Xiang Li

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Education

Stony Brook University, Stony Brook, NY, USA — Jan. 2020 - Present
Ph.D. Candidate in Computer Science — Advisor: Prof. Michael S. Ryoo,

Shanghai Jiao Tong University, Shanghai, China — Sept. 2015 - Mar. 2018
M.S. in Control Engineering (Pattern Recognition and Intelligence System) — Advisor: Prof. Yue Zhou
Thesis: Continuous visual object tracking with view morphing

Shanghai Jiao Tong University, Shanghai, China — Sept. 2011 - June 2015
B.S. in Automation

Research Interest

Self-supervised visual representation learning for robotics.

Selected Publications

1. **Xiang Li**, Cristina Mata, Jongwoo Park, Kumara Kahatapitiya, Yoo Sung Jang, Jinghuan Shang, Kanchana Ranasinghe, Ryan Burgert, Mu Cai, Yong Jae Lee and Michael S. Ryoo, LLaRA: Supercharging Robot Learning Data for Vision-Language Policy. *The Thirteenth International Conference on Learning Representations* **(ICLR'25)**.
    - Transform behavior cloning datasets into instruction tuning datasets and finetunes pretrained VLMs into Vision-Language-Action (VLA) models efficiently by aligning robot action to image pixels.
    - Introduce auxiliary datasets generated from the behavior cloning datasets in a self-supervised fashion, to further improve the VLA performance and enable efficient transfer learning, especially when training data is limited.
2. Kanchana Ranasinghe, **Xiang Li**, Kumara Kahatapitiya and Michael S. Ryoo, Understanding Long Videos with Multimodal Language Models. *The Thirteenth International Conference on Learning Representations* **(ICLR'25)**.
3. Ryan Burgert, **Xiang Li**, Abe Leite, Kanchana Ranasinghe and Michael S. Ryoo, Diffusion Illusions: Hiding Images in Plain Sight. *Special Interest Group on Computer Graphics and Interactive Techniques* **(SIGGRAPH'24)**.
4. **Xiang Li**, Belagali, V., Jinghuan Shang and Michael S. Ryoo, Crossway Diffusion: Improving Diffusion-based Visuomotor Policy via Self-supervised Learning. *IEEE International Conference on Robotics and Automation* **(ICRA'24)**.
    - Explore multiple self-supervised objectives to improve diffusion policy for behavior cloning.
    - Introduce a straightforward state reconstruction objective that consistently and significantly improves performance.
5. Ryan Burgert, Kanchana Ranasinghe, **Xiang Li** and Michael S. Ryoo, Peekaboo: Text-to-image Diffusion Models are Zero-shot Segmentors. *Workshop on Open-Domain Reasoning Under Multi-Modal Settings @ CVPR* **(CVPRW'23)**.
6. **Xiang Li**, Jinghuan Shang, Srijan Das and Michael S. Ryoo, Does Self-supervised Learning Really Improve Reinforcement Learning from Pixels? *Advances in Neural Information Processing Systems* **(NeurIPS'22)**.
    - Unfortunately, NO (when the same amount of data and augmentation is used).
    - Verified by extensively comparing various self-supervised losses under the existing joint learning framework for pixel-based reinforcement learning in multiple simulated and real-world environments.
7. Ryan Burgert, Jinghuan Shang, **Xiang Li** and Michael S. Ryoo, TRITON: Neural Neural Textures Make Sim2Real Consistent. *Conference on Robot Learning* **(CoRL'22)**.
8. Jinghuan Shang, **Xiang Li**, Kumara Kahatapitiya, Yu-Cheol Lee and Michael S. Ryoo, StARformer: Transformer with State-Action-Reward Representations for Robot Learning. *IEEE Transactions on Pattern Analysis and Machine Intelligence* **(TPAMI'22)**.
9. Jinghuan Shang, Kumara Kahatapitiya, **Xiang Li** and Michael S. Ryoo, StARformer: Transformer with State-Action-Reward Representations for Visual Reinforcement Learning. *European Conference on Computer Vision* **(ECCV'22)**.

Experience

Applied Scientist Co-op, Amazon.com Services LLC, Westborough, U.S. Nov. 2024 - Mar. 2025
Scanless Technologies, Amazon Robotics

Machine Learning Engineer Intern, Bytedance Ltd, Seattle, U.S. June 2024 - Aug. 2024
Knowledge Graph, E-commerce
Improve vision language representations on large-scale noisy datasets via self-supervised learning.

- Prepare structured text data utilizing a large language model
- Optimize the existing multi-modal encoder architecture, boosting average recall on seven diverse datasets by 6.7% at 90% precision while decreasing inference time by 7%.
- Explore multiple self-supervised losses for robust multi-modal representation learning

Software Engineer Intern, Beijing Falcon Image Tech Co., Ltd, Beijing, China Sept. 2018 - Sept. 2019
Autonomous Driving
Deploy LiDAR-based SLAM and navigation system on multiple types of autonomous driving cars from scratch.

- Develop ROS packages for multiple new LiDAR, IMU and GPS sensors
- Optimize existing LiDAR-based SLAM system for multiple autonomous driving scenarios
- Deploy navigation system for both differential and Ackermann steering geometry

Software Engineer Intern, Chengshi E-Business Co., Ltd, Shanghai, China Mar. 2016 - Mar. 2018
Internet of Things
Design and develop an intelligent video surveillance system for three warehouses.

- Develop a warehouse simulator in Unity to optimize the placement and coverage of surveillance cameras
- Engineer software solutions for recording and streaming video from multiple camera brands
- Implement a visual motion detection service on Raspberry Pi 3B for real-time monitoring
- Enhanced video stream efficiency and reduced CPU load through hardware-accelerated transcoding

Patent

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

Professional Activities

- Conference Reviewer: ICML'23-25, NeurIPS'23-25, WACV'24&25, ICRA'24&25, ICLR'24&25 and ECCV'24
- Journal Reviewer: RA-L
- Teaching Asistant:
  CSE525 Introduction to Robotics (graduate level, 2023 Spring, SBU)
  CSE527 Introduction to Computer Vision (graduate level, 2021 Fall, SBU)
  CSE353 Machine Learning (undergrad level, 2020 Spring, SBU)
  Introduction to Digital Image Processing (undergrad level, 2017, 2018, SJTU)

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