Yue Yang

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Research Interests

Safe robot learning and deployment, Learning from demonstrations, Generative model applications.

Education

Georgia Institute of Technology, Atlanta GA Expected May 2023

Master of Science in Computer Science, College of Computing. **GPA**: 3.9/4.0

Northeastern University, Shenyang China June 2021

BEng in Software Engineering (pivot class). **TOEFL**: 105 **GRE**: 327+4.0 **GPA**: 90/100

University of California San Diego, San Diego CA Dec 2019

Exchange student, School of Engineering. **GPA**: 4.0/4.0

Publications & Preprints

CoRL' 22 LAR Workshop — **Yue Yang**, Letian Chen and Matthew Gombolay, "Safe Inverse Reinforcement Learning via Control Barrier Function," in *Proceedings of CoRL Learning for Agile Robotics workshop*, 2022

Preprint — **Yue Yang** and Pengtao Xie, "Discriminative Cross-Modal Data Augmentation for Medical Imaging Applications", *arXiv preprint arXiv:2010.03468*, 2020

EMNLP' 20 — Guangtao Zeng, Wenmian Yang, Zeqian Ju, **Yue Yang**, Sicheng Wang, Ruisi Zhang, Meng Zhou, Jiaqi Zeng, Xiangyu Dong, Ruoyu Zhang, Hongchao Fang, Penghui Zhu, Shu Chen, and Pengtao Xie, "MedDialog: Large-scale medical dialogue dataset," in *Proceedings of the Conference on Empirical Methods in Natural Language Processing,* 2020

Preprint — Xuehai He*, Xingyi Yang*, **Yue Yang**, Ruofan Guo, Yuxiao Liang, Shanghang Zhang, Li Du, and Pengtao Xie, "Supervised Pretraining or Self-supervised Pretraining? A Tale of Two Transfer Learning Paradigms", *arXiv preprint arXiv:2007.04234*, 2020.

Research Experience

Safe Inverse Reinforcement Learning via Control Barrier Function [More Details] 2022

Graduate Research Assistant, Advisor: Dr. Matthew Gombolay Georgia Institute of Technology

- Proposed a novel inverse reinforcement learning (IRL) framework, CBFIRL, to enhance the safety of the IRL policy via leveraging the Control Barrier Function (CBF).
- Applied CBFIRL on two virtual robotic control tasks and achieved safer performance.

Lifelike Hand Synthesis with Deep Generative Models [More Details] 2022

Graduate Research Assistant, Advisor: Dr. Greg Turk Georgia Institute of Technology

- Proposed a novel lifelike hand synthesis pipeline with deep generative models via leveraging additional information (e.g., keypoints of hands).

Anytime Bounded Conflicted-Based Search [More Details] 2020

Research Assistant, Advisor: Dr. Jia Pan University of Hong Kong

- Proposed a novel bounded and anytime conflicted-based search (CBS) framework, BCBSD, to improve centralized multi-agent path finding (MAPF) via leveraging the accurate and decentralized perception of dynamic obstacles positions.
- Funded by the computer science internship program of Hong Kong University.

Discriminative Cross-Modal Data Augmentation [More Details] 2020

Research Assistant, Advisor: Dr. Pengtao Xie University of California San Diego

- Proposed a discriminative unpaired image-toimage translation framework, DUIIT, to perform cross-modality data augmentation.
- Applied DUIIT on three different modalities and achieved better physiological age prediction performance than baselines.

Comparison between Transfer Learning and Self-supervised Learning 2020

Research Assistant, Advisor: Dr. Pengtao Xie University of California San Diego

- Studied the selection of pre-trained methods between supervised pre-training and self-supervised pre-training under different settings (e.g., domain difference, data amount).

Creation of Medical Dialogue Dataset 2020

Research Assistant, Advisor: Dr. Pengtao Xie University of California San Diego

- Participated in the creation of the largest medical dialogue dataset to date.

Collision Avoidance Racecar under Complex Environments. [More Details] 2019

Research Assistant, Advisor: Dr. Zheng Fang Northeastern University (China)

- Adopted max gap to implement reactive motion planning, and compared it with traditional navigation stacks. The robot speed can reach nearly 4.0 m/s under the complex environment.
- Won 1st Prize in the NXP Cup National University Students Intelligent Car Race.

Professional Experience

Water-Mirror, *Robotic Algorithm Engineer Intern* Sep 2020 - Nov 2020

- Deploy anytime and bounded CBS algorithm to intelligent warehouse management, which requires up to 100 robots path planning. The proposed algorithm has much faster calculation speed($\sim$ 90%) and higher successful rate($\sim$ 50%) compared to traditional multi-agent path finding methods(e.g., CBS, WHCA*, etc.).
- Implemented the algorithm in two language versions: Python and C++. Exposed an API to the company's system.

Neusoft Corporation, *Software Development Engineer Intern* Jul 2020 - Aug 2020

- Constucted an online platform for commercial transactions between MVO, BVO and GVO. Multiple functions are implemented to ensure the online transaction, including product publishing, ordering, store management, logistics, etc.
- Designed and implemented the distributed micro-service architecture for back-end of the web application. Used Vue + Vuestic components to construct front-end of the web application.

Other projects

Course Research Projects at Georgia Institute of Technology 2021-2022

- Investigated learning-based approaches with control-based hard safety constraints and learning-based approaches with human interventions for safe navigation in a dynamic cluster environment. [More Details]
- Improved Co-GAIL to learn diverse strategies in human-robot collaboration.[More Details]
- Investigated the best approach to initializing GAIL.[More Details]

Awards and Honors

- 1st Prize, The NXP Cup National University Students Intelligent Car Race, 2019
- Second-Class Scholarship, Northeastern University (Top 5%), 2018 & 2019