Abstract

A novel approach to multi-agent cooperation methods by reinforcement learning (MCMRL) is proposed in this paper. Cooperation methods for reinforcement learning depend on the multi-agent scheme are proposed and implemented. Different cooperation methods of cooperative reinforcement learning of each agent proposed here i.e. group method, dynamic method, goal-oriented method. Implementation results have demonstrated that the suggested cooperation methods are capable to accelerate the aggregation of agents that accomplish best action strategies. This approach is developed for dynamic product availability in a three retailer shop in the market. Retailers can cooperate with each other and can get the benefit of cooperative information from their own policies that accurately represent their goals and interests. The retailers are the learning agents in the problem and apply reinforcement learning to learn cooperatively in the situation. By making the considerable theory of the dealer’s inventory strategy, refill period, and entry procedure of the customers, the problem turns out to be Markov decision process model thus facilitating to apply learning algorithms.
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