Genetic Cars Simulation

By Jon

My Project

- My project is to create a Evolutionary Algorithm for a pre-existing Javescript framework.

- This project has so far has required me to learn "Javascript!" and to look over the simulation framework and learn where everything is so I could implement my own algorithm.

Evolutionary Algorithms Overview

- An Evolutionary algorithm in general optimises a given solution to a problem using a set criteria such as time complexity.

- The algorithm itself can have several different components but overall the main ones are Selection, Crossover and Mutation operators.
  - Selection chooses the parents for the new generation
  - Crossover uses the parents chosen through selection to combine the data into new children. Such as taking half from one parent and half from another.
  - Mutation is an operator where a random set of data within the child is changed to a random number.

Simulation

- The following simulation is what I will be editing, I will mostly be adding my own algorithm to the back-end changing how the new populations are produced.

- https://rednuht.org/genetic_cars_2/

Done so far...

- I have implemented 3 selection operators, 2 crossover operators and 2 mutation operators.

To Do: -

- The existing operators need tuning so that they better perform.
- I need to test several different iterations of these operators comparing performances each other and against a baseline, which is a EA with just a mutation operator.
- Changed to the existing user interface to make comparing results easier.