Results

***TEST 1***

numHidden 2

numGenes 21

minGene -3.0

maxGene 3.0

popSize 1000

maxEvaluations 20000

mutateRate 0.01

mutateChange 0.05

seed 1552314780712

random java.util.Random@1f17ae12

neuralNetworkClass class coursework.Examp1leEvolutionaryAlgorithm

Training Set Training

Fitness 0.12685081756437944

0.12685081756437944

Fitness on Test 0.2863117606133829

Tournament select with tournament size 20 and Arithmetic Recombination Crossover

***TEST 2***

numHidden 2

numGenes 21

minGene -3.0

maxGene 3.0

popSize 1000

maxEvaluations 20000

mutateRate 0.01

mutateChange 0.05

seed 1552317357506

random java.util.Random@1f17ae12

neuralNetworkClass class coursework.ExampleEvolutionaryAlgorithm

Training Set Training

Fitness 0.10925899704529288

0.10925899704529288

Fitness on Test 0.2534671607971799

*Roulette select with Uniform Crossover*

***TEST 3***

numHidden 2

numGenes 21

minGene -3.0

maxGene 3.0

popSize 1000

maxEvaluations 20000

mutateRate 0.01

mutateChange 0.05

seed 1552317815304

random java.util.Random@54a9ec12

neuralNetworkClass class coursework.ExampleEvolutionaryAlgorithm

Training Set Training

Fitness 0.10850586736525256

0 Out of 8 Landed Safely

The average fitness was 0.10850586736525256

*Tournament(10) select with Uniform Crossover(2 children)*

***TEST 4***

numHidden 2

numGenes 21

minGene -3.0

maxGene 3.0

popSize 1000

maxEvaluations 100000

mutateRate 0.01

mutateChange 0.05

seed 1552318176392

random java.util.Random@5b87f79d

neuralNetworkClass class coursework.ExampleEvolutionaryAlgorithm

Training Set Training

Fitness 0.06667759150795138

*Tournament(10) select with Uniform Crossover(2 children)*

***TEST 5***

numHidden 2

numGenes 21

minGene -3.0

maxGene 3.0

popSize 200

maxEvaluations 20000

mutateRate 0.01

mutateChange 0.05

seed 1552912154050

random java.util.Random@7eda2dbb

neuralNetworkClass class coursework.OwnEvolutionaryAlgorithm

Training Set Training

Fitness 0.07009206083495512

0.07009206083495512

Fitness on Test 0.14321661339792563

My own algorithm: get 50% of the good chromosomes of the current population, produce children with them until we reach number of correct population, and replace new population with old population

**TEST 6**

numHidden 2

numGenes 21

minGene -3.0

maxGene 3.0

popSize 40

maxEvaluations 20000

mutateRate 0.01

mutateChange 0.05

seed 1552999597629

random java.util.Random@7eda2dbb

neuralNetworkClass class coursework.OwnEvolutionaryAlgorithm

Training Set Training

Fitness 0.06297939643543672

0.06297939643543672

Fitness on Test 0.0657601394937516

My own algorithm: Select 50% parents with constant tournament select, and do my uniform crossover with potential children

**Test 7**

numHidden 2

numGenes 21

minGene -3.0

maxGene 3.0

popSize 1000

maxEvaluations 20000

mutateRate 0.2

mutateChange 0.05

seed 1553184716117

random java.util.Random@1f17ae12

neuralNetworkClass class coursework.OwnEvolutionaryAlgorithm

Training Set Training

Fitness 0.041318329667629945

0.041318329667629945

Fitness on Test 0.169661590732022

My own algorithjm: 2 paremts selected on a quartef of the population which is sorted by fitness, reproducing 4 potemntial children, mutating them, evaluating them, getting the 2 best, replacing the worst in the population.

**TEST 8**

numHidden 3

numGenes 21

minGene -3.0

maxGene 3.0

popSize 100

maxEvaluations 20000

mutateRate 0.1

mutateChange 0.3

seed 1553184716117

random java.util.Random@1f17ae12

neuralNetworkClass class coursework.OwnEvolutionaryAlgorithm

Training Set Training

Fitness 0.026181693802230226

0.026181693802230226

Fitness on Test 0.07725042682562858

My own Algorithm: tournament select using 20 people, Uniform crossover producing and evcaluating only 2 children per iteration, tournament replace using 1/8th of the population, and mutate is between 0 and 0.3 if it changes.

**TEST 9**

numHidden 4

numGenes 39

minGene -3.0

maxGene 3.0

popSize 100

maxEvaluations 20000

mutateRate 0.1

mutateChange 0.3

seed 1553516819529

random java.util.Random@6576fe71

neuralNetworkClass class coursework.OwnEvolutionaryAlgorithm

Training Set Fitness 0.008699522721636032

0.008699522721636032

Fitness on Test 0.023780933362879873

My own Algorithm: tournament select using 20 people, Uniform crossover producing and evcaluating only 2 children per iteration, tournament replace using 1/8th of the population, and mutate is between 0 and 0.3 if it changes.