Assignment 5

Neural Networks

Introduction to Artificial Intelligence

Gitansh Mittal

301200517

Exercise1:

* Test / simulate the network by passing the following test values 0.1 and 0.2. Record the result  
  under result #1

Result # 1: [0.1, 0.2] --> [0.2173786]

Actual result = 0.3

A screenshot of a computer

Description automatically generated with medium confidence

Chart, line chart

Description automatically generated

Exercise2:

* In your written response compare the result #1 to result #2 to the actual result explain your  
  findings.

Actual result: 0.3

Result # 1: [0.1, 0.2] --> [0.2173786]

Result # 2: [0.1, 0.2] --> [0.32950715]

Result 2 is more better because of back propagation (gradient descent).

A screenshot of a computer

Description automatically generated with medium confidence

Chart, line chart, histogram

Description automatically generated

Exercise3:

* In your written response compare result #1 to result #3 to the actual result explain your  
  findings

Actual result: 0.3

Result # 1: [0.1, 0.2] --> [0.2173786]

Result # 3: [0.1, 0.2] --> [0.2980347]

Result3 is better because of increase in training data.

A screenshot of a computer

Description automatically generated with medium confidence

Chart, line chart

Description automatically generated

Exercise4:

* In your written response compare the result #3 to result #4 to the actual result, explain your  
  findings

Actual result: 0.3

Result # 3: [0.1, 0.2] --> [0.2980347]

Result # 4: [0.1, 0.2] --> [0.27431678]

A screenshot of a computer

Description automatically generated with medium confidence

Chart, line chart

Description automatically generated

Exercise5:

* In your written response compare the result #5 to result #6 to the actual result, explain your  
  findings

Actual result: 0.5

Result # 5: [0.2, 0.1, 0.2] --> [0.99999949]

Result # 6: [0.2, 0.1, 0.2] --> [0.56937296]

Result 6 is more accurate because of the back propagation and more traning data and had more layers in network.

A screenshot of a computer

Description automatically generated with medium confidence

Chart, line chart

Description automatically generated

A screenshot of a computer

Description automatically generated with medium confidence

Chart, line chart

Description automatically generated

Final conclusion.

The main finding is that the with the increase in training data as well as increase in layers in training network, neural networks become more accurate. The gradient descent (back propagation) also makes it more accurate.