Spike: 8

Title: Tactical Steering

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Goals / deliverables:

Create a hunter prey simulation with multiple agents. The agents must be able to:

- Can hide from the hunter by
  - Search for the best hiding spot
  - Find a new spot if the hunter is nearby
- When hiding, the best spot must be identified by a “x”
- Must be a difference between the hunter and prey

Technologies, Tools, and Resources used:

- Knowledge of python
  - https://docs.python.org/3/tutorial/
- Python Interpreter
  - Visual Studio
    - https://www.visualstudio.com/downloads/
- Knowledge of how an agent should work out how to find the best hiding spot
  - https://ilearn.swin.edu.au/bbcswebdav/pid-6302928-dt-content-rid-34403398_2/courses/2017-HS1-COS30002-220387/Autonomously%20Moving%20Agents.ppt.pdf

Tasks undertaken:

- Created a new class for the hiding spots
- Agents can search for the hiding spots that aren’t within the radius of the hunter
- A “x” will be displayed for the best hiding spot a hunter can find.
  - Some agents might have different hiding spots depending on spawn position and hunter location
- Hunter will only pursuit an agent if it’s within the radius. If outside the radius, it will wander around the map

What we found out:

- The agents will wander around until they are within the radius of the hunter’s vision
- The agents could calculate the best hiding for them individually. This meant that agents could have different best plants depending on current position of them and the hunter.
- The agents could recalculate the best position if they were within the radius of the hunter.
- The hunter would chase after the closest enemy
- The hunter could eat its pray and a new enemy would spawn.

Open issues/ Risks:

- If there are multiple prey inside the radius it can bug out and spin around in circles
- Make sure when you are searching for the best hiding spot that you get the position of the hiding spot and not the agent when checking to see if the hiding spot is within the radius. If you don’t the hunter and prey circle around the one planet in a never ending cycle.

Notes:

Agent Modes Keys:

1. Seek (Default)
2. Hide

World Keys:

A – Add agent
U – Increase hunter radius
I - Decrease hunter radius
F – Add new hiding spot

Appendix

Figure 1.1 agents hiding from the hunter