

LIU, YONGCE (刘永策)

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EDUCATION

Shanghai Jiao Tong University

Shanghai, China

Master, Control Science and Engineering (Advisor: [REN, Zhongqiang](#), LAB: [RAP LAB](#))

09/2024 - 03/2027 (Expected)

Research Interests: Optimal Control, Motion Planning, Multi-Robot Systems.

Northeastern University

Shenyang, China

Bachelor of Engineering, Automation

09/2020 - 06/2024

Rank: 2/187, GPA: 4.336/5 (93.36/100), Courses: Automatic Control Principle, Modern Control Theory.

PUBLICATIONS [[GOOGLE SCHOLAR](#)]

- [1] Yongce Liu, Zhongqiang Ren. "A Probabilistic Measure of Multi-Robot Connectivity and Ergodic Optimal Control." Robotics: Science and Systems (RSS) [Accepted], 2025
 - Propose a probabilistic connectivity measure, study connectivity maintenance methods under information (ergodic) search, and use augmented Lagrangian iterative-LQR as the trajectory planning method.
- [2] Yongce Liu, Zhongqiang Ren. "Multi-Robot Ergodic Trajectory Optimization with Relaxed Periodic Connectivity." [Submitted to IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)], 2025.
 - Research on multi-robot information search planning (ergodic search) and connectivity maintenance methods, using the augmented Lagrangian method as the numerical optimization method.
- [3] Shizhe Zhao, Yongce Liu, Howie Choset, and Zhongqiang Ren. "Mixed Integer Conic Programming for Multi-Agent Motion Planning in Continuous Space." [Submitted to IROS], 2025.
 - Studying multi-robot motion planning under collision-free paths, using Gurobi as the solver, I execute the hardware experiments to verify the algorithm.
- [4] Yongce Liu, Ziyang Wu, and Pengcheng Song. "Online Trajectory Optimization for UAV-assisted Hybrid FSO/RF Network with QoS-guarantee." IEEE Communications Letters, 2023.
 - Research on trajectory planning of the unmanned aerial vehicle based on reinforcement learning ensures the quality of service between air and ground (UAV - Ground Vehicle).

INTERNSHIP EXPERIENCE

ZERON Truck, Truck Autonomous Driving

Shanghai, China

Autonomous Driving Algorithm Intern

04/2025 - 06/2025

- Research on spatiotemporal joint trajectory planning for autonomous driving to plan safe and comfortable trajectories.
- Joint reinforcement learning end-to-end autonomous driving model to ensure the vehicle driving safety.

PROJECTS

- [1] Ergodic Coverage of a Target Using a Manipulator or Quadrotor (Introduction to Robotics Course)
 - Based on the ergodic search theory, plan a collision-free path for a manipulator or quadrotor to cover (moving) target objects.
- [2] Trajectory Planning Library (Developing)
 - Develop a trajectory planning library with optimization, sampling, and discrete search using C++ (LQR Series, RRT, A* Series, etc).

AWARDS & ACHIEVEMENTS

Outstanding graduates from Liaoning Province

2024

National Scholarship (2.5%), Northeastern University Outstanding Student, etc

2021, 2022, 2023

China University Student Computer Game Theory Competition, 1st Prize

2021, 2022

Mathematical Contest in Modeling (MCM), 1st Prize

2022

Outstanding College Students in Shenyang (0.5%)

2021

OPEN SOURCE REPOSITORY

Motion Capture Deck [[GitHub](#)] : The active and passive deck to position the Crazyflie 2.x in a motion capture system.

TECHNICAL SKILLS

Programming: Python (NumPy, Matplotlib, JAX, PyTorch), C++ (Eigen)

Software: Linux, Docker, Git, Robot Operating System (ROS & ROS2), LATEX