| Ex No: 3.2  Date: 21-08-2024 | Building and Applying a Deep Neural Network for Image Classification |
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**Objective:**

To apply a pre-built deep neural network model for classifying images. The focus of this lab is to utilize a deep learning model, understand its prediction capabilities, and interpret the results..

**Descriptions:**

In this exercise, we utilize a deep neural network (DNN) that has been trained to classify images into two categories: cat and non-cat. The model is composed of multiple layers, including hidden layers, which allow it to capture complex patterns within the input data. The pre-trained model is applied to a new image to predict its class.

The deep neural network in this exercise consists of the following components:

1. **Input Layer:** Accepts the raw pixel data of an image.
2. **Hidden Layers:** Several layers that process the input through non-linear transformations, enabling the network to learn intricate patterns.
3. **Output Layer:** Produces the final classification result (cat or non-cat).

**Model:**

**Steps to Apply a Deep Neural Network:**

1. **Load and Prepare the Image:**
   * Select an image file to classify.
   * Resize the image to match the input dimensions expected by the model.
   * Normalize the pixel values to be within the range [0, 1].
2. **Predict the Image Class:**
   * Pass the processed image through the deep neural network.
   * The model outputs a probability score indicating the likelihood of the image belonging to each class.
3. **Interpret the Results:**
   * Based on the output probability, determine the class label (cat or non-cat).
   * Display the image and the predicted label.

**GitHub Link:**

https://github.com/SudhanvaMS2004/Deep\_Learning\_Fundamentals/blob/main/DNN%20Application%20Distri.ipynb