Report

Problem Statement

In this project, a deep neural network will be proposed and simulated to classify different classes of colour images using the CIFAR-10 dataset.

The best baseline results show 15% test error without data augmentation when using a convolution neural network.

Exhibits best accuracy in classifying 32X32X3 color images (96.63%).

I intend to propose a neural network with suitable hyper parameters which can increase the performance.

Dataset

Organization of the CIFAR-10 dataset,

It consist 60000 32X32X3 color images in 10 classes with 6000 images per class. The classes are labeled as; ‘airplane’, ‘automobile’, ‘truck’, ‘bird’, ‘dog’, ’deer’, ’cat’, ’frog’, ’horse’, ’sheep’.

There are 50000 training images and 10000 test images.

The training image set would be further divided into validation dataset (1000 images from each class).

The dataset is divided into five training batches and each with 10000 images. The test batch contains exactly 1000 randomly selected images from each class. The training batch contains the

remaining images in random order but some of them may contain more images from one class than another. The training batches contain exactly 5000 images from each class.

Another way to call the analysis of dataset is to train all 50000 training images all together.

https://www.cs.toronto.edu/~kriz/cifar.html

University of Idaho

Final Project Report

Adhar Partap Singh
Sing5830@vandals.uidaho.edu
CS-517
Stephen S. Lee
October 29, 2018