

Name: Siarhei Piashko (Сергей Пешко)

Size of chromosome: 32

Capacity of population: 20

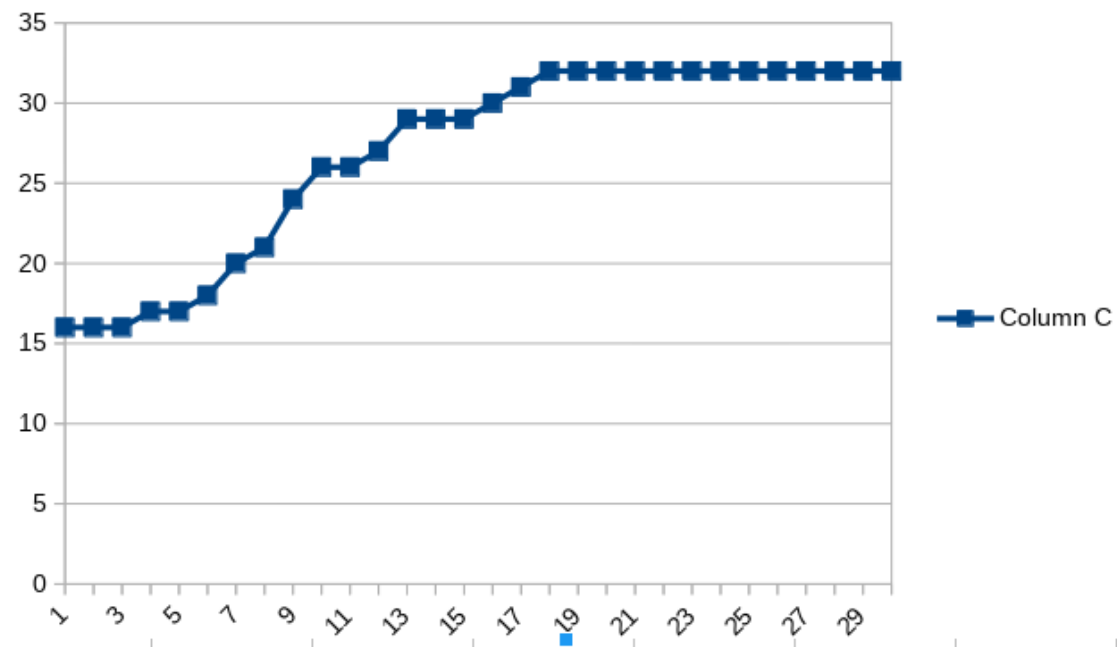
Epoch (generations): 30

With mutation

Onepoint crossover

Truncate selection

Evolution:



X – generations. From 0 to 30

Y – Fitness value. Maximum 32, minimum 0.

The training data is:

first 5 is input, last is ideal output

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1: -1.00 -1.00 -1.00 -1.00 -1.00 -1.00
2: -1.00 -1.00 -1.00 -1.00 1.00 1.00
3: -1.00 -1.00 -1.00 1.00 -1.00 1.00
4: -1.00 -1.00 -1.00 1.00 1.00 -1.00
5: -1.00 -1.00 1.00 -1.00 -1.00 1.00
6: -1.00 -1.00 1.00 -1.00 1.00 -1.00
7: -1.00 -1.00 1.00 1.00 -1.00 -1.00
8: -1.00 -1.00 1.00 1.00 1.00 1.00
9: -1.00 1.00 -1.00 -1.00 -1.00 1.00
10: -1.00 1.00 -1.00 -1.00 1.00 -1.00
11: -1.00 1.00 -1.00 1.00 -1.00 -1.00
12: -1.00 1.00 -1.00 1.00 1.00 1.00
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13: -1.00 1.00 1.00 -1.00 -1.00 -1.00
14: -1.00 1.00 1.00 -1.00 1.00 1.00
15: -1.00 1.00 1.00 1.00 -1.00 1.00
16: -1.00 1.00 1.00 1.00 1.00 -1.00
17: 1.00 -1.00 -1.00 -1.00 -1.00 1.00
18: 1.00 -1.00 -1.00 -1.00 1.00 -1.00
19: 1.00 -1.00 -1.00 1.00 -1.00 -1.00
20: 1.00 -1.00 -1.00 1.00 1.00 1.00
21: 1.00 -1.00 1.00 -1.00 -1.00 -1.00
22: 1.00 -1.00 1.00 -1.00 1.00 1.00
23: 1.00 -1.00 1.00 1.00 -1.00 1.00
24: 1.00 -1.00 1.00 1.00 1.00 -1.00
25: 1.00 1.00 -1.00 -1.00 -1.00 -1.00
26: 1.00 1.00 -1.00 -1.00 1.00 1.00
27: 1.00 1.00 -1.00 1.00 -1.00 1.00
28: 1.00 1.00 -1.00 1.00 1.00 -1.00
29: 1.00 1.00 1.00 -1.00 -1.00 1.00
30: 1.00 1.00 1.00 -1.00 1.00 -1.00
31: 1.00 1.00 1.00 1.00 -1.00 -1.00
32: 1.00 1.00 1.00 1.00 1.00 1.00

Best network (start):

W1(hidden layer) (25 wights)

0.46191 -0.51891 0.27481 0.10091 0.19511
-0.33361 -0.22961 0.96971 0.75841 0.88251
-0.45011 -0.74221 -0.70681 -0.95351 0.09351
0.92901 -0.79101 0.25031 -0.17841 0.55261
0.98141 -0.02551 0.49251 0.46631 0.63461

W2(output layer) (5 wights)

0.67781 0.05341 0.79871 -0.73211 -0.83391

Fitness is 16

Best network (10 generation):

W1(hidden layer) (25 wights)

0.46191 -0.51891 0.27481 0.10091 0.19511
-0.33361 -0.22961 0.96971 0.75841 0.88251
-0.45011 -0.74221 -0.70681 -0.95351 0.09351
0.92901 -0.79101 0.25031 -0.17841 0.55261
0.98141 -0.02551 0.49251 0.46631 0.63461

W2(output layer) (5 wights)

0.67781 0.05341 0.79871 -0.73211 -0.83391

Fitness is 26

Best network (end):

W1(hidden layer) (25 wights)

0.46191 -0.51891 0.27481 0.10091 0.19511
-0.33361 -0.22961 0.96971 0.75841 0.88251
-0.45011 -0.74221 -0.70681 -0.95351 0.09351
0.92901 -0.79101 0.25031 -0.17841 0.55261
0.98141 -0.02551 0.49251 0.46631 0.63461

W2(output layer) (5 wights)

0.67781 0.05341 0.79871 -0.73211 -0.83391

Fitness is 32

Conclusion: Algorithm achieved 100% accuracy (in my case). All 32 cases was matched by our NN (5-5-1). So we can say that GA is aplicapable for training NN.