Yijie Guo

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RESERCH INTEREST

My research interest lies in deep reinforcement learning, especially balancing the exploration and exploitation in difficult domains, and representation learning to improve sample efficiency and performance of RL algorithms.

EDUCATION

University of Michigan   Ann Arbor, Michigan
Ph.D. in *Computer Science & Engineering*   *Sep. 2017 – Present*
Advisor: Honglak Lee
University of Michigan   Ann Arbor, Michigan
B.S. in *Honors Mathematics & Data Science,* GPA: 3.9/4.0   *Jul. 2015 – Apr. 2017*
Peking University   Beijing, China
Major in *Applied Mathematics,* GPA: 3.75/4.0   *Sep. 2012 – Jun. 2015*

RESEARCH EXPERIENCE

Research Assistant at University of Michigan *Advisor: Honglak Lee*   Ann Arbor, Michigan *(Sep. 2017 –Present)*
- Propose a trajectory-conditioned policy to imitate diverse trajectories from the agent's past experience reinforcement learning problems with sparse reward to help exploration to find the (near)-optimal solution
- Implement self-imitation learning, generative adversarial self-imitation learning, and related baseline models; Conduct experiments on Atari and Mujoco tasks to get better performance against baseline
- Conduct experiments across various image datasets for unsupervised landmark discovery; Implement the regression model for quantitative evaluation and generation model for qualitative evaluation

Research Intern at Google Brain *Advisor: Minmin Chen, Honglak Lee*   MTV, California *(Jun.2019 – Aug.2019)*
- Improve the policy-based method in batch reinforcement learning problems by constraining the divergence between target policy and behavior policy in a curriculum way

Research Intern at Google Brain *Advisor: Honglak Lee, Samy Bengio*   MTV, California *(Jun.2018 – Aug.2018)*
- Build a model to learn representation about controllable and uncontrollable dynamics in RL; Capture the location information of multiple moving entities in the 2D video games to improve count-based exploration
- Augment the agent's past good experience using the learnt representation to help one-shot imitation learning

PUBLICATION

Self-Imitation Learning via Trajectory-Conditioned Policy for Hard-Exploration Tasks
Yijie Guo, Jongwook Choi, Marcin Moczulski, Samy Bengio, Mohammad Norouzi, Honglak Lee
Advances in Neural Information Processing Systems,Deep Reinforcement Learning Workshop, 2019.**Oral**

Contingency-Aware Exploration in Reinforcement Learning
Jongwook Choi*, **Yijie Guo***, Marcin Moczulski*, Junhyuk Oh, Neal Wu, Mohammad Norouzi, Honglak Lee
International Conference on Learning Representations(ICLR), 2019
Advances in Neural Information Processing Systems,Deep Reinforcement Learning Workshop, 2018.**Oral**

Generative Adversarial Self-Imitation Learning
Junhyuk Oh*, **Yijie Guo***, Satinder Singh, Honglak Lee
Advances in Neural Information Processing Systems,Deep Reinforcement Learning Workshop, 2018

Self-Imitation Learning
Junhyuk Oh*, **Yijie Guo***, Satinder Singh, Honglak Lee
International Conference on Machine Learning (ICML), 2018.

Unsupervised Discovery of Landmarks as Structural Representations
Yuting Zhang, **Yijie Guo**, Yixin Jin, Yijun Luo, Zhiyuan He, Honglak Lee.
Conference on Computer Vision and Pattern Recognition (CVPR), 2018. **Oral**

[**Discriminative Bimodal Networks for Visual Localization and Detection with Natural Language Queries**](#)
Yuting Zhang, Luyao Yuan, **Yijie Guo**, Zhiyuan He, I-An Huang, Honglak Lee
Conference on Computer Vision and Pattern Recognition (CVPR), 2017. **Spotlight**
[**Perspective Transformer Nets: Learning Single-View 3D Object Reconstruction without 3D Supervision**](#)
Xinchen Yan, Jimei Yang, Ersin Yumer, **Yijie Guo**, Honglak Lee
Advances in Neural Information Processing Systems (NeurIPS), 2016.
(*=Equal Contribution)

TEACHING EXPERIENCE
Graduate Student Instructor of EECS545 Machine Learning, University of Michigan, Ann Arbor *Jan.2020-Present*
Graduate Student Instructor of EECS598 Deep Learning, University of Michigan, Ann Arbor   *Jan.2019-Apr.2019*

PROFESSIONAL ACTIVITIES
Conference Reviewer: NeurIPS 2019

AWARDS & HONORS

Rackham Conference Travel Grant, University of Michigan, Ann Arbor	*Dec. 2019*
Rackham Conference Travel Grant, University of Michigan, Ann Arbor	*Jun. 2018*
Second Prize in Jiang Zehan Mathematical Contest in Modeling, Peking University	*Jun. 2014*
Excellent Academic Performance Scholarship, Peking University (9/190)	*Dec. 2013*
Tang Zhongying Moral Education Scholarship, Peking University (20/3000)	*Dec. 2013*
Secondary School Principals Real-name Recommendation for Peking University (6/900)	*Jan. 2012*
First Prize of Shaanxi Province in Chinese Chemistry Olympiad (top 1/‰)	*Nov. 2011*
Second Prize of Shaanxi Province in Chinese Physics Olympiad (top 5/‰)	*Nov. 2011*
Second Prize of Shaanxi Province in Chinese Mathematics and Biology Olympiad (top 5/‰)	*Oct. 2011*
Merit Student of Xi'an City (2/‰)	*Apr. 2011*

SOCIAL ACTIVITIES

Zhongying Public Welfare Association, Peking University Beijing, China   *Mar. 2013 – Sep.2014*
- Planed and organized a visiting event to Peking University for 200 students and teachers from local middle school
- Negotiated with university administration and security on space and logistics
- Motivated and led members to participate in the public service event for World Water Day on a yearly basis
- Visited and took care of retired elderly from Peking University regularly

High School Mathematics Tutoring, Beijing, China   *Sep. 2013 – Sep. 2014*
- Help two high school students learning and understanding mathematics and after one years' tutoring, they improved their scores in math test from 80 to 120 out of 150.

China Center for Economic Research Club, Peking University Beijing, China   *Sep. 2013 – Sep. 2014*
- Promoted and organized guest lectures on a variety of topics, including finance, macroeconomics and career development, etc.

Youth Volunteers Association of Mathematics Department, Peking University   *Oct. 2013 & Dec. 2013*
- Took part in the volunteering service for the Mathematics Department Centennial Anniversary and charity bazaar

SKILLS AND INTERESTS
- Computer: Proficient in Tensorflow, PyTorch, Matlab, Python, C++, R.
- Languages: Mandarin, English