Project Part 3 Report

Abstract:

In this part of the project, I have implemented small convolution neural network to work on classification of printed digits cropped from house plate pictures. We have used the neural network architecture provided to classify the images.

Dataset:

We have used SVHN MNIST data set to perform the classification. The dataset is we used here is two mat files one for training and one for testing. The training data consists of 73,257 training samples with image resolution as 32×32 with 3 channels for RGB. The testing data consists of 26,032 testing samples with the same resolution as training data.

Parameters:

I have used the following parameters to calculate the accuracy and loss:

Learning rate: 0.1

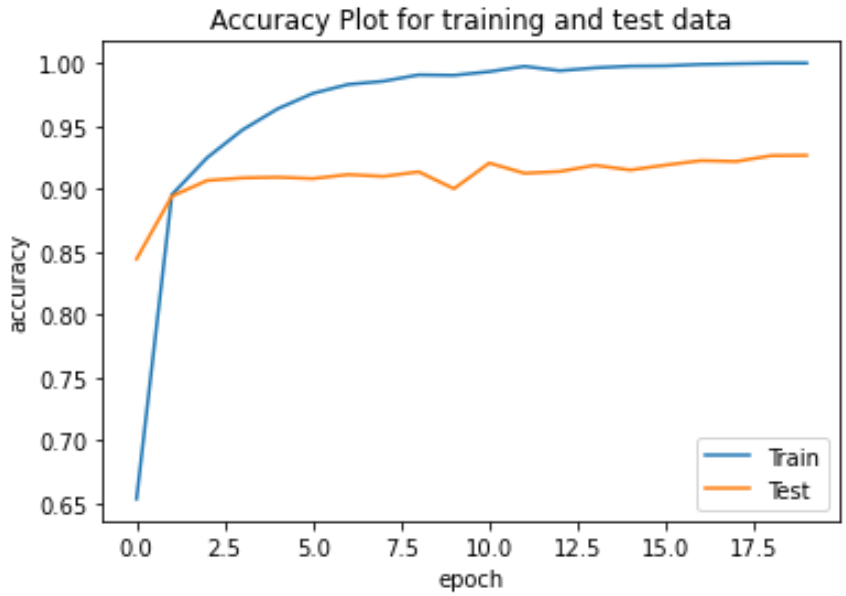
Batch Size: 64

Epochs: 20

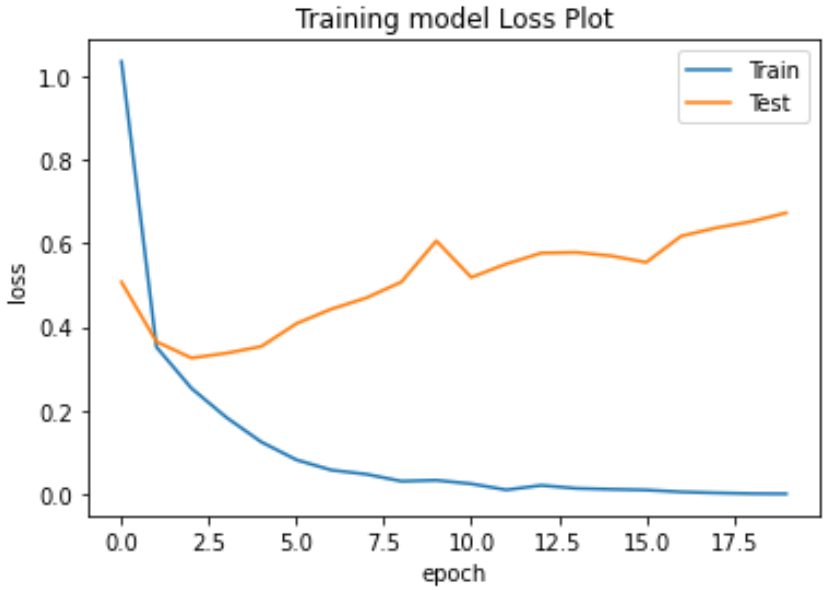
Loss function: categorical cross entropy

Optimizer: Stochastic Gradient Descent (SGD)

Plots:



Loss Value Plot:



Result:

We have achieved an accuracy of 92.65% after evaluating our model with the test data set.

```
[29] accuracy=cnn_model.evaluate(tsX, tsY_encoded)

     814/814 [==============================] - 3s 4ms/step - loss: 0.6729 - accuracy: 0.9265
```

Conclusion:

I have used various learning rates and batch sizes to get better accuracy and achieved the accuracy with learning rate 0.1 and batch size 64. I have also experimented by adding various layers to the network and using various optimizers. I have used the given optimizer and architecture and achieved 92.65% accuracy and loss 67.29%.