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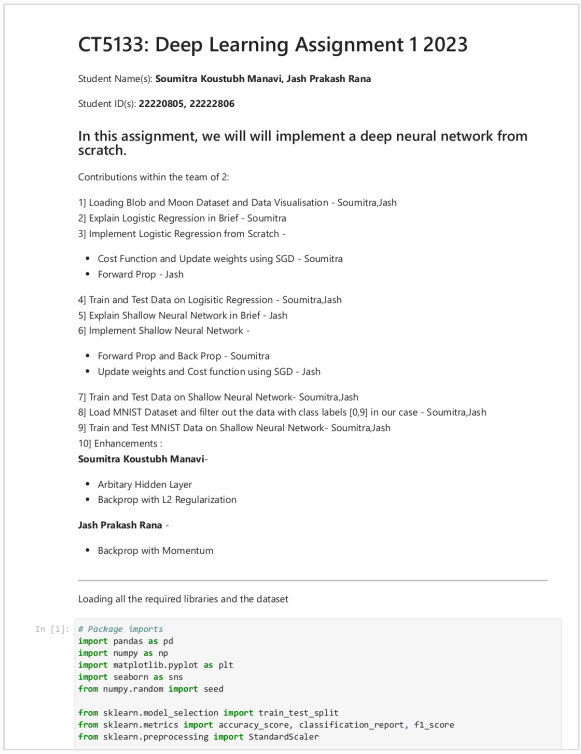

CT5133: Deep Learning Assignment 1 2023

Student Name(s): **Soumitra Koustubh Manavi, Jash Prakash Rana**

Student ID(s): **22220805, 22222806**

In this assignment, we will will implement a deep neural network from scratch.

Contributions within the team of 2:

1] Loading Blob and Moon Dataset and Data Visualisation - Soumitra,Jash
2] Explain Logistic Regression in Brief - Soumitra
3] Implement Logistic Regression from Scratch -

- Cost Function and Update weights using SGD - Soumitra
- Forward Prop - Jash

4] Train and Test Data on Logisitic Regression - Soumitra,Jash
5] Explain Shallow Neural Network in Brief - Jash
6] Implement Shallow Neural Network -

- Forward Prop and Back Prop - Soumitra
- Update weights and Cost function using SGD - Jash

7] Train and Test Data on Shallow Neural Network- Soumitra,Jash
8] Load MNIST Dataset and filter out the data with class labels [0,9] in our case - Soumitra,Jash
9] Train and Test MNIST Data on Shallow Neural Network- Soumitra,Jash
10] Enhancements :
Soumitra Koustubh Manavi-

- Arbitary Hidden Layer
- Backprop with L2 Regularization

Jash Prakash Rana -

- Backprop with Momentum

Loading all the required libraries and the dataset

In [1]:
```
# Package imports
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from numpy.random import seed

from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score, classification_report, f1_score
from sklearn.preprocessing import StandardScaler
```