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B3 Batch (DL)

EXPERIMENT - 01

TITLE :- Linear regression by using Deep Neural network: Implement Boston housing price prediction problem by linear regression using Deep Neural network. Use Boston House price prediction dataset.

OBJECTIVE :- Student should be able to perform Linear regression by using Deep Neural network on Boston House Dataset.

REQUIREMENT :-

SOFTWARE REQUIREMENT :

- Python 3.7
- Jupyter Notebook
- Operating System :- 64 bit Open-Source Windows

THEORY :-

*Linear Regression

Linear regression is a statistical approach that is commonly used to model the relationship between a dependent variable and one or more independent variables.

Linear Regression using deep neural networks combine the principles of linear regression with the power of deep learning algorithm.

In this approach, the input feature are passed through one or more layers of neurons to extract feature and then a linear regression model is applied to the output of the last layer to make prediction.

Example of Linear Regression

A suitable example of linear regression using deep neural network would be predicting the price of a house based on various feature such as the size of the house, the number of bedroom, the location & the age of the house.

This approach can be used in real-estate industry to provide accurate & reliable estimates of house prices, which can help both buyers and sellers make informed decisions.

CONCEPT OF DEEP NEURAL NETWORK

Deep neural network are trained using a process known as back propagation, which involves adjusting the weight and biases of the nodes on the error between the predicted output and the actual output. This process is repeated for multiple iteration until the model reaches an optimal level of accuracy.

Each layer of the network perform specific type of processing on the data, such as identifying patterns or correlations between feature and passes the result to the next layer. It has variety of application such as image & speech recognition, natural language processing & recommendation system.

STEPS TO PERFORM DEEP NEURAL NETWORK

1) Data Preprocessing
2) Model Architecture
3) Model Training
4) Model evaluation
5) Model Prediction

BOSTON HOUSE DATASET

The data set include 13 input feature, such as CRIM, ZN, INDUS, CHAS, NOX, RM, AGE, RAD, TAX, PTRATIO, B=1000 (BR - 0.63)^2, LS TAT, etc

This dataset is also used in research to compare the performance of different regression model.

CONCLUSION

In this way we can Predict the Boston House Price using Deep Neural Network.