ABSTRACT

Due to performance restrictions, video games have to make a tradeoff between having few independent and intelligent computer controlled agents, or many but simpler ones. Allowing games to have thousands of clever, independent agents would allow for new gameplay opportunities.

In this thesis, I develop a model for an agent behaviour software module, which is capable of processing decisions and their consequences for thousands of agents per second, and of modifying the game state accordingly without artificially limiting the expressive power of behaviour scripts. The module is self-contained, client independent, and has a minimal interface for communicating with the game engine. The model is designed to utilize a database system at its core, taking advantage of its features and optimizations. Additionally, I introduce a set of parameters that aim to quantize the cost of a behaviour, and to analyze the performance of the module. These parameters are considered when designing behaviour scripts and when building the world. Conducted tests show that the parameters provide a good estimate of the cost of a behaviour script. Despite of the created module not being implemented most efficiently, results show better performance compared to current state-of-the-art solutions.