MODELING BEHAVIOR OF RATIONAL AGENTS BASED ON STIMULATION LEARNING

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In this article the method and the algorithm of the intelligent agents simulated training are developed, which could enable to use effectively the knowledge of the agent to maximize winnings. Generally, the agent has to explore the environment and choose the optimal behavior. The agent behavior evaluation depends on the following four factors: the performance metrics, the knowledge of the agent about the environment, the actions and the sequence of the agent perception. Given these factors for each possible sequence of perception acts, the intelligent agent must choose an action that is expected to maximize its performance metrics, given the facts provided by some sequence of perception and all embedded knowledge held by the agent, i.e., to a rational action. The rational choice depends on the sequence of the perception acts formed to a predetermined point. After the sufficient existence experience in their midst, the intelligent agent behavior can essentially become independent of its priori knowledge. The inclusion in the project of the learning abilities will allow us to design simple intelligent agents that can act successfully in various versions of the environment.

Also, the appropriate mathematical software was developed based on the number of states in which such an agent may be, based on the dynamic programming, the probability theory and Markov processes. Appropriate algorithms are used to model the behavior of intelligent agents. In the future, it is planned, based on of mathematical software, to investigate the behavior of intelligent agents as tactical units of the armed forces and the rational functioning of higher education institutions.

Keywords – rational agent, model finite horizon, Gittins allocation indices, dynamic programming, Markov process.