

Assignment - 1

Title -

Linear regression by using deep Newsal Network:
Implement Boston housing price prediction problem
by linear regression using Deep Newsal network.
Use Boston price prediction dataset.

Objective -

Apply the technique of Deep Newsal network for implementing linears regression and classification.

Theory-

· Deep learning:

Deep learning is a subfield of machine learning focusing on learning data representations as successive learning of increasinly meanigful representations.

· Lineax Regression =

It is a machine leaxning alogosithm based on supervised learning. It performs a regression task. Regression models a torsget prediction value based on independent variables. Different regression models differ based on the kind of relationship between dependent a indepent values number of being used.

Conclusion =

Housing Prices of Boston city predicted using linear Regression.



FAQ'S

I what is linear regression?

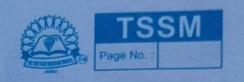
Variable and one or more independent variables by fitting a linear equation to observed data. It aims to minimize the difference bet observed and predicted values, estimating co-efficients for intercept & slopes Widely used in offers insights into variable relationships & predictive capabilities

- 2) What are different types of linear regressions?

 = Different types of linear regressions include simple LR, multiple linears regression, polynomial regression and ridge regression. They are used to model various relationships bet dependent & independent variables in data analysis & protection tasks.
- 3) Application where linear regression is used.

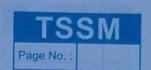
 = linear regression is used in diverse applications such as finance, economics, marketing, healthcare and engineering. It aids in understanding relationship bet variables, making fore-costs and guiding decision making processes across numerous industries & research domains.
- That are the limitations of linear regression?

 = linear regression assumes a linear relationship
 voriables, which may not always hold true.



It's sensitive to outliers and can be affected by
multicollineaxity. Additionally it connot capture complex, non-lineax relationship without modifications
tike polynomial segression lastly it require features to be independent, violating this assumption
can lead to inaccurate results.





Assignment - 2

Title -

Binarry classification using Deep Neutral Networks Example: Classify movie reviews into positive reviews and negative seriews, just based on the text content of the reviews. Use the IMDB dataset.

Objective -

To implement different deep learning model.

Theory -

In this case study, our objective is to classify movie reviews as positive or negative. This is a classify binary classification, which aims to predict one of two classes (positive vs. negative). To predict whether a riview is positive or negative, we will use the text of the movie review:

Throughout this case study you will learn a few new couples.

- · Vectorizing text with one-hot encoding.
 - Regularization with:
 - · Learning rate
 - · Model capacity
 - · Weight decay
 - · D-sopout.



Conclusion.

In this story, we applied the concepts of Deep Neutral Network on the IMDB data set I would secommend toying out other datasets as well.

FAQ'S

- D Explain types of loss function with example.

 In mathematical optimization and laising
- In mathematical optimization and decision theory, a loss function or cost function is a function that maps an event or values of one or more variables onto a real no intuitively representing some "cost" associated with the avent
- 2) What are 11 & 12 loss function?

 = L1 & 12 are two common loss functions in machine learning which are mainly used to minimize the exfort. It loss function is also known as least Absolute Deviations in short IAD. It loss function is also known as least grave errors in short 12
- 3 What is deep networking?

 = What is a deep newal network At its simplest,
 a newtral network with some level of complexity,
 usually at least two layers, availables as a deep
 newal network, or deep not for short deep nets
 process data in complex ways to employing
 spphisticed math modeling.



- De deals with training large neveral network with an example?

 De deals with training large neveral network with complex input output transformations one example of Pl is the mapping of a photo to the name of the person in photo as they do on social networks & describing a picture with another secent application of DL.
- Deep networks require a large amount of annotated data for training. With efficient training algorithms, deep neural networks are capable of seperating millions of labelled images. Morevers, the trained network can also be used for learning efficient image representations for other similar benthic data sets.



Assignment - 3

Title -

Use MNIST Fashion Dataset and execute a classifier to classify fashion clothing into categoxies Convolutional neural network) (CNN)

Objective -

To implement different deep learning model.

Theory-

The Fashion - MNIST dataset is proposed as a more challenging replacement dataset too the MNJST dataset

It is a dataset composed of 60,000 square 22+28 pixel grayscale images of items of 10 types of clothing, such as shoes, +-shirts, dresses and more

In more challenging dassification problem that MNIST and top results are achieved by deep learning convolutional newsal networks with a classification accuracy of about 90'1. to 95'1. on the hold out test dataset The loads Fashion MNIST dataset using the Kersas APT and creates a plot of the fixst rine images in the training dataset.

Conclusion -

In this story, we applied the concepts of convolution Newal Network or the MNIST Fashion dataset



FAQ'S

- The convolution layer in the convolution layer in CNN?

 The convolution layer in the convolution Neural

 Networks (CNNs) extracts features from input

 data by applying filters across the input's

 spatial dimensions. This process captures local

 patterns, enabiling the network to learn hierarchical

 representations of the input, orucial for tasks

 like image recognition, object detection and natural

 language processing.
- D What are the advantages of using CNN over PNN?

 Convolutional Neural Network ((NNs) excel overs

 traditional Deep Neural Networks (PNNs) due to

 their ability to extract spatial hierarchical

 features efficiently from data like images.

 They leversage parameters sharing, offer translation

 invariance, automate feature leaning and demonstrate

 computational efficiency making them ided for

 tasks like image secognition & processing.
- 3) Why is CNN preferred over ANN for image data?

 CNNS outperform ANNS for image data due

 to their ability to capture spatial hierachies of

 features efficiently. They exploit local connectivity

 shared weights, and parameters sharing, enabling

 them to automatically learn relevant features,

 making the ideal for tasks like recognition and

 processing.



I How would you visualise features of CNN is an image classification task?

To visualize features landed by a CNN in a image classification task, techniques like activation maximization, gradient - weighted class mapping or feature maps can be used. These methods highlight areas of the ipinput image but contribute most to specific feature activations as class predictions, providing insight into the network

3) What do you understand about shared weights in CNN?

decision - making process.

In CNNs shared a weights refer to using the came set of parameters across different parts of the input data. This allows the network to learn local patterns efficiently by reusing the learned parameters, reducing the no of parameter to be learned and improving generalization.