

AI & P Final project

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This code has been made for the final project of Artificial Intelligence and Programming, a subject for second year Creative Technology students. This project has been coded by Ahmed Mahran and Ferdy Slood and has been handed in on 3-2-2022.

The code has been made with inspiration taken from an online tutorial by freeCodeCamp.org (<https://www.youtube.com/watch?v=XGf2GcyHPhc&t=5693s>)

The code consists of a main class with an update and main function, the other classes consist of an area class(draws the area and grid), snake class(handles the snake and it's movement, has an array of cube class objects), three ai classes(all have their own ways of moving through the grid). Each Ai class and snake class have their own cube class that remembers their color, the amount of cubes they have. As of now, the snake is able to be moved by inputs from the keyboard. It will move according to what arrows you press. The Ai enemies will hunt the player down. The first Ai(Red) will simply chase after the player with a 1-node Greedy search algorithm. the second(Purple) will try to steal snacks on the board from the player, giving himself more speed and a bigger size every time he eats a snack. His Ai could be seen as a 2-node Greedy search algorithm. Ai number 3(blue) was supposed to have a well-thought out A* search algorithm that would be able to look 3-4 steps into the future. The code however was not fully completed and could thus not be implemented despite our bests efforts. For the time being, blue received the same Ai as red but with a few different parameters. when the player touches the ai, it will be game over and the score and total time survived will be shown in the terminal. When the player snake gets to a piece of fruit that spawn on the map at a random location, the snake grows and the fruit respawns at another location. The player snake can not only die because he hits the Ai snakes, but he can also die from hitting himself by turning around or by hitting his own tail.

An speech recognition API from Google has been implemented. When holding the "r" key, it is possible to, after the program tells you its preparations are complete, speak to it. A few words can be said to change how the game works. The player is able to give the command "hard" in order start hard-mode, where all the Ai snakes will have an increased speed. When the user gives the command "slow" or "fast", the player snake will change its speed accordingly. If the user wishes to close the program, it's also possible to give the command "quit" in order to immodestly close the program. Survival time and end score will still be available if this happens.

A class diagram can be seen down below.

