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## Using Learning Automata in Cooperation among Agents in a Team

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**Abstract**

Learning automata act in a stochastic environment and are able to update their action probabilities considering the inputs from their environment, so optimizing their functionality as a result. In this paper, the goal is to investigate and evaluate the application of learning automata to cooperation in multi-agent systems, using soccer simulation server as a test bed. Also, because of the large state space of a complex multi-agent domain, it is vital to have a method for environmental states' generalization. In this paper we have introduced and designed a new technique called the "best corner in state square" for generalizing the vast number of states in agent's domain environment to a few number of states by building a virtual grid in that environment. The efficiency of this technique in state space generalization in a cooperative multi-agent domain is investigated

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