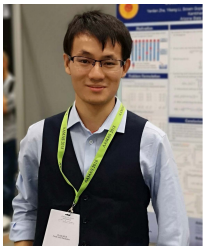

Yantian Zha

Perception and Robotics Group
University of Maryland, College Park
(480) 635-6431
ytzha@outlook.com

OVERVIEW

Postdoctoral Associate at UMD College Park, who is interested in Cognitive Robot Learning – how different levels of cognitive functions like perception, acting, planning, and metacognition, can be tightly coupled to achieve human-level intelligence for robots.

EDUCATION

PhD in Computer Science, Artificial Intelligence 2017-2022
Arizona State University

- Research Advisor: Prof. Subbarao Kamphampati
- Relevant Coursework: CSE 591 Intelligent Assistive Robotics (A); CSE 591 Advances in Robot Learning (A-); CSE 530 Embed Operating Sys Internals (B+); PHY 576 Quantum Theory (B-).
- GPA: 3.51/4.0

MS in Computer Engineering, Computer Systems 2015-2017
Arizona State University

- Research Advisor: Prof. Subbarao Kamphampati
- Relevant Coursework: Human Aware Robotics (A); Statistical Machine Learning (A-).
- GPA: 3.38/4.0

BE in Electronics Engineering, Automation 2010-2014
Southeast University Chengxian College

- Research Advisor: Prof. Xudong Ma
- Relevant Coursework: Advanced Mathmatics (85), Probability & Mathematical Statistics (87), College Physics (91.5), C Programming (88), Embedded Systems (85), Microcomputer: Principles And Application (88), Sensor and Detection Technology (75), Signals and Systems (88), and Fundamentals of Software Technology (84)
- GPA: 83.59/100

RESEARCH PROJECTS

NatSGD-HRI: A Dataset with Speech, Gestures, and Demonstrations for Robot Learning in Natural Human-Robot Interaction
Perception and Robotics Group, University of Maryland College Park 2022.7-Present
Mentoring: Snehesh Shrestha

- Conventional datasets for learning human-robot interaction tasks barely include languages, gestures, and expert demonstrations together that enable the robot learning of complex tasks. In this work, we introduce NatSGD-HRI, a multi-modality human-robot interaction dataset that involve the three modalities together. Our dataset can be used to train robots to incorporate more natural human advice including both language and gestures and accomplish complex everyday tasks like preparing and cooking food, and cleaning up in the kitchen.
- The work is accepted by AAAI Workshop on Artificial Intelligence for User-Centric Assistance for at Home Tasks, 2023

User Modelling for Task and Motion Planning
Yochan Lab, Arizona State University 2018.9-2019.3
Mentor: Prof. Subbarao Kamphampati and Prof. Siddharth Srivastava

Integrating Vision and Planning
Yochan Lab, Arizona State University 2017.6-2018.12
Mentor: Prof. Subbarao Kamphampati and Prof. Baoxin Li

- **Recognizing plans by learning embeddings from observed action distributions**
  Proposed and developed the Distr2Vec model to address the problem of learning shallow planning models from distribution sequence inputs
  This work is published in AAMAS, 2018
- **Plan Recognition Driven Attention Modelling for Visual Recognition**
  Proposed and developed the Pixel Dynamics Network for generating plan recognition driven attention maps
  The work is accepted by AAAI Workshop on Plan, Action, and Intention Recognition (PAIR) in 2019.

Development of Service Software for Demonstrating Plan Explicability
Yochan Lab, Arizona State University 2016.9-2016.12
Mentor: Prof. Subbarao Kamphampati and Prof. Yu Zhang

Developed a software for Fetch robot to perform service in an explicable way. The software is used for evaluating our paper Explicability as Minimizing Distance from Expected Behavior. Here is the link to our demo video

Development of Grasping Module for Baxter Robot
Yochan Lab, Arizona State University 2015.9-2016.1
Mentor: Prof. Subbarao Kamphampati and Prof. Yu Zhang

Developed a robotic grasping module for a Baxter Research Robot. The algorithm is based on stable grasping handle prediction, template-based object recognition, and object point cloud segmentation and extraction. Here is a link to my demo video..

Development of Service Software for Mobile Robots (Bachelor Thesis)
Intelligent Robot Lab, Southeast University 2014.2-2014.5
Mentor: Prof. Xudong Ma and Prof. Kun Qian

Developed a service robot system, which includes navigation, object detection, manipulation control, and Unified Robot Description Format (URDF) programming. Applied the system to a turtlebot 2 and a Phantonx Pincher arm.

CONFERENCE AND JOURNAL PAPERS [dblp]

8. Shrestha, Snehesh, Zha, Yantian, Gao, Ge, Fermuller, Cornelia and Aloimonos, Yiannis, "NatSGD: A Dataset with Speech, Gestures, and Demonstrations for Robot Learning in Natural Human-Robot Interaction", *AAAI-23 Workshop on User-Centric Artificial Intelligence for Assistance in At-Home Tasks* , (2022).

