

Assignment 3

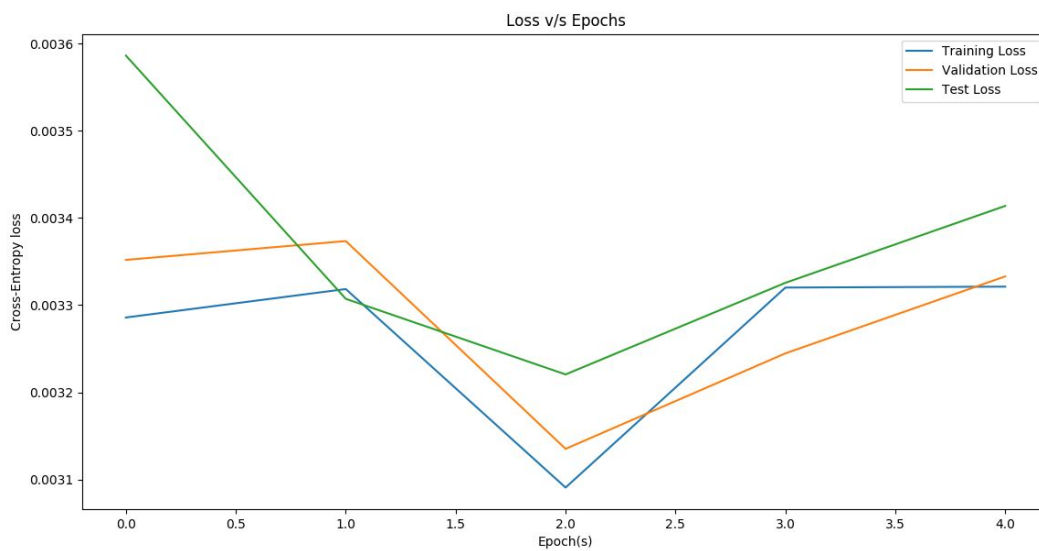
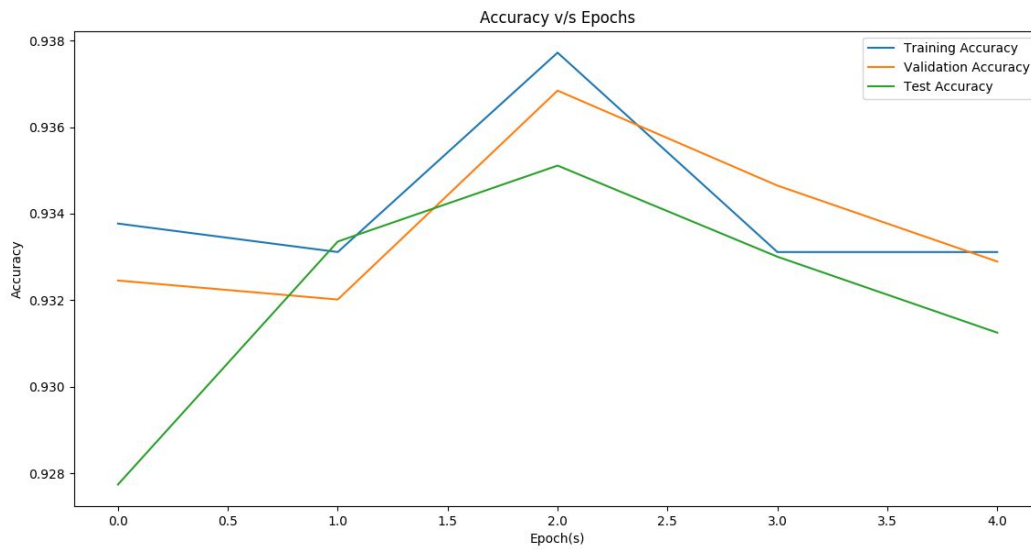
Aniket Pradhan 2017133

Question 1:

Part 2

```
Training Metrics...  
Final Training Accuracy: 0.9331  
Final Training Loss: 0.00332  
Validation Metrics...  
Final Validation Accuracy: 0.9328  
Final Validation Loss: 0.00324  
Test Metrics...  
Final Testing Accuracy: 0.9312  
Final Testing Loss: 0.00341
```





Varying loss and accuracies, because I was splitting the dataset randomly. Fixed it by using a seed parameter.

However, the metrics were still varying, which can be accounted for by the random initialization of the weight matrices.

In order to make the NN for a general number of layers, I hardcoded the first and the last layers (input and output) and had to pass the hidden layers in a for loop.

Part 3

NA

Part 4

```
Training metrics...
Accuracy: 0.9355263157894737
Loss: 0.003195
Validation metrics...
Accuracy: 0.9324561403508772
Loss: 0.003347
Test metrics...
Accuracy: 0.9354612416695897
Loss: 0.003199
```

It also performs regularization, which my own model does not, hence the slight variation. Also due to random weight initialization. Otherwise, the network performance is similar.

Question 2

Test Accuracy: 0.9185

Converted images to size 256x256 first. Because AlexNet takes input of size 227x227 as input, hence had to upsample 32x32 to 256x256.

Then extracted the features and stored their corresponding labels in a pickle.

Used the features and labels to train a linear SVM (LinearSVC).

