Practical NO:- 2.

Aim:- Creating functions to compute various losses.

Theory:-

Deep learning models are neural networks with multiple layers that learn complex patterns from data.

* Loss function in Deep learning:-
Loss function helps in updating the model's weights during training.

(1) Mean Square Error (MSE) :- Commonly used in regression tasks, calculating the average squared difference between actual & the predicted values.

(2) Mean Absolute Error (MAE):- Measures the average absolute difference between actual & the predicted values, makes it less sensitive to outliers than MSE.

(3) Categorical Cross Entropy:- used for multi-class classification problems, measuring how well the predicted probability distribution matches the actual labels.

Activation Function:-

- The ReLU (Rectified Linear Unit) activation function is used in the hidden layers. It introduces non-linearity into the model, helping it learn complex patterns.

Neural Network Architecture:

- The deep learning model in this practical consists
- Input layer
- Two hidden layers:-
  - Hidden layer 1: 10 neurons
  - Hidden laye 2: 8 neurons.
- output layer.

Each neuron in one layer is connected to every neuron in the next layer using dense (fully connected) layers.

optimizer.

- Adam optimizer is used to adjust the network's weights efficiently during training. It combines the benifits of momentum and adaptive learning rates for faster convergence.

Data set split

The data set is divided into 80% training & 20% testing to evaluate the model's performance.

Implementation.

- The model is built using TensorFlow and keras. The key libraries used are:-
  - Numpy & Pandas:- For handling numerical data.
  - Tensorflow & keras:- For defining and training the deep learning model.

Aim: Creati

Manasi Gaik

```
[10] import tens
     from tensor
     from tenso
     from tenso
     from tenso
     import par
     from sklea
     from sklea

     # Load th
     df = pd.r

     # Drop t
     df.drop(
```

```
[10] # Drop
     df.dro

     # Enc
     for c
         d

     # Sep
     # As
     X =
     y =

     # Sp
     X_tr

     # S
     sca
     X_t
```

Conclusion:-

The pratical focuses on building a neural network for fraud detection by pre-processing data, using ReLU activation, binary crossentropy loss, and evaluating performance with accuracy, MSE and MAE.

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