

Xiang Li

✉ xiangli8 [at] cs.stonybrook.edu 🏠 <https://xxli.me>

Education

Stony Brook University, Stony Brook, NY, USA
Ph.D. Candidate in Computer Science

2020 - Present
Advisor: Prof. Michael S. Ryoo

Shanghai Jiao Tong University, Shanghai, China
M.S. in Control Engineering
Thesis: Continuous Visual Object Tracking with View Morphing

2015 - 2018
Advisor: Prof. Yue Zhou

Shanghai Jiao Tong University, Shanghai, China
B.S. in Automation

2011 - 2015

Research Interest

Self-supervised visual representation learning; VLM & LLM for robotics.

Selected Publications

1. **Li, X.**, Belagali, V., Shang, J. & Ryoo, M. S. Crossway Diffusion: Improving Diffusion-based Visuomotor Policy via Self-supervised Learning. *arXiv preprint (2023)*.
 - We propose a state decoder as well as a reconstruction loss to improve diffusion-based visuomotor policy. The state decoder is designed to reconstruct visual observations from the intermediate representation of the diffusion network. The reconstruction loss is jointly optimized with the diffusion loss during training.
 - We achieve consistent and significant improvement over multiple simulated and real-world tasks.
2. Das, S., Jain, T., Reilly, D., Balaji, P., Karmakar, S., Marjit, S., **Li, X.**, Das, A. & Ryoo, M. S. Limited Data, Unlimited Potential: A Study on ViTs Augmented by Masked Autoencoders. *Winter Conference on Applications of Computer Vision (WACV) (2024)*.
3. Burgert, R., Ranasinghe, K., **Li, X.** and Ryoo, M.S. Diffusion Illusions: Hiding Images in Plain Sight. *arXiv preprint (2023)*.
4. Burgert, R., Ranasinghe, K., **Li, X.** and Ryoo, M.S. Peekaboo: Text-to-image Diffusion Models are Zero-shot Segmentors. *Workshop on Open-Domain Reasoning Under Multi-Modal Settings @ CVPR (2023)*.
5. **Li, X.**, Shang, J., Das, S., & Ryoo, M. Does Self-supervised Learning Really Improve Reinforcement Learning from Pixels? *Advances in Neural Information Processing Systems (NeurIPS) (2022)*.
 - Unfortunately, NO (when the same amount of data and augmentation is used).
 - We conduct an extensive comparison of various self-supervised losses under the existing joint learning framework for pixel-based reinforcement learning in many simulated and real-world environments.
 - We perform evolutionary searches for the optimal combination of multiple self-supervised losses and the magnitudes of image augmentation, and confirm its limitations.
 - We conduct detailed ablations on multiple factors and demonstrate multiple properties of representations learned by different methods.
6. Burgert, R., Shang, J., **Li, X.** & Ryoo, M. S. TRITON: Neural Neural Textures Make Sim2Real Consistent. *Conference on Robot Learning (CoRL) (2022)*.
7. Shang, J., **Li, X.**, Kahatapitiya, K., Lee, Y.-C. & Ryoo, M. S. StARformer: Transformer with State-Action-Reward Representations for Robot Learning. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI) (2022)*.
8. Shang, J., Kahatapitiya, K., **Li, X.** & Ryoo, M. S. StARformer: Transformer with State-Action-Reward Representations for Visual Reinforcement Learning. *European Conference on Computer Vision (ECCV) (2022)*.

Patent

Utility Model: Universal Serial Control Touch-screen Test Device, China 2016
An embedded system that interacts with touchscreens like a human finger. No.2016201772460

Experience

Beijing Falcon Image Technologies Co., Ltd, Beijing, China 2018 - 2019

Software engineer

Deploying LiDAR-based SLAM and navigation system on multiple types of self-driving cars with ROS.

Hubei Cheng Shi Electronic Business Co., Ltd, Shanghai, China 2016 - 2018

IoT software engineer

Designing an intelligent video surveillance system in three IoT warehouses.

Key features: video recording, video streaming, and visual motion detection.

Professional Activities

- Conference Reviewer: ICML'23, NeurIPS'23, WACV'24, ICRA'24 and ICLR'24
- Teaching Assistant:
 - Introduction to Digital Image Processing (undergrad level, 2017, 2018, SJTU)
 - CSE353 Machine Learning (undergrad level, 2020 Spring, SBU)
 - CSE527 Introduction to Computer Vision (graduate level, 2021 Fall, SBU)
 - CSE525 Introduction to Robotics (graduate level, 2023 Spring, SBU)

Honors and Awards

- CVPR Outstanding Demos Award [3] 2023
- Outstanding Graduate of Colleges and Universities in Shanghai, China (Top 5%) 2018
- National Scholarship for Graduate Students, China 2017
- Outstanding Graduate of SJTU, China 2015