Language Model As Hierarchical Policy For Improved Exploration on Challenging Problem Solving**
Z. Ling, Y. Fang, X. Li, T. Mu, M. Lee, R. Pourreza, R. Memisevic, H. Su Preprint
Category: Language
- **OpenShape: Scaling Up 3D Shape Representation Towards Open-World Understanding**
M. Liu*, R. Shi*, K. Kuang*, Y. Zhu, X. Li, S. Han, H. Cai, F. Porikli, H. Su NeurIPS 2023
Category: Vision-Language

- **Deductive Verification of Chain-of-Thought Reasoning**
Z. Ling*, Y. Fang*, **X. Li**, Z. Huang, M. Lee, R. Memisevic, H. Su
NeurIPS 2023
Category: Language
- **Live Fitness Coaching as a Testbed for Situated Interaction**
S. Panchal, A. Bhattacharyya, G. Berger, A. Mercier, C. Bohm, F. Dietrichkeit,
X. Li, R. Pourreza, P. Madan, M. Lee, M. Todorovich, I. Bax, R. Memisevic
NeurIPS 2024
Category: Vision-Language, Embodied AI
- **Distilling Large Vision-Language Model with Out-of-Distribution Generalizability**
X. Li*, Y. Fang*, M. Liu, Z. Ling, Z. Tu., H. Su
ICCV 2023
Category: Vision-Language, Embodied AI
- **Reparameterized Policy Learning for Multimodal Trajectory Optimization**
Z. Huang, L. Liang, Z. Ling, **X. Li**, C. Gan, H. Su
ICML 2023 (Oral)
Category: Robotics, Embodied AI
- **On the Efficacy of 3D Point Cloud Reinforcement Learning**
Z. Ling*, Y. Yao*, **X. Li**, H. Su
Preprint
Category: Vision, Embodied AI, Robotics
- **Frame Mining - A Free Lunch for Learning Robotic Manipulation from 3D Point Clouds**
X. Li*, M. Liu*, Z. Ling*, Y. Li, H. Su
CoRL 2022
Category: Vision, Embodied AI, Robotics
- **ManiSkill2: A Unified Benchmark for Generalizable Manipulation Skills**
J Gu⁺, F Xiang⁺, **X. Li***, Z. Ling*, X. Liu*, T. Mu*, Y. Tang*, S. Tao*, X. Wei*,
Y. Yao*, X. Yuan, P. Xie, Z. Huang, R. Chen, H. Su
ICLR 2023
Category: Vision, Embodied AI, Robotics
- **ManiSkill: Generalizable Manipulation Skill Benchmark with Large-Scale Demonstrations**
T. Mu*, Z. Ling*, F Xiang*, D. Yang*, **X. Li***, S. Tao, Z. Huang, Z. Jia, H. Su
NeurIPS 2021
(Dataset & Benchmarks Track)
Category: Vision, Embodied AI, Robotics
- **Improving Policy Optimization with Generalist-Specialist Learning**
Z. Jia, **X. Li**, Z. Ling, S. Liu, Y. Wu, H. Su
ICML 2022
Category: Robotics, Embodied AI
- **Discovering Non-Monotonic Autoregressive Orderings with Variational Inference**
X. Li*, B. Trabucco*, D.H. Park, Y. Gao, M. Luo, S. Shen, T. Darrell
ICLR 2021
Category: Vision-Language
- **Regularization Matters in Policy Optimization - An Empirical Study on Continuous Control**
Z. Liu*, **X. Li***, B. Kang, T. Darrell
ICLR 2021 (Spotlight)
Category: Robotics

HONORS AND AWARDS

- Jacobs School of Engineering PhD Fellowship, UC San Diego, 2021
- Arthur M. Hopkin Award, UC Berkeley EECS, 2021

TECHNICAL SKILLS

- **Languages:** Python, Java, C/C++, Bash, LaTeX, Golang, HTML/CSS
- **Libraries / Softwares:** PyTorch, Tensorflow, Numpy/Scipy/Pandas/Matplotlib/Scikit-learn, Jax, Open3D/Trimesh, Blender
- **Developer Tools:** Git, Docker, Kubernetes, Vim, VSCode
- **Selected CourseWork:**
 - Graduate: Computer Vision, ML for 3D Geometry, Deep Unsupervised Learning, ML for Robotics, Deep Reinforcement Learning, Advanced Robotics, Natural Language Processing, Theoretical Statistics, Topology and Real Analysis, Functional Analysis
 - Undergraduate: Machine Learning, Operating Systems, Probability Theory and Random Processes, Optimization, Algorithms, Data Structures, Machine Structures, Real Analysis, Linear Algebra, Abstract Algebra, Complex Analysis, Numerical Analysis, Differential Geometry, PDE

SERVICE

- **Reviewer:**
 - Computer Vision: CVPR, ECCV, ICCV
 - Machine Learning: NeurIPS, ICML, ICLR
 - Robotics: ICRA, CoRL, RA-L, IJRR
- **Teaching Assistant:** Fall 2022 UCSD CSE 291 - ML for 3D Geometry