Bingjie Tang

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EDUCATION

Ph.D.	Computer Science, University of Southern California.	Sep.2020-Present
	– Advised by Gaurav Sukhatme.	
M.S.	Computer Science, Brown University.	Sep.2018-May.2020
	– Advised by George D. Konidaris & Stefanie A. Tellex.	
B.S.	Computer Science, Huazhong University of Sci. and Tech.	Sep.2014-Jun.2018

PROJECT HIGHLIGHTS

Transferring Contact-Rich Assembly Tasks from Simulation to Reality [paper, website]

A set of algorithms, systems, and tools that solve assembly tasks in simulation with reinforcement learning (RL) and successfully achieve policy transfer to the real world. Specifically, we propose 1) simulation-aware policy updates, 2) signed-distance-field rewards, and 3) sampling-based curricula for robotic RL agents. We use these algorithms to enable robots to solve contact-rich pick, place, and insertion tasks in simulation. We then propose 4) a policy-level action integrator to minimize error at policy deployment time. We build and demonstrate a real-world robotic assembly system that uses the trained policies and action integrator to achieve repeatable performance in the real world.

Selective Object Rearrangement in Clutter [paper, website]

An image-based, learned method for selective tabletop object rearrangement in clutter using a parallel jaw gripper. Our method consists of three stages: graph-based object sequencing (which object to move), feature-based action selection (whether to push or grasp, and at what position and orientation) and a visual correspondence-based placement policy (where to place a grasped object).

Learning Collaborative Push and Grasp Policies in Dense Clutter [paper, video]

Learning planar pushing and 6-DoF grasping operations for dense clutter clean-up as sequential decision making process by using deep reinforcement learning algorithm. Deep neural networks are trained to map from 3D visual observations to actions with a Q-learning framework.

PUBLICATIONS

- 2023 **Bingjie Tang***, Michael Lin*, Iretiayo Akinola, Ankur Handa, Gaurav Sukhatme, Fabio Ramos, Dieter Fox, Yashraj Narang. "IndustReal: Transferring Contact-Rich Assembly Tasks from Simulation to Reality." *19th Robotics: Science and Systems (RSS)*, 2023.
- 2022 **Bingjie T.**, Gaurav S. "Selective Object Rearrangement in Clutter", 6th Annual Conference on Robot Learning (CoRL), December 2022.

2022	Bingjie T., Gaurav S. "Feature-based Multi-action Tabletop Rearrangement".	
2021	Bingjie T. , Matthew C., Geroge K., Stefanos N., Stefanie T. "Learning Collaborative Pushing and Grasping Policies in Dense Clutter", <i>IEEE International Conference on Robotics and Automation (ICRA)</i> , May 2021.	
2021	Y. Luo, H. Zhao, Z. Zhang and B. Tang "Open Named Entity Modeling from Embedding Distribution." <i>IEEE Transactions on Knowledge & Data Engineering</i> , 2021.	
2018	Zhuosheng, Z., Jiangtong L., Hai Z., Bingjie T. "Neural Hypernym Discovery with Term Embeddings." <i>Proceedings of the 12th International Workshop on Semantic Evaluation (SemEval 2018)</i> , pp.903–908, Workshop of NAACL-HLT 2018.	

WORKING EXPERIENCE

Seattle Robotics Lab, NVIDIA Corporation, Research Intern.	May.2022 - Present
Manager: Dieter Fox, mentor: Yashraj Narang	
MoE Key Lab, Shanghai Jiao Tong University, Research Assistant.	Dec.2017 - Mar.2018
Advisor: Prof. Hai Zhao.	
Technology Engineering Group (TEG), Tencent., SDE Intern.	Jun.2017 - Sep.2017

TEACHING EXPERIENCE

Graduate Teaching Assistant, University of Southern California	Aug.2022 - Dec.2022
CSCI455: Introduction to Robotics by Prof. Heather Culbertson.	
Graduate Teaching Assistant, University of Southern California	Jan.2022 - May.2022
CSCI566: Deep Learning and Its Applications by Prof. Xiang Ren.	
Graduate Teaching Assistant, University of Southern California	Aug.2021 - Dec.2021
CSCI103-L: Introduction to Programming by Prof. Andrew Goodney.	
Graduate Teaching Assistant, Brown University	Jan.2020 - May.2020
CSCI1460: Computational Linguistics by Prof. Eugene Charniak.	
Graduate Teaching Assistant, Brown University	Sep.2019 - Dec.2019
CSCI1951-R: Introduction to Robotics by Prof. Stefanie A. Tellex.	

SKILLS

Programming language: Python, C, C++. **Software:** Pytorch, Tensorflow, ROS, Pybullet, CoppeliaSim.

Updated October 2023