

Tianying Ji

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EDUCATION

- Tsinghua University** Beijing, China
 - Hydraulic Engineering Sept. 2016 - June 2017
 - Computer Science and Technology Sept. 2017 - June 2020
 - Bachelor of Engineering
- Tsinghua University** Beijing, China
 - Computer Science and Technology Sept. 2020 - Present
 - The State Key Laboratory of Intelligent Technology and Systems

PROJECTS

- Non-Markovian Behavior Learning and Decision Making (Reinforcement Learning)**
Project Leader. Applied for and received funding for a National Key Project. As the project lead, I guided my team to exceed our research goals and successfully completed the project acceptance. We developed a knowledge-driven, non-Markovian behavioral decision-making model and algorithms to address decision-making problems under incomplete observation information, and we conducted experimental validation on complex motion and obstacle avoidance tasks for quadruped robots. (2020 - 2022)
- Cognitive Learning and Decision Manipulation of Unmanned Platforms in Dynamic Adversarial Environment (Reinforcement Learning)**
Project Team Member. Focused on experience-based agent cognition. Proposed a constraint model-based algorithm incorporating an event-triggered mechanism to flexibly determine when to update the model. Implemented the solution in final unmanned platforms for traversing various terrains. (2019 - 2021)
- Generation of Adversarial Networks for Object Detection (Computer Vision)**
Project Team Member. Developed an end-to-end joint architecture for target-oriented detection tasks in complex flight environments, incorporating image harmonization, image matting, sequence inpainting, and segmentation. Received honors grade for this undergraduate project. (2019 - 2021)

PUBLICATIONS

- Congcong Miao, Jilong Wang, **Tianying Ji**, Hui Wang, Chao Xu, Fenghua Li, Fengyuan Ren. BDAC: A Behavior-aware Dynamic Adaptive Configuration on DHCP in Wireless LANs. 2019 IEEE 27th International Conference on Network Protocols (ICNP), 2019.
- Chao Yang, Chengliang Zhong, Mingxuan Jing, Yu Luo, **Tianying Ji**, Wenbing Huang, Xiaodong Mu, Fuchun Sun. RGB-D Object Segmentation for Multi-Step Pick-and-Place in Open Cloud Robot Table. ICRA 2021 Workshop: Cloud-Based Competitions and Benchmarks for Robotic Manipulation and Grasping.
- Yu Luo, Mingxuan Jing, **Tianying Ji**, Fuchun Sun, Huaping Liu. A Robust Tube-Based Smooth-MPC for Robot Manipulator Planning. arXiv preprint arXiv:2103.09693, 2021.
- Tianying Ji**, Yu Luo, Fuchun Sun, Mingxuan Jing, Fengxiang He, Wenbing Huang. When to Update Your Model: Constrained Model-based Reinforcement Learning. NeurIPS 2022 (**Spotlight - top5%**).
- Haoyi Niu*, **Tianying Ji***, Bingqi Liu, Haocheng Zhao, Xiangyu Zhu, Jianying Zheng, Pengfei Huang, Guyue Zhou, Jianming Hu, Xianyuan Zhan. H2O+: An Improved Framework for Hybrid Offline-and-Online RL with Dynamics Gaps. ICLR 2024 DMLR Workshop.
- Guowei Xu, Ruijie Zheng, Yongyuan Liang, Xiyao Wang, Zhecheng Yuan, **Tianying Ji**, Yu Luo, Xiaoyu Liu, Jiaxin Yuan, Pu Hua, Shuzhen Li, Yanjie Ze, Hal Daumé III, Furong Huang, Huazhe Xu. DrM: Mastering Visual Reinforcement Learning through Dormant Ratio Minimization. ICLR 2024 (**Spotlight - top5%**).
- Yu Luo, **Tianying Ji**, Fuchun Sun, Huaping Liu, Jianwei Zhang, Mingxuan Jing, Wenbing Huang. Goal-Conditioned Hierarchical Reinforcement Learning With High-Level Model Approximation. IEEE Transactions on Neural Networks and Learning Systems.
- Tianying Ji**, Yu Luo, Fuchun Sun, Xianyuan Zhan, Jianwei Zhang, Huazhe Xu. Seizing Serendipity: Exploiting the Value of Past Success in Off-Policy Actor-Critic. ICML, 2024.
- Tianying Ji***, Yongyuan Liang*, Yan Zeng, Yu Luo, Guowei Xu, Jiawei Guo, Ruijie Zheng, Furong Huang, Fuchun Sun, Huazhe Xu. ACE: Off-Policy Actor-Critic with Causality-Aware Entropy Regularization. ICML, 2024 (**Oral - top 2%**).
- Yu Luo, **Tianying Ji**, Fuchun Sun, Jianwei Zhang, Huazhe Xu, Xianyuan Zhan. OMPO: A Unified Framework for RL under Policy and Dynamics Shifts. ICML, 2024 (**Oral - top 2%**).

