B00397557 & B00344208 SESSION 2020-2021

Computer Games AI Assignment 1

UNIVERSITY OF THE WEST of SCOTLAND

By: B00397557 and B00344208

Summary

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INTRODUCTION

We were given a task to recreate 3 behaviours we have seen with a start of code.

- Wander
- Align
- BlendedSteering

OBJECTIVE POINTS:

Those objectives ensure points if done properly:

-Completing the main classes: Wander, Align, BlendedSteering (Blend of Seek and Align).

-Creating a screen wrap

-Creating a sound for hunts

-Prey Respawn

-This report

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WORK ACHIEVED

First, we worked on the prey movements. Who wants to chase something that doesn't move, after all?

We created the function Wander with the character chasing a point on the map +/-10 "steps" at first, but the prey was turning back on its footsteps sometimes plus it never leaves the map and we want a screen wrap.

We changed it to the "AI for Games" book method: the prey moves forward but its orientation changes making it wander on the map.

We exchange the places for post_process and orientation in the update since post_process was erasing the modification of Wander on orientation.

Then we worked on screen wrapping, which is basically just a verification of the position of the character from the edges of the map and a respawn at the opposite edge.

We worked on a caught function that verifies if the Prey is caught (if the hunter is in a box around the prey), make it respawn and plays a sound.

We then moved on to the Align with the particularity that it mimics, from the character position, the target's movements after syncing on its orientation.

We also created a new update for Align that will slow down upon arriving near the target. This function isn't to be used on the hunter! It would make it impossible for him to catch the prey.

And we finished by creating the Blended function, completely helping ourselves with AI for Games and the course.

Particularity on blending: The more you add weights, the more it blends, and we don't see long period on a single aspect.

It isn't perfect since the hunter sometimes stops in front of the prey.

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WORK PLANNED

We had an objective to make is as attractive as possible with as many options as possibly available. Changing the texture of the characters, adding music, maybe a different mode where we could control the prey's directions.

Of course, with the other courses we have, it isn't realistic to take too much time on bonuses. And we will happily upgrade the coursework on our own later.

So, we planned basic tasks, and a few additional stuff to make the program slightly more attractive to view.

We started by helping ourselves by including iostream for debugging purpose.

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BONUS

As bonus, we added a few options:

There is a main theme music playing in the game.

We added a score of the successful hunts achieved by the hunter.

We created a ghost that will mimic and follow the prey (like their shadow)

We added an option on the left click to place the prey wherever you want (just click and it will teleport). Be careful how you use it, helping the hunter makes you an accomplice…

For more information on the code or work achieved, the code itself is commented.

The exe is in the zip too.

REFERENCES

Those are all the sources we used to understand and recreate the behaviours:

- “AI for Games” book by Ian Millington

- Course Slides

- https://github.com/RobLoach/raylib-cpp

- https://en.cppreference.com/

- https://github.com/mArribas/Steerings

- https://natureofcode.com/book/

- https://github.com/JoanStinson/SteeringBehaviors#key-6-wander