IT-641 DEEP LEARNING

LAB 3

1. Introduction

Artificial Neural Networks (ANN)

In this Lab tutorial we shall explore Artificial Neural Networks commonly also known as Multi-Layered-Perceptions. We shall make use of ANN's for classification and regression tasks and also compare how they work in comparison to machine learning models.

2. Building your first Artificial Neural Network

We will use the "Keras" Library to build our first Artificial Neural Network.

Go through the code in the following link for reference on how to build your first artificial neural networks

https://colab.research.google.com/drive/14tPKVgQPjeG-6rwWtOuxWT2XV4PB2p0Z?usp=sharing

3. Polynomial Regression

In the last Lab we used Linear Regression to predict house prices. Now we shall see how polynomial regression compares to it.
Refer to the below code for polynomial regression:

https://colab.research.google.com/drive/1RpyzwQaOVyS2UwrjXHoIne0rv5-BzcFM?usp=sharing

4.Datasets

1. **Hearts dataset:** predict heart disease using features like age, sex, chestpressure, cholesterol levels, restecg etc.

2. **House Price Prediction:** Predict house prices using advanced regression techniques

5.Tasks

Task A:
   1. Load the house price prediction data
   2. Select 4 important features
   3. Apply Linear Regression (sklearn) to it
   4. Apply Polynomial Regression (sklearn) to it

Task B:
Perform the following tasks on the above datasets

   1. Load Data
   2. Preprocess Data
   3. Split Data
   4. Create ANN models. Try experimenting with the following
       • Hidden Layers
       • Neurons in Hidden Layers
       • Different number of epochs
       • Different batch size
   5. Compare all the above created models

6.Submission Details

1. The assignment can be submitted as IPython Notebook as well as PDF

2. The submitted file must be of format:

"STUDENTID_FIRSTNAME_LASTNAME.ipynb" or
"STUDENTID_FIRSTNAME_LASTNAME.pdf"