

ABSTRACT

Artificial Intelligence (AI) or commonly called artificial intelligence is intelligence that is added to a system that can be managed. AI can be implemented into the game system to make every NPC (Non-Player Character) look smart in decision making. With AI, the game looks interesting and makes players not easily bored. If the NPC gives static behavior, then it allows the player to predict what the NPC will do next. In addition to this, NPCs provide static behavior which also causes players to become bored and stop playing the game.

For NPCs to provide non-static behavior, research is carried out that makes NPCs able to provide different behaviors. NPC research is intended to create artificial intelligence through the Monte Carlo Tree Search (MCTS) method. The MCTS method is applied so that NPCs become more varied in responding to player stimuli. NPCs will provide more interesting and challenging responses to players according to the alternatives on the Decision Tree Flowchart. When players play games, the Decision Tree Flowchart that is designed can make players perform various NPC movements, the game is more challenging, and doesn't get bored quickly.

The results of the test using the MCTS method, it is found that the NPC can make decisions well and following the current situation. By doing 2 types of tests where the first test is that the player is not allowed to take energy balls during the match and the second test is that players can take energy balls during the match. In the first test, the results were obtained where the NPC could win 6 out of 10 matches, while in the second test the results were obtained where the NPC could win 5 out of 10 matches.

Keyword: *Artificial Intelligence, Monte Carlo Tree Search, Game, NPC, Decision Tree Flowchart*