Xinhu Li

CLVR Lab, Lira Lab
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Research Interests

My ultimate research goal is to develop robust and generalizable agents that learn how to solve tasks in unstructured environments. To achieve this goal, I am particularly interested in the following:

- Develop representation learning algorithms to enhance agents' learning efficiency and effectiveness.
- Utilize foundation models to boost generalization abilities across diverse tasks and environments.
- Develop self-adapting RL algorithms for minimal human oversight and autonomous decision-making.

Key Fields: Robotics, Reinforcement Learning, Machine Learning

Education

University of Southern California, Viterbi School of Engineering Aug. 2020 - Dec. 2022
M.S. in Artificial Intelligence, GPA: 3.81/4

Zhejiang University of Technology Sept. 2016 - Jun. 2020
B.S. in Software Engineering, GPA: 3.76/5 **(top 5%)**

Research Experience

Research Assistant, Lira Lab, University of Southern California Oct. 2023 - Present
Advisor: Prof. Erdem Biyik, Prof. Joseph J. Lim
[Target: ICML 2024] **Xinhu Li***, Ayush Jain*, Zhaojing Yang, Joseph J. Lim, Erdem Biyik. "Beyond Policy Transfer: Self-Supervised Reward Adaptation"

- Introduced self-supervised reward adaptation for adapting policies without human assistance.
- Exceeds all other adaptation methods in manipulation and locomotion environment adaptation.

Research Assistant, CLVR Lab, University of Southern California May 2022 - Oct. 2023
Advisor: Prof. Joseph J. Lim
[**Submitted** to ICLR 2024] Ayush Jain*, Norio Kosaka*, **Xinhu Li**, Kyung-Min Kim, Joseph J. Lim. "Rethinking Actor-Critic: Successive Actors for Critic Maximization."

- Proposed a successive actor-critic structure for effective max-action selection in actor-critic RL.
- Significantly improves the return in the minigrid, recommendation systems, and Mujoco-Gym.

Research Assistant, Institute of Digital Media Technology, ZJUT July. 2019 - May 2020
Advisor: Prof. Meiyu Zhang
[Patent pending] **Xinhu Li**, Meiyu Zhang "Research and Implementation of Deep HDR Video Synthesis"

- Implemented LSTM for high-quality video synthesis from footage with varying exposure times.
- Enhances video quality substantially using a compact, efficient neural network.

Research Assistant, MoE Key Lab of Network and Software Security Assurance, Peking University July. 2019 - Aug. 2019
Advisor: Prof. Zhong Chen
Aspect-based Sentiment Analysis(ABSA) with bi-LSTM structure

- Introduced bi-LSTM for ABSA, enhancing precision in sentiment component extraction.
- Enables generalization through whole content, improving extraction accuracy.

Extracurricular Activities

Team Leader, ICPC Competition, Zhejiang University of Technology Jan. 2017 - Jan. 2020

- Demonstrated algorithmic skills by solving a set of algorithmic problems within a limited time frame.
- Achieves 16th rank in a national competition; detailed rewards under Achievements.

Leadership Activities

Group Leader, Communication Club between Students and University Jan. 2016 - Jan. 2018

Achievements

- Silver Award, China Collegiate Programming Contest, **Final**. **(Rank 16)**
- **First Prize**, Group Programming Ladder Tournament, China Collegiate Computing Contest
- Scholarship of Zhejiang Provincial Government **(top 3%)**
- **Gold Award**, The 2017 ACM-ICPC Asia Xi'an Regional Contest
- Silver Award, The 2017 ACM-ICPC Asia ShenYang Regional Contest
- **Gold Award**, China Collegiate Programming Contest, GuiLin
- Silver Award, China Collegiate Programming Contest, JiLin

Teaching

Teaching Assistant, Database Systems, USC (Prof. Sathyanaraya Raghavachary) Spring 2022

– Developed course homework and held weekly office hours (four hours/week) for student support.

Technical Strengths

- **Robot Learning Proficiency:** ROS, PyTorch, Tensorflow, Matplotlib
- **English Proficiency:**
  - **TOEFL** : Reading 26, Listening 26, Speaking 24, Writing 24
  - **GRE** : Quantitative: 170, Verbal: 156, Analytical Writing 3.5
- **Programming Language:** Python, JAVA, C++/ C, C#, R, SQL
- **Relevant Courses:** Robotics, Machine Learning, Deep Reinforcement Learning, Computational Human Robot Interaction, Linear Algebra