

Yue Yang

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Research Interests

Robotics, Machine Learning, and their application to Human Robot Interaction

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

- Studied the possible safety problem of inverse reinforcement learning (IRL) during deployment.
- Proposed a novel 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 domains 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

- Worked on the difficulty of synthesizing human-like hand images for popular generative models (e.g., GAN, Diffusion Models).
- Proposed a novel lifelike hand synthesis pipeline with deep generative models via leveraging additional information (e.g., keypoints of hands).
- Achieved successful preliminary results with the correct number and position of fingers.

Anytime Bounded Conflicted-Based Search for Dynamic Environments [\[More Details\]](#) 2020
Research Assistant, Advisor: Dr. Jia Pan University of Hong Kong

- Enhanced centralized multi-agent path finding (MAPF) via leveraging the accurate decentralized perception of dynamic obstacles positions.
- Proposed a novel low-level Focal Search algorithm to consider the dynamic obstacles and unpredictable events in real-world situations.

- 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

- Aimed to mitigate the data deficiency issue in medical imaging in a cross-modal way.
- Proposed a discriminative unpaired image-to-image translation framework, DUIT, to perform cross-modality data augmentation.
- Applied DUIT on three different modalities and achieved better physiological age prediction performance than baselines.

Comparison between Transfer Learning and Self-supervised Learning [\[More Details\]](#) 2020
Research Assistant, Advisor: Dr. Pengtao Xie University of California San Diego

- Worked on the selection of pre-training methods between supervised pre-training and self-supervised pre-training.
- Designed various experiments to study factors that affect the comparison of these two pre-training methods. Factors include domain difference, the amount of training data, class imbalance in source tasks, and using target data for additional pre-training.
- Provided six insights to guide the selection of pre-training methods for future researchers.

Creation of Medical Dialogue Dataset [\[More Details\]](#) 2020
Research Assistant, Advisor: Dr. Pengtao Xie University of California San Diego

- Participated in the creation of the largest medical dialogue dataset to date.
- Pre-trained several dialogue generation models on the Chinese MedDialog dataset and studied the transferability of models trained on MedDialog to low-resource medical dialogue generation tasks.
- Cited by 58 research articles.

Collision Avoidance Racecar under Complex Environments. [\[More Details\]](#) 2019
Research Assistant, Advisor: Dr. Zheng Fang Northeastern University (China)

- Studied a robotic system that is high-speed and auto-obstacle-avoidance under complex environment.
- Adopted maximum gap to implement reactive motion planning, and used behavioral cloning for short-term planning in some specific scenarios (e.g., U-turn corners).
- The robot speed reached nearly 4.0 m/s under the complex environment and won 1st Prize in the NXP Cup National University Students Intelligent Car Race.

Industry 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

- Rebuilt a storage system with AWS RDS, S3, and CloudFront from local storage for non-structural data like pictures, texts, and labels. Successfully improved the loading speed of static resources and reduced system load.
- Developed micro-services based on Spring Boot framework for user and product information management, connected with OAuth2 authentication server to verify token as well, deployed to EC2 server.
- Configured deployment automation for microservices by using Docker and Jenkins.

Awards and Honors

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