Ruixiao Yang

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Field of Interests

Combinatorial Optimization; Machine Learning; Multi-agent Planning

Education

Massachusetts Institute of Technology — MA, USA
Ph.D, Grade: -/5.0, Major: Autonomy, Department of Aeronautics and Astronautics — *2024 - Now*

Massachusetts Institute of Technology — MA, USA
SM, Grade: 5.0/5.0, Major: Autonomy, Department of Aeronautics and Astronautics — *2022 - 2024*

Tsinghua University — Beijing, China
BE, Grade: 3.91/4.0, Major: Computer Science, Institute for Interdisciplinary Information Sciences — *2018 - 2022*

Experience

Graduate Research Assistant — Sept. 2022 – Now
Reliable Autonomous Systems (REALM) Lab, Massachusetts Institute of Technology — *MA, USA*
Advisor: Chuchu Fan, Department of Aeronautics and Astronautics

- Explore different variants of Multi-agent Traveling Salesman Problem, including energy constraints and heterogeneous salesmen
- Develop efficient and scalable hierarchical algorithms for solving Multi-agent Traveling Salesman Problem variants
- Two paper in submission

Undergraduate Research Assistant — Jan 2021 - May 2022
Rigorous Systems Research Group (RSRG), California Institute of Technology — *CA, USA*
Advisor: Adam Wierman, Department of Computing and Mathematical Sciences

- Design algorithms to utilize unreliable prediction in learning-augmented predictive control problem
- Introduce online learning to the control policy for adaptive control
- Derive the competitive ratio bounds (worst case guarantee) and stability conditions

Undergraduate Research Assistant — Jul 2020 - Nov 2020
The Chinese University of Hong Kong — *HK, China*
Advisor: Helen Meng, Department of Systems Engineering and Engineering Management

- Verify clocking drawing test via few-shot Learning

Research Intern — Dec 2019 - Mar 2020
Chinese Academy of Science — *Beijing, China*
Advisor: Yanbiao Li, Computer Network Information Center

- Design and implement an algorithm for connections between FPGA groups with constraints

Publications

- **R. Yang** and C. Fan (2024). Optimization of Multi-Agent Flying Sidekick Traveling Salesman Problem over Road Networks. arXiv preprint arXiv:2408.11187.
- **R. Yang** and C. Fan (2024). A Hierarchical Framework for Solving the Constrained Multiple Depot Traveling Salesman Problem. IEEE Robotics and Automation Letters, doi: 10.1109/LRA.2024.3389817.
- Li, T., **Yang, R.**, Qu, G., Lin, Y., Wierman, A., & Low, S. H. (2023). Certifying Black-Box Policies With Stability for Nonlinear Control. IEEE Open Journal of Control Systems, 2, 49-62.
- Li, T., **Yang, R.**, Qu, G., Shi, G., Yu, C., Wierman, A., & Low, S. (2022). Robustness and consistency in linear quadratic control with untrusted predictions. Proceedings of the ACM on Measurement and Analysis of Computing Systems, 6(1), 1-35.

Technical Skills

Programming: Python, C++
Tools: Pytorch, Git, ROS, Docker, Linux
Language: Proficient in English and Chinese