

Effect of Space and Mobility in the Spatial Prisoner's Dilemma with Reinforcement Learning

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Recent studies in the spatial prisoner's dilemma embedded with a reinforcement learning framework have shown that, in a static environment, agents can learn to cooperate through a diverse sort of mechanisms, including noise injection [1], different types of learning algorithms and neighbours' payoff knowledge [2]. In this work, using a Q-learning algorithm for each agent, which composes a multi-agent reinforcement learning framework, we study the effects of free space with two different types of rewards, one selfish and one shared. We also analyze for both cases how cooperation is affected with mobility, connecting with previous results on the classical, non-reinforcement learning spatial prisoner's dilemma [3].

References

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