Evolution Simulator

Eric Turner
Period 3

September 14, 2006

Abstract

My area of interest is in artificial life, specifically arficial evolution.

1 Overview

The purpose of this project is to create an AGENT-based model that simulates the evolution of different organisms within an envrionment. These organisms will be a basic simulation of real-world organisms, with the need for food, the ability to breed and die, and so on. Their function and lifespan will be based on dozons of genetic characteristics, such as metabolism, eyesight, etc., and these characteristics will be passed on to offspring. There will be a genetic variability that will allow the organism species to evolve, or devolve. The hope is a demonstration of natural selection, and after several generations the collective gene will be more advanced than the original. To give an incentive to evolve, there will be dangers in the environment, and predator-organisms and herbivore-organisms, both of which will evolve.

2 1st Quarter

Since I have already started this project over the summer, I have most of the GUI and basic structure done. I hope by first quarter to have the ability to graph different aspects of the simulation, such as example average genetic variables, or the current population of a given species. This will hopefully be able to be compared to known trends in real-world situations.

3 2nd Quarter

Hopefully by this time I will have completed the AI of the different organisms, fully implementing fear, hunger, curiousity, etc., as well as a basic memory. The hope that making the characteristics and behavoirs of the artificial life as realistic as possible will allow their progress to mimick real-life patturns.

4 3rd Quarter

At the end of my project, I hope to make the habits of the artificial life as realistic as possible, where organisms change their behavior based of life experience, and can "teach" offspring, allowing for intellectual evolution, as well as physical evolution. The user will also be able to customize a given environment, and patturns of evolution and population growth should be relatively accurate for a given situation.