Module Interface Specification: GeneticAlgorithm.js

Contents

Methods

crossOverOffsprings(cars, topCars) → {Array.<Cars>}

This method crosses over the chromosomes of the offspring cars.

Parameters:

Name	Type	Description
cars	Array.<Cars>	The array of cars to crossover
topCars	Integer	The number of cars in the surviving parent generation

Source: GeneticAlgorithm.js, line 32

Returns:

An array of the crossed-over cars

Type
    Array.<Cars>

getRandomArbitrary(min, max) → {Float}

This method generates a random floating point number between min and max, exclusive.

Parameters:

Name	Type	Description
min	Integer	The lower bound
max	Integer	The upper bound

Source: GeneticAlgorithm.js, line 252

Returns:

A floating point number between min and max.

Type
    Float

getRandomArbitraryInteger(min, max) → {Integer}

This method generates a random integer between min and max, exclusive.

Parameters:

Name	Type	Description
min	Integer	The lower bound
max	Integer	The upper bound

Source: GeneticAlgorithm.js, line 239

Returns:

A random number between min and max

Type
    Integer

mutateOffsprings(cars, numberOfParents, mutationFactor) → {Array.<Cars>}

This method mutates the genes in the offspring's chromosomes.

Parameters:

Name	Type	Description
cars	Array.<Cars>	The array of cars to crossover
numberOfParents	Integer	The number of parents in the cars array
mutationFactor	Float	The likelihood of mutation

Source: GeneticAlgorithm.js, line 73

Returns:

An array of the mutated cars

Type
    Array.<Cars>

partition(items, left, right)

This method partitions the array into two sets based on a pivot. The following code was modified from: https://www.nczonline.net/blog/2012/11/27/computer-science-in-javascript-quicksort/

Parameters:

Name	Type	Description
items	Array.<Cars>	An array of cars
left	Integer	The left index of the pivot
right	Integer	The right index of the pivot

Source: GeneticAlgorithm.js, line 210

Returns:

The left index of the partitioned array

quicksort(cars, left, right)

This method preforms quicksort on an array of cars according to fitness value. The following code was modified from: https://www.nczonline.net/blog/2012/11/27/computer-science-in-javascript-quicksort/

Parameters:

Name	Type	Description
cars	Array.<Cars>	The array of cars to sort
left	Integer	The left index
right	Integer	The right index

Source: GeneticAlgorithm.js, line 168

Returns:

The sorted cars array

selectNextGeneration(cars, n) → {Array.<Cars>}

This method selects for the next generation of cars.

Parameters:

Name	Type	Description
cars	Array.<Cars>	The array of cars to choose from.
n	Integer	The number of cars to select for.

Source: GeneticAlgorithm.js, line 11

Returns:

An array of the top n cars.

Type
    Array.<Cars>

swap(items, firstIndex, secondIndex)

This method swaps 2 items in an array. The following code was obtained from: https://www.nczonline.net/blog/2012/11/27/computer-science-in-javascript-quicksort/

Parameters:

Name	Type	Description
items	Array.<Cars>	An array of cars
firstIndex	Integer	The index of the first car to swap
secondIndex	Integer	The index of the second car to swap

Source: GeneticAlgorithm.js, line 194