Shijie Fang

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EDUCATION

Tufts University   Medford, MA, USA
M.S. in Computer Science; **GPA: 3.94/4.00**   *Sep. 2023 – Present*

Peking University   Beijing, China
B.Sc. in Robotic Engineering; **GPA 3.0/4.0**   *Sep. 2019 – Jun. 2023*

PUBLICATION

Published

- Hang Yu, Qidi Fang, **Shijie Fang**, Reuben M. Arson, Elaine Schaertl Short. How Much Progress Did I Make? An Unexplored Human Feedback Signal for Teaching Robots. In 33rd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN 2024)

Under Review

- **Shijie Fang**, Hang Yu, Qidi Fang, Reuben M. Arson, Elaine Schaertl Short. Demonstration Sidetracks: Categorizing Systematic Non-Optimality in Human Demonstrations. ICRA 2025

- **Shijie Fang**, Wenchang Gao, Shivam Goel, Matthias Scheutz, Jivko Sinapov. FLEX: A Framework for Learning Robot-Agnostic Force-based Skills Involving Sustained Contact Object Manipulation. ICRA 2025

- Qidi Fang, Hang Yu, **Shijie Fang**, Qiuyu Chen, Reuben M. Arson, Elaine Schaertl Short. CHARM: Considering Human Attributes for Reinforcement Modeling. ICRA 2025

RESEARCH EXPERIENCE

Assistive Agent and Behavior Learning Lab   Tufts University, USA
Research Assistant   *Sep. 2023 – Present*
Advisor: [Prof. Dr. Elaine Schaertl Short](#)

- **Learning with *Progress*: using novel feedback signal to enhance Learning from Demonstration.**

  We aim to utilize the *progress* signal we discovered to enhance the learning process by shaping the reward function with it. We discovered multiple unique properties of progress, which provide both absolute and relative information on the quality of human demonstrations and the importance of different parts of the trajectory.

Multimodal Learning, Interaction, and Perception Lab   Tufts University, USA
Research Assistant   *Sep. 2023 – Present*
Advisor: [Prof. Dr. Jivko Sinapov](#)

- **Efficient skill learning for general object manipulation using LLM and force-based reinforcement learning**

  This work is a step further from our *FLEX: A Framework for Learning Robot-Agnostic Force-based Skills Involving Sustained Contact Object Manipulation* paper. Instead of focusing on a single articulated object manipulation task, we aim to develop a system that can handle more complicated tasks, such as baking a cake. We leverage the power of LLM reasoning to discover the general information of the target skill and can launch force-based reinforcement learning on-the-fly, leveraging The high time efficiency of force-based reinforcement learning methods.

- **Handling robot task failure with combined PDDL and LLM.**

  In this work, we aim to address the issue of task failure due to undiscovered preconditions and effects in PDDL planning by querying LLM to give failure reason and use RL to discover solutions. We then add these newly discovered items back to PDDL, resulting in a complete planning domain that no longer needs LLM for future use.

- ***Dream to correction:* back-to-distribution imitation learning with world model.**

  In this work, we aim to address out-of-distribution problems in regular imitation learning by including knowledge of system dynamics through world models. Our method combines policy generated by imitation learning and planning when the agent gets out of a known learned region. We use a world model for both out-of-distribution detection and indicator of planning direction

TEACHING

CS-138-M1 Reinforcement Learning   Tufts University, USA
Class Assistant   *Fall 2024*
Lecturer: [Yash Shukla](#)

PROJECTS

Norm-obeying agent in supermarket shopping environment | *[GitHub](#)*

* Developed an agent that can obey social norms in a supermarket shopping environment (norms include not running into other shoppers, not leaving the cart behind, always going to register and pay after shopping, etc.). The agent combines planning in open space navigation with strategies to ensure the movement obeys norms.

Emochat | *[GitHub](#)*

* Devloped a chatbot with empathy by combining LLM and sentiment analysis. We embed results from the sentiment analysis module into the input of LLM using prompt engineering. We deployed this technique on a Misty robot. Results show that users find chatbots with sentiment analysis to be more empathetic combined with pure LLM-driven

SKILLS

Languages: Python, MATLAB, C/C++

Technologies: Git, Docker,PyTorch, ROS, Gazebo, Mujoco, Robosuite