Tian Gao

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Education

◇ **Tsinghua University,** Institute for Interdisciplinary Information Science (Yao Class) *Aug. 2019 - present*
Bachelor of Engineering, in the major of Computer Science and Technology

- **GPA**: 3.94/4.00
- **Honors and Scholarships**:
  * Gold Medal Yao Award (2 out of 94, **the highest honor in our department**)
  * Google APAC Women Techmakers Scholars Program Scholarship 2020
  * National Scholarship (2 out of 94)
  * Outstanding Innovation in Science and Technology Scholarship Tsinghua University
  * Outstanding Comprehensive Scholarship Tsinghua University

Publications

*(*Equal Contribution)*

[1] Yunfei Li*, **Tian Gao***, Jiaqi Yang, Huazhe Xu, Yi Wu. Phasic Self-Imitative Reduction for Sparse-Reward Goal-Conditioned Reinforcement Learning. *International Conference on Machine Learning (ICML)*, 2022.

[2] Soroush Nasiriany, **Tian Gao**, Ajay Mandlekar, Yuke Zhu. Learning and Retrieval from Prior Data for Skill-based Imitation Learning. *The Conference on Robot Learning (CoRL)*, 2022.

Research Experiences

◇ **Imitation Learning and Robot Manipulation** *Mar. 2022 - present*
Advised by Prof. Yuke Zhu *UT Austin, RPL Lab*

- Learning a high-level policy to sequence temporally extended sensorimotor skills in an offline setting to improve the data-efficiency and robustness of policy learning in long-horizon tasks. **First-authored work in preparation for RSS 2023**.
- Reasoning about and parsing unsegmented robot task demonstrations with no human labels into sequences of parameterized primitives using dynamic programming and sequencing skills via imitation learning on parsed data.

◇ **Imitation Learning and Robot Manipulation** *Mar. 2022 - present*
Advised by Prof. Yuke Zhu *UT Austin, RPL Lab*

- Developed a skill-based imitation learning framework to solve long-horizon real-world manipulation tasks in a more robust and data-efficient manner via leveraging prior data. **Second-authored work accepted to CoRL 2022**.
- Adopted an auxiliary temporal predictability objective to improve the skill representation and a retrieval-based data augmentation mechanism to increase the scope of supervision for further policy training.

◇ **Reinforcement Learning and Robot Manipulation** *Jul. 2021 - Jan. 2022*
Advised by Prof. Yi Wu *Tsinghua, IIIS*

- Developed a phasic framework for tackling sparse-reward goal-conditioned RL problems. **First-authored work accepted to ICML 2022**.
- Proposed a phasic self-imitative reduction (PAIR) framework which optimizes RL and SL objectives alternatively and adopted task reduction and a value-difference-based intrinsic reward in the RL phase to improve sample efficiency.

Presentation

- Phasic Self-Imitative Reduction for Sparse-Reward Goal-Conditioned Reinforcement Learning *Jul. 2022*
  ICML 2022 Spotlight Talk

Extracurricular Activities

- Department president of Student Union *2022-present*
- President of Yao class *2019 - 2020, 2022-present*
- School choir member *2021- present*

Standard Language Tests

- TOEFL Total 114: reading 30, listening 30, speaking 26, writing 28