**Artificial Intelligence in Entertainment**

**AI in Gaming**

Around 1972, the video game Pong was released by Atari, an American video game company. At the time, Pong was praised by many and was a major success for Atari. From then on, the video game industry advanced throughout the years. Alongside this, game developers found new ways to improve their games. The visuals of a video game got much better as game developers made a jump from 2D to 3D graphics. The gameplay also majorly improved as it became more complex with new additions. One of these additions was the use of artificial intelligence.

AI is a very important aspect of making a video game fun for the player. A lot of video games have characters within them, known as non-player characters or NPCs, that are controlled by AI. The purpose of NPCs usually varies from game to game but they are generally used to provide the player with a more immersive and fulfilling game experience.[1] They are also designed not just around knowledge of the game or with complex tactics more but around how a human would play a video game: “... they beat you by outthinking you, not by outshooting you.”[2] This applies perfectly for some game genres, such as action games and strategy games. In action games, the AI is implemented in several NPCs, such as partner, support and enemy characters. While partner and support characters are designed to give assistance to the player, enemy characters are the opposite as they will try to stop the player by any means necessary, e.g. Half-Life, Grand Theft Auto.On the other hand, in strategy games, the AI must be capable of taking on the player and providing them a challenge. For example, in Civilization, the AI has the ability to expand their empires, use resources and units to their advantage, and has the power to negotiate with the player as well as other civilizations.[1]

AI used by game developers are, however, more simplistic in comparison to AI used for academic and industrial purposes. One reason was that there was usually a lack of development time. By the time developers were getting around to creating the AI, they had most of the game finished and had to get it finished. Another reason is that there is a lack of understanding of advanced AI techniques in the gaming industry. Game developers use certain techniques to their advantage, such as finite state machines (FSMs), path-finding algorithms and flocking algorithms. However, it was harder to implement much more advanced techniques into games. The last reason I will mention is the fact that developers tend to prioritise graphics over other areas in a game, such as AI.[1] There are many other reasons but these are the main ones.

Some argue that using AI in video games is a good idea when used for research.[3] Reasons in favour of this include realism in video games, possibility of modifying the game (also known as mods), a complex world similar to reality, and the fact that the video games industry is a “multi-million dollar worldwide industry.”[1] However, others argue against this as there as several drawbacks to doing research with game AI. Some of these drawbacks include a lack of formal structure, a lack of contact between researchers and game developers, and suspicion against game companies for their degree of secrecy. However, some people think it’s a good idea to use video games for research, especially the military. For example, the Soarbot project created agents to play Quake, a 3D action game, while using the rule-based SOAR architecture.[4] Another example of the military using games for research is when a military system designed to analyse terrain in order to plan attacks was adapted for use in strategy games.[5]

**AI in Gambling**

Artificial intelligence is quite useful in making predictions. For example, IBM’s supercomputer Deep Blue beat grandmaster Gary Kasparov in a game of chess in 1997. However, since AI is good at making predictions, it is sometimes used in predicting sporting events. One example of this involves a company known as Unanimous AI. This company took advantage of “swarm AI” in order to predict major sport events. During the 2016 Kentucky Derby, the company managed to successfully predict which horses would come first in four races.[6] As well as this, during the 2017 Super Bowl, Unanimous AI successfully predicted a 34-28 win by the Patriots.[7] However, this is only one example of how AI is used to predict wins in sports.

In gambling, AI is used in two main ways: one in favour of the player and the other in favour of the organisation. For the player, people are trying to find a way to win through AI. For example, Carnegie Mellon University developed an AI called Libratus that managed to win against four professional poker players.[8] For the organisation, they use AI to predict “problem gamblers” as well as create more appealing game design, marketing campaigns and user interface.For example, Manu Gambhir, CEO of a gambling site called 24/7, has AI that predicts problematic gamblers with a certainty rate of 60%.[9]

**AI in Movies**

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