**AML Report HW\_04\_19**

A scatter plot is made between actual and predicted values of a neural network (Perceptron). With the learning rate = 0.1, Number of epochs = 200 and Hidden Layers = 1 we get the following plot:

A picture containing screenshot

Description automatically generated

**Fig. Scatter plot between actual and predicted values of a perceptron**

**Quality of neural network prediction:**

While evaluating the quality of neural network prediction, from the scatter plot, more the number of outliers the less is the accuracy. As the outliers represent the variability from the actual and predicted values, more outliers = less accuracy

**Improving quality of the perceptron:**

The quality can be established by performing several exhaustive experiments on the neural network model. It is observed that the quality of prediction is high by having more hidden layers. The developed perceptron has a minor difference for variation in number of iterations and learning rate of the trained model.

A screenshot of a cell phone

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**Fig. Scatter plot between actual and predicted values of a perceptron**

As from the scatter plot it can be observed that as the number of hidden layers is increased to 8, the graph is stable. Meaning that there are lesser to none outliers. Thus, the model is more accurate than the crude perceptron.

**Other Ideas:**

* The accuracy of perceptron can also be improved by using Data mining techniques like K-fold Cross validation on the dataset. It can give us a surety of the performance of the perceptron and the model behaves more stable.
* Also, Increasing the complexity of the activation function helps the neural network learn better and produce more accurate results.