7. Kambhampati, Subbarao, Sreedharan, Sarath, Verma, Mudit, Zha, Yantian, and Guan, Lin, "Symbols as a Lingua Franca for Bridging Human-AI Chasm for Explainable and Advisable AI Systems", *Proceedings of the AAAI Conference on Artificial Intelligence* , Senior Member Presentation Track (2022).

6. Zha, Yantian, Guan, Lin, and Kambhampati, Subbarao, "Learning from Ambiguous Demonstrations with Self-Explanation Guided Reinforcement Learning", *Under Review and AAAI-22 Workshop on Reinforcement Learning in Games* , arXiv (2021).

5. Zha, Yantian, Bhambri, Siddhant, and Guan, Lin, "Contrastively Learning Visual Attention as Affordance Cues from Demonstrations for Robotic Grasping", *The IEEE/RSJ International Conference on Intelligent Robots and Systems* , IROS (2021).

4. Zha, Yantian, Li, Yikang, Yu, Tianshu, Kambhampati, Subbarao and Li, Baoxin, "Plan-Recognition-Driven Attention Modeling for Visual Recognition", *Plan, Activity, and Intent Recognition (PAIR) Workshop* , AAAI (2019).

3. Zha, Yantian, Li, Yikang, Gopalakrishnan, Sriram, Li, Baoxin, and Kambhampati, Subbarao., "Recognizing plans by learning embeddings from observed action distributions.", *In Proceedings of the 17th International Conference on Autonomous Agents and Multi Agent Systems* **2153-2155**, International Foundation for Autonomous Agents and Multiagent Systems (2018).

2. Zhuo, Hankz Hankui, Zha, Yantian and Kambhampati, Subbarao, "Discovering Underlying Plans Based on Shallow Models", *In Proceedings of ACM Transactions on Intelligent Systems and Technology (TIST)* **finalized journal version to come**, (2019).

1. Kulkarni, Anagha, Zha, Yantian, Chakraborti, Tathagata, Vadlamudi, Satya Gautam, Zhang, Yu and Kambhampati, Subbarao, "Explicability as Minimizing Distance from Expected Behavior", *Explainable AI Planning (XAIP) Workshop* , ICAPS (2018).

INVITED TALKS AT INTERNATIONAL CONFERENCES

3. IROS 2021, Virtual, Sep 30

2. AAAI 2019 Workshop on Plan, Activity, and Intent Recognition, Honolulu, USA, January 28

1. ICML / IJCAI / AAMAS 2018 Workshop on Planning and Learning (PAL-18) Workshop, stockholm, Sweden, July 15

INDUSTRY EXPERIENCES

ABB Corporate Research Center in the United States
Worked as a robotics research intern 2020.3-2020.8

Mentor: Dr. Jianjun Wang

My intern projects are confidential. One of them could potentially be a paper if I spent time making my own dataset. I also contributed to another project and our software eventually was deployed to our product team.

MENTORING

4. Pavan Mantripragada, PhD Student at UMD College Park, 2022.7 - now
3. Snehesh Shrestha, PhD Student at UMD College Park, 2022.7 - now
2. Dehao Yuan, PhD Student at UMD College Park, 2022.8 - now
1. Zongxia Li, MS Student at UMD College Park, 2022.9 - now

TEACHING EXPERIENCES

Instructor
ENPM808N Cognitive Robotics 2022.8-now

I am developing this new course for the University of Maryland and will be its instructor in 2023 Spring

Teaching Assistant
Artificial Intelligence 2016.8-2016.12

My TA jobs included answering students' questions, helping the instructor design assignments and exams for the part regarding neural networks, and grading assignments/exams. I learned important lessons from this experience. I learned how to understand and answer students' questions from their perspectives, and how to inspire students to think deeper.

AWARDS AND CERTIFICATES

- 2022 Recipient of the Maryland Robotics Center Postdoctoral Fellowship at the Institute for Systems Research (ISR) at the University of Maryland, College Park for the year 2022 - 2023. This fellowship will support my research "Self-explanation-guided deep reinforcement of Imitation learning from human advice for task-driven perception and robotic manipulation"
- 2021 Awarded the CIDSE Doctoral Fellowship by Arizona State University
- 2014 Awarded Excellent Undergraduate Student in Southeast University
- 2012 Awarded SEU Second Class Scholarship for Academic Achievement (Top 10%)
- 2011 Awarded SEU First Class Scholarship for Academic Achievement (Top 3%)
- 2011 Course Scholarship in C Programming
- 2011 SEU Merit Student Scholarship
- 2007 CERTIFICATE OF ARTS GRADE EXAMINATION OF CHINA (Piano, Ten/Top-level), THE MUSICIANS ASSOCIATION OF JIANGSU PROVINCE, License 200703201-010309

SKILLS

- Expert on Robot Operating System, PyBullet TensorFlow and PyTorch
- iGibson and fast-downward
- Have solid knowledge on robotics, neural networks, planning, reinforcement learning, and computer vision