The Role of Artificial Intelligence in Games Summary

Austin Hartley

The paper starts off by defining the basic concepts behind games and declaring that AI in game development does not have to equate to AI used in scientific settings that can self-learn, but merely have rules that make the user believe the game is reacting intelligently. NPCs are most commonly associated with AI, but it can be used in many different assets, such as dynamic environments, game mechanics, and statistical data. AI in games is primarily used to enhance the user experience rather than learning to be better than the player. The contemporary uses of AI are then introduced to show how AI has advanced alongside the advancement of games.

This paper is very well written, allowing non-gamers and those unfamiliar with AI to easily be able to read it and come away with a new basic understanding of AI in game development. The specific algorithms for NPCs, such as FSM, MCTS, and Pathfinding, are well articulated and gives a more technical analysis, showcasing the pros and cons of each. Other algorithms for non-NPC game assets, such as GANS for level making also go into detail, showcasing how productive they can be compared to hand-making levels. The authors ensure the reader knows the different facets of AI, and how it's not just for gameplay and assets, but for graphics to enhance the frame quality, such as DLSS and game testing.

A weakness of this paper is the generalizing statement that AI is superior in every way compared to humans. It is not needed for the point to be made and, if anything, takes away some of the legitimacy, as AI is not currently in a place for such blanket statements to be true. The paper also suffers by talking about how productive AI can be while excluding how getting AI to create a specific look can be more time consuming than doing it by hand and that AI will not consistently produce good results. The lack of ethics is also concerning since many models are being trained on data the game developer may or may not have rights to. This is only slightly mentioned in the conclusion and is not a proper way to address a very important topic. Forecasting neural networks to be the future of AI in games, but using a reference from 2005 is not very promising, especially since AI in games would have to be in real-time.

Overall, the paper is able to articulate the role of AI in game development to a large audience of different backgrounds and the readers will certainly understand the basics. An easy paper that can introduce a complex topic for others to learn about a subject is valuable because it brings more minds into the field for innovations who may have been turned off by the hard entry point. AI is currently a strong focus in many research areas, and it can definitely be useful in game development. Striving for advancements that can be used in real-time would advance AI in all fields, not just games.