

## LAB 10 Report

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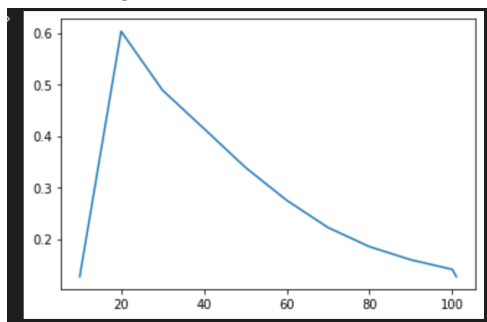
Roll No.: B20ME027

### About code:

- Import libraries
- Df is a dataframe of iris data. X is the input data frame and y is label. X and y splitted using train\_test\_split.
- MLP is the multi layer perceptron model with different hyperparameters.
- A list called loss\_values stores the error after every iteration. 'l' stores error after every 10th iteration when max\_iter=100
- 'L2' stores no. of iterations. Using matplotlib we plot the graph of the loss\_value vs iterations.
- Importing and reading the training data house sales prediction dataset
- X\_reg, y\_reg input dataset and price respectively.
- For preprocessing first we drop the columns which have a lot of NaN values. So after dropping those columns 75 columns remain.
- Then the columns having float or int values are imputed. For columns with dtype=object, they are encoded manually with a dictionary. After that the nan values in those columns are replaced with the median of those columns.
- For columns having dtype as object but no Nan value ordinal encoder is used to encode them and finally all data is obtained in numeric format.
- We import MLP regressor and on tuning the hyperparameters obtain the highest accuracy possible.

### Observations:

- It can be seen that small changes in the learning rate can decrease the accuracy of MLP classifier.
- The plot gives where minimum loss is obtained.



- The maximum accuracy obtained for MLP classifier is 0.9333
- The maximum accuracy obtained for MLP regressor is 0.54555 with activation function=identity, learning\_rate\_init=0.001, hidden\_layer\_sizes=300.

Google colab link

<https://colab.research.google.com/drive/1CeQLcUFQN72NZSo0ulZ9SmrJdMle20T2?usp=sharing>