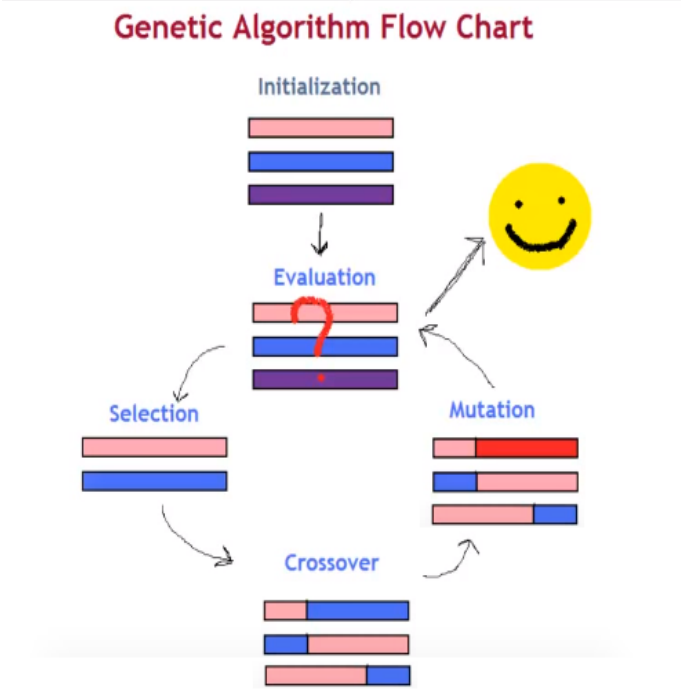
HSC Project 2016 Proposal - Bradley McInerney

Description

The project I decided to complete is called a genetic algorithm. I found a project that someone else had made in which 2D cars were randomly generated, raced and then the winners were “bred” together.

To sum up it simulates evolution via natural selection, where the “inferior” population die off and the better ones breed into the next generation)

Basic structure:



Initialization: Randomize the population of the first generation

Evaluation: Give each individual a score based on how close it is to the perfect goal

Selection: Select the individuals with the highest score and remove the others

Crossover: “Breed” the remaining individuals together and create a full population again

Mutation: A chance to randomise a part of each individual

This process will stop once a goal or a limit has been reached

Feasibility Study

- Economic feasibility:
    - No cost
- Technical feasibility:
    - Decided to make the project far in advance to see if I had the skills to complete such a project. I was successful
- Operational feasibility:
    - Will not take a lot of processing power, as long as the PC has python installed (free) it will run.
    - The program could be multithreaded to improve processing time
    - The program has more features if the correct modules are installed, but I have made all modules completely optional

The project is to be completely done in python as it is a free script that works on most operating systems.