



Department of
Mechanical Engineering
The University of Hong Kong



SEMINAR

Efficient Exploration and Cooperation among Multi-Robots in Unknown Environment based on Reinforcement Learning Planner

- Date:** 29 March, 2023 (Wednesday)
Time: 11:00 a.m.
Venue: Room 7-34, Haking Wong Building, HKU
- Speaker:** Mr. LI Mingyang (M.Phil. candidate)
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Abstract:

Due to their robustness and efficiency, multi-robot systems have received widespread attention in the field of robotics. Multi-robot cooperative search, as one of the research branches, has been extensively studied in recent years. Traditional planning-based methods require the design of complex heuristic functions and a large amount of reasoning calculations, while prediction-based methods require specific environment information and the initial position of the target point, which is difficult to obtain in real-world scenarios. Compared with these methods, reinforcement learning-based methods have received extensive attention from the academic community due to their powerful policy search ability and policy representation ability. Applying multi-agent reinforcement learning (MARL) methods to multi-agent exploration tasks in unknown environments can be formulated as a partially observable Markov decision process (POMDP), where agents perceive and explore the environment based on historical observation information, and learn through feedback obtained by interacting with the environment. Experimental results show that by using a reasonable state representation and parameter sharing, agents can learn robust exploration and cooperation strategies in unknown environments, improving the efficiency of the system exploration while retaining excellent scalability.

ALL INTERESTED ARE WELCOME

For further information, please contact Dr. P. Lu at 3910 2548.