Assignment 2

Aim : Classidication using Deep neural Network
Binary classidication using Deep Neural Network : Classify movie reviews into 'Positive' reviews and 'negative' reviews, just based on text content of the reviews
use IMDB dataset

Dataset Description:
We will use IMDB dataset which contains 50000 movie reviews that are labelled as 'Positive' or 'negative'. The dataset is split into 25000 reviews for training and 25000 reviews for testing.

Objectives: i) To implement diddferent deep learning models.
ii) To understand Hardware acceleration
iii) To illustrate concepts of AI / ML

Requirements: 64 bit windows, Python, Jupyter Notebook

Theory

Binary Classidication:
Binary Classidication is a type od machine learning problem where the task is to classify data into two categories. In this practical assignment we will use Deep Neural Networks to perdorm binary classidication od movie review based on their text content.

Deep Neural Networks are a type of machine learning model that are capable of learning complex patterns of data.

In machine learning, binary classification is a supervised learning algorithm that categorizes new observations into one of two classes.

Algorithm:

i) Load the dataset using built in function in keras

ii) Pre-process the dataset by converting the integer sequence into a binary matrix using one-hot encoding.

iii) Split the training dataset into training and validation sets.

iv) Implement a deep neural network with following architecture
- An embedding layer to convert the integer sequence into desire vectors of fixed size
- two dense layers with ReLU activation function.
- A final, state denserlayer with a sigmoid activation function to output probability for 'positive' or 'negative'.

v) Train the model using adam optimizer and binary cross-entropy loss function.

vi) Evaluate the model on the test dataset and report the accuracy and loss.

vii) Experiment with different hyperparameters such as number of hidden layers and learning rate and evaluate the model performance.

viii) Solve the trained model for future use.

ix) END

Conclusion: Hence we have successfully implemented binary classification for IMDB dataset.