Xijia "Pony" Zhang

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Interests

My research interest is to develop human-like robots that can collaborate with humans and learn continuously through perception and interaction. I'm interested in anything that may resolve those questions: how robots could acquire human-like intelligence, how such intelligence may influence or improve collaboration with humans, and how robots could adapt to an open-ended environment on themselves.

Education

University of Michigan Sep. 2022 – May. 2024
B.S.E Computer Science and Robotics *Ann Arbor, Michigan, USA*

Shanghai Jiao Tong University Sep. 2020 – Aug. 2024
B.S.E Electrical and Computer Engineering *Shanghai, China*

Research Experience

Enhancing Performance of the E-Nose through Deep Learning Sep. 2021 - Aug. 2022
Advisor: Zhi Yang *Shanghai, China*

- **Objectives**: Enhance the performance of electronic noses using deep learning methods. Optimize the sensor array of the electronic nose for identifying gas components and predicting gas concentrations.
- **Contributions**: Applied machine learning techniques to analyze sensor signals; Investigated optimization of sensor array and measured performance under various array sizes; Designed a cost-effective ratio to determine benefit of adding or removing sensors.

Deploying Theory of Mind on Real-world Robots Sep. 2022 - Present
Advisor: Joyce Chai *Ann Arbor, Michigan, USA*

- **Objectives**: Deploy theory of mind modeling on robots to facilitate human-robot collaboration. Enable real-world agents to better understand and respond to the mental states of their human partners.
- **Contributions**: Recorded and processed multi-modal data including laserscan, rgbd, imu and utterances with timestamps; Enabled the robot to receive commands from a remote terminal to streamline development process; Designed multiple collaboration tasks to demonstrate the effect of Theory of Mind Modeling on human-robot collaboration.

Towards Flexibility in Lifelong Language Learning Sep. 2022 - Present
Advisor: Joyce Chai *Ann Arbor, Michigan, USA*

- **Objectives**: Investigate the cognitive flexibility of language models in lifelong language learning. Analyze the factors that affect the flexibility of language models under task switching
- **Contributions**: Formulated the definition of task in various language domains; Adjusted and developed metrics that reflect flexibility of learning; Analyzed the performance of language models under task switching.

Publication [Under Review]

"Sensor Array Optimization of the Electronic Nose Based on Different Deep Learning Method"
Xijia Zhang, Tao Wang, Wangze Ni, Wen Lv, Yongwei Zhang, Min Zeng, Jianhua Yang, Yanjie Su, Nantao Hu, Zhi Yang *Sensors and Actuators: B, 2022*

Honors & Awards

Feb. 2021	Honorable Mention	*The Mathematical Contest in Modeling*
May. 2021	Chun-Tsung Scholarship	*Shanghai Jiao Tong University*
Oct. 2021	Rongchang Innovation Scholarship Nomination	*Shanghai Jiao Tong University*
Nov. 2021	China National Encouragement Scholarship	*Ministry of Education of China*
Nov. 2021	Silver Medal	*The University Physics Contest (UPC)*

Skills

`Toolchain`	Robot Operating System, Linux, Docker
`Programming Languages`	C/C++, Python, Matlab, Mathematica, LaTeX, Elm
`Frameworks & Libraries`	NLTK, Transformers, Pytorch, Scikit-Learn

Course Work

EECS 281 Data Structures and Algorithms	A
EECS 595 Natural Language Processing	A+
EECS 370 Intro to Computer Organization	A+

Extra-Curriculars

Writing Consultant | JI Writing Center — Sep. 2021 - Apr. 2022

– Work with student writers during any step of the writing process: invention, draft, revise, edit, publish.

– Ensure alignment with and adherence to the paper's prompt or assignment.

Class Advisor | UMJI - Joint Institute — Sep. 2021 - Aug. 2022

– Provide JI freshmen with support and advice to help them get familiar with new environment.

Student Advisor | JI Advising Center — May. 2022 - Aug. 2022

– Assist students in deciding on careers, course of study, and academic subjects to pursue.

– Propose and plan for career sharing workshops.

Member | IEEE at Umich — Sep. 2022 - Present

– Attend technical talks on recent advances in multiple fields.