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. Research-oriented, focus on the non-markovian decision process under partially observed environments with dynamics modeling. Explored several kinds of non-markovian decision process. (2020 - 2022)

- **Cognitive Learning and Decision Manipulation of Unmanned Platforms in Dynamic Adversarial Environment (Reinforcement Learning)**
  Project Team Member. Responsible for experience-based agent cognition, implemented several kinds of experience replay techniques in the final unmanned platform. (2019 - 2021)

- **Generation of Adversarial Networks for Object Detection (Computer Vision)**
  Project Team Member. Responsible for data augmentation for target-oriented detection tasks in complex flight environments. Designed and implemented a joint architecture including image harmonization, image matting, sequence impainting and segemantation. Received an honours GPA for the undergraduate project based on these. (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).

- 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).

- 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).

- 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).

- 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.

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 event-triggering mechanism. 202410039006.3, Preliminary review passed (Feb. 2, 2024).
- Fuchun Sun, Yu Luo, **Tianying Ji**, Yan Zeng. Agent hierarchical reinforcement learning method and system based on dynamic high-level planner. 202410039334.3, Preliminary review passed (Feb. 2, 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