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Performance comparison of multiagent cooperative reinforcement learning algorithms for dynamic decision making in retail shop application

Deepak A. Vidhate and Parag Kulkarni

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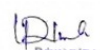


Abstract

A novel approach by expertise based on multiagent cooperative reinforcement learning algorithms (EMCRLA) for dynamic decision making in the retail application is proposed in this paper. Performance comparison between cooperative reinforcement learning algorithms and expertise-based multiagent cooperative reinforcement learning algorithms is demonstrated. Different cooperation schemes for multi-agent cooperative reinforcement learning, i.e., EGroup scheme, EDynamic scheme is proposed here. This approach is developed for a three retailer stores in the retail marketplace. Retailers will be able to help each other and obtain profit from cooperation knowledge through learning their own strategies that exactly stand for their aims and benefit. Dynamic consumer performance is noticeably learned using the proposed algorithms. The paper illustrates results of cooperative reinforcement learning algorithms of three shop agents for the period of one year sale duration and then demonstrated the results using proposed approach for three shop agents for one year sale duration.

Keywords

cooperation schemes, multiagent learning, reinforcement learning


PRINCIPAL
Dr. Vithalrao Vikhe Patil
College of Engineering
Ahmednagar

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