JINGHUAN SHANG

100 Nicolls Road, Stony Brook, NY 11794, USA

✉ jishang [at] cs.stonybrook.edu   🌐 cs.stonybrook.edu/∼jishang

Education

Stony Brook University, NY, USA   **2018 – Present**
Ph.D. Candidate in Computer Science, GPA: 3.98/4, Advisor: Prof. Michael S. Ryoo

Shanghai Jiao Tong University, Shanghai, China   **2014 – 2018**
B.S. in Computer Science, IEEE Pilot Class

Research Interest

Visual and sequence representation & foundation models for imitation learning and reinforcement learning.

Selected Publications

1. **Shang, J.** & Ryoo, M. S. Active Reinforcement Learning under Limited Visual Observability. *arXiv preprint.* eprint: 2306.00975 (2023).

2. Li, X., Belagali, V., **Shang, J.** & Ryoo, M. S. Crossway Diffusion: Improving Diffusion-based Visuomotor Policy via Self-supervised Learning. *arXiv preprint.* eprint: 2307.01849 (2023).

3. **Shang, J.**, Das, S. & Ryoo, M. S. *Learning Viewpoint-Agnostic Visual Representations by Recovering Tokens in 3D Space* in *Proceedings of Conference on Neural Information Processing Systems (NeurIPS)* (2022).

4. Li, X., **Shang, J.**, Das, S. & Ryoo, M. S. *Does Self-supervised Learning Really Improve Reinforcement Learning from Pixels?* in *Proceedings of Conference on Neural Information Processing Systems (NeurIPS)* (2022).

5. Burgert, R., **Shang, J.**, Li, X. & Ryoo, M. S. *Neural Neural Textures Make Sim2Real Consistent* in *Conference on Robot Learning (CoRL)* (2022).

6. **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* (2022).

7. **Shang, J.**, Kahatapitiya, K., Li, X. & Ryoo, M. S. *StARformer: Transformer with State-Action-Reward Representations for Visual Reinforcement Learning* in *European Conference on Computer Vision (ECCV)* (2022).

8. **Shang, J.** & Ryoo, M. S. *Self-Supervised Disentangled Representation Learning for Third-Person Imitation Learning* in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (2021).

Research Experience

Research Intern, Motional AD Inc   **Aug 2022 – Dec 2022**
Trajectory prediction models, benchmarks and datasets

Research Assistant, Stony Brook University　　　　　　　　　　　　　　　**May 2020 – Present**
Visual Representation Learning for Robotics

- **Active Reinforcement Learning** [1]
  - ∗ Embodied agent learns to see and act simultaneously through a task in limited observable environments.
- **Viewpoint-agnostic Representation** [3]
  - ∗ A learnable, differentiable, and light-weighted plugin for Transformer that learns viewpoint-agnostic representations from monocular 2D image.
- **Imitation Learning for Egocentric Tasks from Third-person Experiences** [8]
  - ∗ A disentanglement approach to align first-person view and third-person view experiences for reward assignment that benefits the robot learning from third-person view observations.

Sequence Representation Learning for Robotics

- **Transformer for Robot Learning** [6, 7]
  - ∗ StARformer, a decision transformer model with explicit separate local and long-horizon representations for better offline-RL and imitation performance, especially for longer sequences.
- **Diffusion Model for Sequential Behavior Generation** [2]
  - ∗ Crossway Diffusion, a diffusion model with a self-supervised branch that enhances imitation learning.

Professional Activities

Conference Reviewer: CVPR'22, ECCV'22, AISTATS'23, ICML'23, ICCV'23, NeurIPS'23, AAAI'24
Guest Talk: Google Inc. (2022, Transformer for Robot Learning), CSE527 Introduction to Computer Vision (Fall 2021, graduate level), CSE525 Introduction to Robotics (Spring 2023, 2022, 2021, graduate level)
Teaching Assistant: CSE548 Analysis of Algorithms (Spring 2019, graduate level), CSE564 Visualization (Spring 2020, graduate level), CSE101 Computer Science Principles (Fall 2018)

Honors and Awards

- NeurIPS 2022 Scholar Award　　　　　　　　　　　　　　　　　　　　　　　　　　2022

- Merit Scholarship, Stony Brook University　　　　　　　　　　　　　　　　　2018-2019

- Outstanding Graduate of Colleges and Universities in Shanghai, China (Top 5%)　　　2018

- 1st Prize in China Undergraduate Mathematical Contest in Modeling　　　　　　　　2017

- Academic Excellence Scholarship of SJTU (Top 20%)　　　　　　　　2015, 2016, 2017

Technical Skills

Competitive Programming:[My LeetCode] Ranked 9/54 in SBU ACM ICBC Selection Contest, 2020
Technologies/Frameworks: PyTorch, Linux, Git, Tensorflow, Unity3D
Simulated Environments: Pybullet, MuJoCo, DeepMind Control Suite, Robosuite, Atari_py