

## Inverse Reinforcement Learning Schemes for Continuous-Time Deterministic Systems

### 概要

We have developed two data-driven schemes for inverse reinforcement learning (IRL) of continuous-time linear and nonlinear deterministic systems. The main objective was to deal with the unknown dynamics without solving an RL problem after each estimation.

### 特徴

- The first approach is model-free and the second approach relaxes the confining assumption that input-state measurements of the demonstrator must be rich.
- Unlike some existing methods, in the second proposed method, the learner and expert can have different drift dynamics.
- The methods do not require to solve a forward reinforcement learning problem after each cost function update; that is, they are not nested methods.

### 今後の展開

- We will expand our findings to address the Inverse Reinforcement Learning (IRL) problem in multiplayer games, where the increased number of parameters to be estimated introduces novel challenges.

### テーマ「ともに究め、明日の社会を拓く」との関連

- The proposed methods are online which provide fast solutions to the reinforcement learning-based control, and have less computational load. These features are essential in autonomous systems where there is a need to adapt to possible changes in the task objectives or dynamics of the demonstrator.

