Report 4

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2) In the experiment, the evolutionary goal will be creatures that are jumping and fast on land.

3)

## Jumper:

## MX(X[| 0 :-0.893,G:0],rrLLX[G:-2.583]MX[| 0:0.797,-1:2.899])

M**X(X**[**|** 0 **:**-0.9**,G:**0]**,**rrLL**X**[**G:**-2.5]M**X**[**|** 0**:**0.8**,**-1**:**2.9]**)**

## fitness :

return 0.0+this.velocity\*1.0+this.distance\*10.0;

return 0.0+this.velocity\*1.0+this.numneurons\*7.0+this.distance\*10.0;

##shitcode

Simulator.init();

Simulator.start();

var pusus = File.create("\_logs.txt");

var out = "";

var startTime = Math.time;

var i = 0;

var temp = 0;

while (i<1000){

Simulator.step();

out += stats.st\_max\_fit;

out += "\n";

i += 1;

}

out += Math.time - startTime;

pusus.writeString(out);

pusus.close();

## EXAMPLE OF EVOLUTION WITH PARAMETERS 2

**(**Mii**X**[**N,** 9**:**-0.204**,**5**:**1][**\***][**\***]**,** i**X**[**N,** 6**:**0.871][**@,** -2**:**-0.613]L**X**[**T**][**T**][**|,** -5**:**-0.688**,** **p:**0.25]L**X**[**N,** 1**:**-4.672**,** 0**:**-1.513**,** -6**:**-1][**G**][**|,** -8**:**6.584][**G**]**X**[**Gpart**][**|,** **r:**0.872**,** -7**:**1]**)**

Simulator.init();

Simulator.start();

var pusus = File.create("\_logs.txt");

var out = "";

var startTime = Math.time;

var i = 0;

var temp = 0;

while (i<10){

Simulator.step();

if (stats.st\_max\_fit > temp)

{

out += stats.st\_max\_fit;

out += "\n";

temp = stats.st\_max\_fit;

i += 1;

}

}

out += Math.time - startTime;

pusus.writeString(out);

pusus.close();

Simulator.init();

Simulator.start();

var pusus = File.create("\_logs.txt");

var out = "";

Simulator.print(pusus);

var startTime = Math.time;

var i = 0;

while (i<100){

Simulator.step();

i += 1;

out += stats.st\_max\_fit;

out += "\n";

}

out += Math.time - startTime;

pusus.writeString(out);

pusus.close();

## starting fitness 42.8127

Final fitness: 286.263

Average fit 212.187

For 79 genotypes

## box plot:

fig = plt.figure()

ax = fig.add\_axes([0,1,1,1])

ax.set\_xticklabels(['par1', 'par2'])

par1 = [47, 59, 100]

par2 = [56, 98, 131]

allp = [par1, par2]

bp = ax.boxplot(allp)

plt.title("Fitnesses")

plt.show()

## line graph

data = np.loadtxt('par1.2.txt')

for column in data.T:

plt.plot(data[:], color='red')

plt.legend(['parameter 1'],loc='upper left', frameon=False)

plt.title("Fitnesses")

plt.xlabel("Generations")

plt.ylabel("Fitness")

plt.show()

import matplotlib.patches as mpatches

data = np.loadtxt('par1.2.txt')

for column in data.T:

plt.plot(data[:], color='red', linewidth=0.1)

data2 = np.loadtxt('meow.txt')

for column in data2.T:

plt.plot(data2[:], color='blue', linewidth=0.1)

plt.title("Fitnesses")

plt.xlabel("Number of the evaluated creatures")

plt.ylabel("Fitness")

red\_patch = mpatches.Patch(color='red', label='Parameter 1')

blue = mpatches.Patch(color='blue', label='Parameter 2')

plt.legend(handles=[red\_patch, blue])

plt.show()

####Parameters 1

M**X(X**[**|** 0 **:**-0.9**,G:**0]**,**rrLL**X**[**G:**-1.404]M**X**[**|** 0**:**0.8**,**-1**:**2.9]**)**