

This is a very ambitious project! You have looked around already and found some inspirational work. Settle on your own system quickly — then build it up, step by step.

Camott-EcoSim

~~Camilo~~ Talero¹
~~Scott~~ Saunders²

Dept. of Computer Science, Faculty of Science, University of Calgary, 2500 University Drive N.W., Calgary, Alberta, Canada T2N 1N4
Camilo.talero@ucalgary.ca
Scott.Saunders@ucalgary.ca

Abstract. A Simple evolution based ecosystem simulator.

1 Introduction

We chose this project because all members of the group are interested in the emergent properties of evolution and ecosystems. We want to observe how an ecosystem evolves over time based on some controllable initial conditions.

2 Related Work

Critterding, and many other projects for evolution.

Excellent references. But you need to describe these here and reference properly.

3 Project Details

We will do an evolution based ecosystem simulation, with the hope of getting emergent scouting, and predator-pray behaviours. We hope to accomplish this by creating a set of standard parts, which will be used to create creature species. Each species of creatures will have different abilities due to their parts. Each creature will inherit these, and possibly mutate them, and will be thrown into the environment, in hopes that it survives. Through natural selection, species will evolve. As there are multiple species occurring at once, and we're permitting carnivores and omnivores, we hope to eventually get some predators. These creatures will be controlled by a brain() function we will write, containing various parameters (based on parts and genes) to influence how the creatures behave. Alternatively and if time allows, this could be done via a neural-network.

Given the references above, this is too general.

4 Software Tools

Initially we are planning to attempt this in Unreal Engine, as it supports Linux and is open source, however failing that, we will be using Unity. Sources:

- <https://www.unrealengine.com/what-is-unreal-engine-4>
- <https://unity3d.com/>

Depending on our time and our needs, we may create models via blender, or attempt to find Creative Commons or other freely licensible models.

5 Time line

The following represents the milestones for our project:

1. Implement a mouth appendage and movement.
2. Implement a (simple) brain for creatures.
3. Implement world generation, creating obstacles and other procedurally generated aspects of the environment.
4. Implement food-spawn.
5. Implement multiple appendages.
6. Implement a single creature that can evolve over time using the appendages.
7. Implement multiple creatures based on the previous step.
8. Implement multiple food sources.
9. (Optional based on time) include climates and environmental conditions like humidity and temperature.
10. (Optional based on time) Neural-network for the brain.

After our initial brain creation, we will have to continually add to it, and adjust it.

*Anticipated
timer for each?*

*That's a
lot to
implement!*

Here would the list of references go.