

DN_MM_Hunter

1.The Team

We are University student that are trying our best to fullfill our Tasks.

2 Aimed Scope

2.1. Functionality

- Make a simulation that shows various hunting stratgies for group hunting
 - each predator should be making decisions based upon their knowledge
 - predators hunt small pray alone
 - predators notify group when help is needed for larger prey
 - there are only cooperative and solo hunters
 - when cooperative hunting predators must stay within a group radius, while trying to corner the prey
 - prey is considered killed once one of the predators of a group has reached it
 - if the group of predators it not large enough the prey will retaliate
 - prey attacks the closest predator
 - prey kills closest predator if their atk is higher than the predator def
 - attacked predators try to escape the preys attack and rejoin the group by being in the group radius
 - Predators should use diffrent movement tactics to corner prey without being aware of the predator
 - Prey neednoticing them to go as far as possible without the predators without a specific strategy
 - The predator needs to see prey (there must be a way to determine if they see them or not)
 - The predator needs to inform others (in group circle there is no howling required, else the wolf needs to share their possition and prey via howling)
 - each cycle predators loose hp due to starvation
 - predators gain hp by killing prey
- programmed with Java (not further specified)
 - unclear what library is allowed
 - unclear if we need to use the standard GUI or if we can output to HTML/CSS or use GUI larbary
- there has to be a Visual representation of the hunters and hunted
 - this can be a simple 2D grid based envoirement with colored singulare or groups of tiles
 - the hunter and predator should be diffrentiable
 - movement should be shown
 - a trail does is not given for the hunter (maybe debug version though)
- there has to be a GUI for the user to enter parameters that influence the GUI

2.2. Input parameters

The input parameters may include but are not limted to

- the grid size

- X and Y size shall be independent
- predator
 - Initial Predator count
 - run speed (how many tiles per cycle)
 - Q: should there be growth of these or just lesser through death
- Prey
 - position on the grid (x | y coordinate)
 - size of prey in grid (x | y size)
 - smaller prey is easier to kill
 - gives less nutrition
 - run speed (how many tiles per cycle)
 - Q: number of prey? is it one
- Auto generate prey (Toggle)
 - generate prey every x seconds
 - place at random positions
- Predator starvation resilience (Starvation rate)
 - how many cycle can a predator survive without starving to death
- Predator defence chance
 - larger prey would attack a lone predator
 - the predator will be killed if its score is bigger than the predator's defence
- predator group radius
 - if a number of predators are within radius of each other they form a group and can hunt larger prey
- Simulation object colors
 - allow color palettes for predators and prey
 - Q: What are duplicates in this context, should every predator
- Simulation Speed
 - fast represents results faster
 - slow should be easy to follow

2.3. Application outputs

output shall include but is not limited to

- average food gain per iteration
 - average nutrition gained on average per cycle
- predator count
 - OWN: show avg deaths
 - OWN: show avg death rate

3. possible pitfalls

3.1. Effective scouting

- if a group is together it is stronger but it will find less prey
- a strategy is needed to disperse the group ideally so it will regather quickly again

3.2 Hunting in subgroups

- should the group gather in at once in order to hunt safely or should it hunt in sub groups
- OWN: will should this depend on average hunger or main hunger