Marist College

The Memory Game

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Back in Game Development II, I worked with a partner on creating a memory card game. It had a basic sense of matching objects in a two-dimensional array in order to find more matches than the player. That game had certain power ups that would provide benefits for finding them, but some would only help under certain conditions. What I hope to accomplish is to have the computer remember a card that is flipped over and understand which cards match each other, making sure to use matching power ups only when they would help in the long run, as well as the ability to make assumptions based on the remaining cards.

Last semester, I successfully got the memorization part of the AI working, but it wouldn't actually use a strategy. I even had it so that you could set how likely the AI would remember the value of the flipped card. I might even be able to add another layer where it remembers the value slightly wrong by a few numbers as well, so that I can then make some better educated guesses.

The methodology behind how this AI will work is split up into a few parts. The first part is memory, where the AI compares the value to the values it already knows and, if it doesn't have a match, it records the value as a new match. The second part is the decision making, which currently takes a simple approach. For this milestone, I'll cover the methodology behind this. If the AI did not know any exact matches, it would choose a card that it hadn't yet memorized and flip it. The AI would then check if the flipped card matched any of the cards it already memorized. If there was a match, it would make the pair, but, if there wasn't, it'd flip over another randomly chosen, non-known card and check for a match. The final part is the ability to remember. For this part, if it knew a match, it would have a certain percent chance to remember the exact location of the match, depending on difficulty. If it remembered the match, it would choose the related card and flip it, otherwise it would flip one of the cards it did not yet know. After this milestone, I hope to have the remembering part become a bigger factor in making the AI feel more like a human opponent instead of something that's programmed to perfectly match every card as soon as it sees one.

The experiments that I have run have been to confirm my translation of code from the compiler that we used in Game Development II into Python. As for experiments for improving the AI, I hope to get them started after this milestone is submitted.

I am pleased to note that the code for the AI was translated properly and that the AI is acting as it did in the game, except without the visuals that were provided by the game-making software used in that class.

As I am taking this course because it is one of four that are tied to the Game Design focus for Computer Science, I decided to keep the AI project tied to the game-related side of the subject. Everything so far is coming along nicely and I'm excited to start the advancement of the AI to make the game it would have been in much more entertaining to play by balancing it so that you feel like you're actually challenged, but not so much that it seems the only way to win is by luck, if at all.