

LEARNING PARADIGMS FOR GAME ARTIFICIAL INTELLIGENCE

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ABSTRACT

One of the main challenges facing Computer games is creating agents that are driven by artificial intelligence (AI) that interact with the player in reliable and entertaining ways. In the game world, it is being accepted that careful and considered use of learning makes it possible to come out with smarter and more robust AIs without the need to appropriate and counter every strategy that a player may adopt. It follows therefore, that rather than having all non-player character behaviours being determined by the time a game is produced, the game should instead evolve, learn, and adapt throughout the period the game is being played. The outcome of this is that the game grows with the player and is very difficult for the player to predict the next action, thus extending the play-life of the game. These learning techniques normally change the way that games are played, by forcing the player to continually search for new strategies to defeat the AI. This paper tries to highlight some of the learning paradigms for Game AI and the great potential they offer to the game world. It was discovered that each of the learning paradigm is suited to a different type of problem, and so the game developer has to be careful in the choice of a particular paradigm.

Key words: Machine Learning, Game Artificial Intelligence, Computer games, Artificial Neural Networks