

Yang Yang

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SUMMARY

- Experienced in robot learning, computer vision, and machine learning
- Strong programming skills in Python, C/C++, and Matlab
- Fast learner, self-driven team player with good communication

EDUCATION

Doctor of Philosophy, Computer Science *Expected 12/2021*

University of Minnesota (UMN), Minneapolis

Advisor: [Changhyun Choi](#) and [Hyun Soo Park](#)

Dissertation: Target-Driven Robotic Manipulation with Visual Attribute Reasoning

GPA: 3.94/4.0

Graduate student, Engineering Thermophysics *2015 - 2016*

Tsinghua University (THU), Beijing, China

Bachelor of Engineering, Energy and Power Engineering *2011 - 2015*

Huazhong University of Science and Technology (HUST), Wuhan, China

GPA: 91.4/100

SKILLS

Machine Learning: PyTorch, Tensorflow, Keras, scikit-learn, DGL, Ray, Spacy

Programming: **Python**, MATLAB, C/C++, CMake, Linux, Git, Docker, \LaTeX

Robotics: OpenCV, Open3D, PCL, ROS, Gym, MuJoCo, V-REP

COURSES

Statistical and Deep Learning, Reinforcement Learning, Computer Vision, Natural Language Processing, Convex and Nonlinear Optimization, Operating Systems, Sensing and Estimation in Robotics

EXPERIENCE

Mitsubishi Electric Research Laboratories, Cambridge, MA *05/2020 - 08/2020*

Research Intern, Host: Dr. Siddharth Jain

- Developed deep reinforcement learning (RL) algorithms for contact-rich robotic manipulation
- Built a hierarchical RL-based policy of deep Q-learning (DQN) and soft actor-critic (SAC) models
- Proposed a graph neural network (GNN) based visual state encoder (**deep reinforcement learning, graph neural network, computer vision**)

Google, Mountain View, CA *07/2018 - 08/2018*

Visual-Inertial System Engineer, Host: Dr. Stergios Roumeliotis

- Built a visual tracking and mapping (SLAM) system for Phone-based VR
- Wrote a C++ visual RANSAC library for camera pose estimation
- Implemented an image selection algorithm based on multiple RANSAC's (**3D computer vision, SLAM, C++**)

Choice Robotics Lab, Minneapolis, MN *02/2019 - Present*

Research Assistant, Advisor: Dr. Changhyun Choi

- Developed an interactive robotic grasping system with vision-and-language reasoning
- Investigated self-supervised deep learning for robotic perception and manipulation
- Proposed a deep RL-based approach to target-driven manipulations (**robotics, natural language processing, deep reinforcement learning**)

- Researched multi-task learning on depth prediction and surface normal estimation
- Proposed a convex optimization-based approach for UAV motion planning
- Developed an attitude tracking system for gyro-less mobile devices (**deep learning, optimization, robotics**)

PUBLICATIONS

Yang Yang, Changhyun Choi, “Interactive Robotic Grasping with Attribute-Guided Disambiguation”, submitted to IEEE International Conference on Robotics and Automation (ICRA) 2022

Yang Yang, Yuanhao Liu, Hengyue Liang, Xibai Lou, Changhyun Choi, “Attribute-Based Robotic Grasping with One-Grasp Adaptation”, IEEE International Conference on Robotics and Automation (ICRA), 2021 [[PDF](#), [website](#)]

Xibai Lou, **Yang Yang**, Changhyun Choi, “Collision-Aware Target-Driven Object Grasping in Constrained Environments”, IEEE International Conference on Robotics and Automation (ICRA), 2021 [[PDF](#)]

Hengyue Liang, Xibai Lou, **Yang Yang**, Changhyun Choi, “Learning Visual Affordances with Target-Orientated Deep Q-Network to Grasp Objects by Harnessing Environmental Fixtures”, IEEE International Conference on Robotics and Automation (ICRA), 2021 [[PDF](#), [website](#)]

Yang Yang, Hengyue Liang, Changhyun Choi, “A Deep Learning Approach to Grasping the Invisible”, IEEE Robotics and Automation Letters (RA-L), 2020 [[PDF](#), [website](#), [code](#)]

Xibai Lou, **Yang Yang**, Changhyun Choi, “Learning to Generate 6-DoF Grasp Poses with Reachability Awareness”, IEEE International Conference on Robotics and Automation (ICRA), 2020 [[PDF](#), [website](#)]

Tien Do, Leo Neira, **Yang Yang**, Stergios I. Roumeliotis, “Attitude Tracking from a Camera and an Accelerometer on Gyro-less Devices”, International Symposium on Robotics Research (ISRR), 2019 [[PDF](#)]

HONORS & AWARDS

UMII-MnDRIVE Graduate Fellowship, UMN	2020
Departmental Fellowship, UMN	2016
Merit Student Scholarship, HUST	2012 - 2014
National Scholarship, Ministry of Education of P.R. China	2012 - 2014