Zhao-Heng Yin

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Research Summary I study AI and ML for Robotics. I conduct research on reinforcement learning and imitation learning, with their applications in robotics (robotic manipulation, autonomous driving, etc.). I have proposed several imitation learning algorithms that can leverage cross domain data, learn in a sample efficient way by MCTS planning, and generalize better with proper inductive bias.

Education

The Hong Kong University of Science and Technology **2021 - 2023**
Master of Philosophy - Electronic and Computer Engineering

- GPA: 4.16/4.00. Advisor: Prof. Qifeng Chen.
- Research intern at Tsinghua Univeristy IIIS with Prof. Yang Gao.
- Research intern at UC San Diego with Prof. Xiaolong Wang.

Nanjing University **2017 - 2021**
Bachelor of Science - Computer Science (Honored Class), Mathematics

- GPA: 4.52/5.00. Advisor: Prof. Wu-Jun Li.
- Visiting student at UC Berkeley with Prof. Masayoshi Tomizuka.

Selected Publications

1. **Zhao-Heng Yin**, Yang Gao, Qifeng Chen. "Structural Generalization of Visual Imitation Learning with Positional-Invariant Representations". Under review of *Intenational Conference of Learning Representations (ICLR)*, 2023.
2. **Zhao-Heng Yin**, Weirui Ye, Qifeng Chen, Yang Gao. "Planning for Sample Efficient Imitation Learning". In *Neural Information Processing Systems (NeurIPS)*, 2022.
3. **Zhao-Heng Yin**, Lingfeng Sun, Hengbo Ma, Masayoshi Tomizuka, Wu-Jun Li. "Cross Domain Robot Imitation with Invariant Representation". In *IEEE International Conference on Robotics and Automation (ICRA)*, 2022.
4. Yuzhe Qin*, Binghao Huang*, **Zhao-Heng Yin**, Hao Su, Xiaolong Wang. "Generalizable Point Cloud Policy Learning for Sim-to-Real Dexterous Manipulation". In *Conference on Robot Learning (CoRL)*, 2022.
5. **Zhao-Heng Yin***, Lingfeng Sun*, Liting Sun, Masayoshi Tomizuka, Wei Zhan. "Diverse Critical Interaction Generation for Planning and Planner Evaluation". In *IEEE/RSJ Internation Conference on Intelligent Robots and Systems (IROS)*, 2021.
6. **Zhao-Heng Yin**, Wu-Jun Li. "TOMA: Topological Map Abstraction for Reinforcement Learning". *arXiv preprint:2005.06061*, 2020.

Skills

- **Language:** English, Chinese.
- **Programming:** C, C++, Python, Java, MATLAB, Verilog HDL, HTML/CSS/Javascript, Shell, TEX.
- **Research Development Toolsets:** Docker, Kubernetes, Git, Linux.
- **Physics Simulation:** MuJoCo, PyBullet, SAPIEN, IsaacGym.
- **General Engineering Skills:** 3D Modeling (Solidworks and Blender), Embedded System Design (STM32 and Arduino), ROS, FPGA, Analog Circuit.

Honors and Awards

National Elite Scholarship, China 2020, 2021