DEVELOPMENT OF ARTIFICIAL INTELLIGENCE GENERATION SYSTEM FOR COMPUTER GAMES USING GENETIC ALGORITHMS

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Currently, computer games are appearing and developing more and more in the world. In most games, you can see NPCs that interact with you. In fact, their logic is implemented using questions with answer options or using artificial intelligence. The first option is not adaptive, and the second option requires a lot of memory and time for implementation and training. But there is one of the way to implement bots with adaptive logic using genetic algorithms.

As a result of the study, the behavior and adaptability of bots in various conditions were considered. For this, optimal conditions for the survival of bots were selected and various source maps were created.

The bot logic consists of 64 cells, each of which contains an action:

1) Move by spending one step (0-7).
2) Rotate around if the bot made 10 rotations without any other actions, then it skips its turn (8-14).
3) Take cell content by spending one step (15-21).

Map elements and their interaction with a bot:

1) Main wall around the map – it could not be destroyed. 2) Food – if the bot eats it, it gains ten units of health. 3) Poison – if the bot goes to him, then he loses ten units of health if health ends, he dies. But if the bot eats it, it gets ten units of health. 4) Wall – The bot can break it by spending half its health. 5) Bot – if the bot goes to or try to take another bot it make another action. 6) Bots spawn – it disappears after each new movement and appears when each new generation appears. 7) Empty cell – if the bot goes to him or tries to eat him, he loses one unit of health.

As a result, we get the optimal bot logic that can be used further on this map. If you use the same logic on another map, then it may not be optimal for it. Summing up, we can assume that genetic algorithms can be considered the optimal algorithm for bots. Its disadvantages: it takes a long time to study, the results are designed for a specific location and conditions. Advantages: if the conditions change, then the bots continue to develop, as a result of it their behavior will be more unpredictable than just questions with answer options and will take less memory than other ways of implementing artificial intelligence.