Chapter 7
Artificial Intelligence in Games Evolution

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ABSTRACT

The growth of the game industry shows a great market to be conquered. However the gaming business now has consumers more demanding and hungry for quality games, not just graphics, but also related to more gameplay and challenge. This chapter provides an overview over a large area that is increasingly explored by game developers, the artificial intelligence (AI). The main goal is to highlight the main reasons that make the great investors fascinated to use AI techniques in games. Indeed, a new paradigm of game began to be defined and introducing it is also the mission of this chapter. As a final goal is intended that this material can be a source of learning and encouragement for beginners on game development and even for the curious and amateurs about the subject.

1. INTRODUCTION

First, is important to clarify that initial proposal of this chapter) is to characterize the relationship between the game development and the use of artificial intelligence (AI). The basic idea is that it could be a source of introduction and learning for beginning developers and curious and an alternative material of knowledge for the experienced developers.

The world market is "watching" the high growth achieved by the games industry. It is not wrong to say that this sector has gained recognition of companies and investors and, moreover, has proved strong enough to overpass the financial crisis which the global market has been living (PCGA, 2010).

Obviously, this chapter will not make distinction between the games industry for PC and con-

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soles, after all it is known that the two have very similar characteristics and when relate to the use of artificial intelligence techniques in developing their games, it is believed that the difference is basically around budget (GC, 2009).

I have read many books on AI, however, contrary to what I see in them, I will not write anything related to forget the science fiction films that address the subject in a "exaggerated" way. On the contrary, movies such as "AI-Artificial Intelligence" (directed by Steven Spielberg), "I, Robot" (directed by Alex Proyas), and others make us really think about artificial intelligence as something possible however yet abstract. This is, perhaps, the main difference between we, the researchers in the field, and the others because, according Champandard (2003), we approach the AI as an endless source of challenges and studies about the construction of intelligent applications through the use of machines.

Thus, it is understood that one of the AI main features is the ability to permit the creation of systems that, somehow, present an index of autonomy, coming from its clever way of acting according to its goal, to realization of operations).

As an introduction, the following question is asked: what is the true relationship between the AI and the "evolution" of the games?

Firstly, there are several factors contributed or contribute to that "evolution" happen. Within computing, there are several (research) areas as, for example, the graphics computing that is used in games development with the primary aim to increase the effects and/or the realism of them; this on the other hand implies in researches to improvement of the hardware components, graphics, gameplay and many others.

It is also true that artificial intelligence is one of these factors. We know that the main goal of any game is to satisfy the player to that he feels attracted, challenged and at the same time entertained (Jegers, 2009). For this, the game cannot be neither too easy nor so difficult (almost impossible), there must be a balance of difficulty. Here is where the use of artificial intelligence techniques (AI techniques) makes sense, making games more "intelligent" when they take into account the behavior/action human to the world the game.

An example of what was mentioned above can be seen considering the famous game Pacman and the balanced manner as the ghosts (Inky, Pinky, Clyde and Blink) chase the player. Of course, the ghosts could be programmed to surround the character or monitor the areas where there are still pills, in order to be practically impossible to overcome them or the reverse as, for example, hunting it only in places where there are no more pills, decreasing sharply the degree of difficulty of the game. However, who would like to play a game with some of these characteristics? Where is the challenge?

It is not today that the AI has been incorporated into the games world, quite the opposite, making a historical analysis is visible your application, even simple, to develop solutions for the first games. However one aspect that generates controversy among gamers is the broad interpretation of what is considered AI for games. Millington (2009) deals with the question and say that there are developers who consider the game's interface with the user part of the area of AI, other classify the movement and collision algorithms as AI. On the other hand, these same developers have consent that there are differences between the artificial intelligence in games (called Game AI) and the academic AI.

At first, you should understand the term Game AI as a way to distinguish the artificial intelligence applied to games from the one used in academic circles because of the large difference between its main objectives. The former (Game AI) is commercial and the latter (Academic AI) scientific. According to Tozour (2002), it is wrong to consider that Game AI could be called artificial intelligence, so we have to distinguish the two, since in the field of AI for games is necessary to create agents with behaviors appropriate in a given context. Thus the adaptability of human