Modelling Environmental and Temporal Factors on Background Characters in Open World Games

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The goal of this dissertation is to explore methods for increasing the believability of "background" characters in open world games. While the background characters do not influence the game's main storyline, they play a vital role in making the game world feel more believable to the player. These characters often follow scripted behaviours, carrying out the same tasks each day unless otherwise influenced by the player. Furthermore, the environmental and time-related cycles of the game world, such as day/night cycles and weather cycles, have no impact on the behaviours and actions of these characters. This project proposes an emotional model which drives the behaviours of these background characters through both the tasks they carry out and the environmental and temporal factors of the game world. A State Manager is used to determine the next task for the non-player characters (NPCs) based on their current emotional state and the traits they possess. Traits, e.g. nocturnal or cold-blooded, are introduced to accommodate the different races found in open world games, such as humans, lizards, and orcs. Having the environmental and temporal factors influence the behaviours of these races differently adds a further element of believability to these characters. The model is tested in a game environment within the Unity game engine and shows potential, as the characters' actions are determined by their emotional state, as opposed to the scripted behaviours typically found in open world games. With further work, this model could have potential for use in open world games.