CIFAR 10 Image classifier

Problem Statement

The CIFAR problem is basically a photo classification problem use to identify images belonging to 10 different categories. It can be used as the basis for learning and practicing how to develop, evaluate, and use convolutional deep learning neural networks for image classification from scratch.

The CIFAR-10 dataset (Canadian Institute for Advanced Research) is a collection of images that are commonly used to train machine learning and computer vision algorithms. It is one of the most widely used datasets for machine learning research. The CIFAR-10 dataset contains 60,000 32x32 color images in 10 different classes.] The 10 different classes represent airplanes, cars, birds, cats, deer, dogs, frogs, horses, ships, and trucks. There are 6,000 images of each class

- Load the CIFAR 10 dataset
- Develop a convolutional neural network for photo classification from scratch
- Validate the accuracy of the model

Evaluation Parameters

Evaluation will be based on:

- Evaluating model accuracy by comparing validation accuracy vs training accuracy
- Evaluating model loss by comparing validation loss vs training loss

Data Preparation

- Data will be imported from Keras Datasets
- Data will be Scaled and Normalized
- Data will be divided into training set and Validation set
- One hot encoding will be done using Keras utilities.

Expected Outcome

After Completing this Project, student will be able to

- Develop a robust classification model which can be used as a basis to work on any other multi-classification problem.
- Evaluate a CNN model comparing Validation data against training data.
- Evaluate a Neural Network model loss and accuracy.