- Yu Luo, **Tianying Ji**, Fuchun Sun, Jianwei Zhang, Huazhe Xu, Xianyuan Zhan. Offline-Boosted Actor-Critic: Adaptively Blending Optimal Historical Behaviors in Deep Off-Policy RL. ICML, 2024.
- Qie Sima*, Yu Luo*, **Tianying Ji**, Fuchun Sun, Huaping Liu, Jianwei Zhang. Smooth Computation without Input Delay: Robust Tube-Based Model Predictive Control for Robot Manipulator Planning. ICRA 2024.
- Yu Luo, Fuchun Sun, **Tianying Ji**, Xianyuan Zhan. Bidirectional-Reachable Hierarchical Reinforcement Learning with Mutually Responsive Policies. RLC 2024.
- Hai Zhang, Boyuan Zheng, Anqi Guo, **Tianying Ji**, Pheng-Ann Heng, Junqiao Zhao, Lanqing Li. Scrutinize What We Ignore: Reining Task Representation Shift In Context-Based Offline Meta Reinforcement Learning. arXiv preprint arXiv:2405.12001.
- Hantao Zhou*, **Tianying Ji***, Jianwei Zhang, Fuchun Sun, Huazhe Xu. RoboGolf: Mastering Real-World Minigolf with a Reflective Multi-Modality Vision-Language Model. CoRL, 2024.
- Jianhua Yin, Xianyuan Zhan, **Tianying Ji**, Bingrong Xu, Yi He, Daqing Zhang, Lingxi Li. Motion Planning Integrated with Vehicle-Terrain Interactions for Off-Road Autonomous Ground Vehicles. 2024 IEEE 27th International Conference on Intelligent Transportation Systems (ITSC).

PATENTS

- Xianyuan Zhan, **Tianying Ji**, Yu Luo. Method and device for realizing reinforcement learning of intelligent body by searching and utilizing balance. CN116663653A, Aug. 29, 2023.
- Fuchun Sun, **Tianying Ji**, Yu Luo, Yan Zeng. A model training and strategy optimization method and system based on an event-triggering mechanism. CN117763974A, Mar. 26, 2024.
- Fuchun Sun, Yu Luo, **Tianying Ji**, Yan Zeng. Agent hierarchical reinforcement learning method and system based on dynamic high-level planner. CN117872758A, Apr. 12, 2024.

INTERNSHIPS AND OVERSEAS EXPERIENCES

- **HAOMO.AI Autonomous Driving Research Cooperation Project** Beijing, China
Research Project Internship; Institute for AI Industry Research, Tsinghua University *Sept. 2022 - Nov. 2023*
- **SFB/TRR169-Multimodal Learning Sino-German Cooperation Project** Hamburg, Germany
Visiting Scholar; University of Hamburg *Nov. 2023 - Feb. 2024*

HONORS AND AWARDS

- Tsinghua University, Tsinghua 1st-class scholarship for overall excellence, 2023
- OCRTOC : Open Cloud Robot Table Organization Challenge @ IROS 2020 Simulation Track: Team Champion, Real Robot Track: Team 3rd place, 2020
- Tsinghua University, “Love Reading” Scholarship, 2019
- Tsinghua University, “Love Reading” Scholarship, 2017

SKILLS

- Languages: Python, C++, C, MATLAB, Java, Javascript, Bash
- Frameworks: Qt, Vue, Django, Pytorch, Tensorflow, Gym, NumPy, Pandas, SciPy, MuJoCo
- Majors: Reinforcement Learning, Control Theory, Probability Statistics, Optimization Theory