

Chapter I

Contemporary Video Game AI

Introduction

This chapter provides a brief outline of the history of video game AI, and hence by extension, an extremely brief outline of some of the key points in the history of video games themselves.

The objectives of this chapter are to provide an overview of this broad topic, to outline those areas which this book will focus on, and to explain why other areas of game AI will not concern us.

The Dawn of the Computer Video Game

Those who were in their teenage years or older in the 1980s got their first exposure to videogames in the home of these machines, the amusement arcade. Many of

the games that were played in the arcades during this period have left an indelible, nostalgic imprint in our memories and are now considered classic games. Computer and videogames have thoroughly invaded our homes so we now have a vast array of games that can be played on a range of formats. In this section we take a brief look at some of the classic games from a gaming period known as the golden age of videogames and discuss the rudimentary AI used in these early games.

The first videogame was actually created by William Higinbotham who worked to the U.S. government at the Brookhaven National Laboratory (Hunter, 1998). For an open day he put together a rudimentary two-player tennis game made by wiring an oscilloscope up to an analogue computer. Thus, this not only was the first computer/videogame game but also the first **multiplayer computer/videogame**. The game more usually quoted as the first computer game is Space War. Perhaps this is understandable as this was written on a digital computer that has a strong relationship with computers as we know them today. This game was written by Stephen Russell and colleagues during 1960 on a PDP-1 computer at MIT. Two spaceships controlled by separate players battled against each other in the void of space, firing missiles at each other, and trying to avoid being pulled towards a central sun. Asteroids is perhaps a game that bears most resemblance to this granddaddy of games.

It is noticeable that these early games had no semblance of AI in them. This was in part because noncomputer games are all played between individuals and the concept of playing against a computer had yet to really mature in the minds of programmers. Of course, resources were very much more limited on early computers and programs were cumbersome to code, enter, and debug on these machines. As computers become more powerful over the following decades, then AI in games became more important and elaborate.

Mainframe programmers continued to show off their prowess throughout the 60s with pioneering games like Lunar Lander in which two players took turns to control rocket-thrusters via a text interface during a landing, and Hammurabi which could be described as a precursor to the more recent Civilisation. However, it was possibly another **tennis-inspired game** that truly began the videogame revolution. In 1972 the first arcade version of Pong was created by an Atari engineer, Al Alcorn (and Nolan Bushnell). The game consisted of a hypnotic ‘blip’ sound, white dot ball, and white line paddles for rackets on a black background court; simple, but people could not get enough of it. According to Poole (2000), its popularity could be explained by the fact that ‘players had only to use one hand to rotate the paddle control, thus facilitating simultaneous beer consumption!’ Later to appear on home consoles (1975), this game was very influential in the evolution of videogames.

With games such as Pong the mechanics are such that early versions of the game were primarily multiplayer orientated. Single player versions of the game can use very rudimentary ‘game AI’ such as tracking AI. With tracking, typically the AI computer opponent follows and hones in on the player character’s position. In the

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