Assignment 4 Report

Harsh Vora
CWID : A20445400
CS577 – S20

April 15, 2020

Problem Statement:

To train the network for multiclass classification – Cifar-10 and tune the various model parameters.

Design Details:

I have trained my network using the below model.

I have used the SGD with momentum.

For classification I have used the below network layers:

1. Convolution Layer (32 neurons) Activation = relu

2. Batch Normalization

3. Dropout(0.5)

4. Flatten Layer

5. Dense Layer (3 neurons) Activation = softmax.

Implementation Details:

1. I downloaded the data from https://www.cs.toronto.edu/~kriz/cifar.html.
2. I extracted the data from the zip folder in a directory named cifar-10-batches-py.
3. I then created a convnet model using keras to train and test performance.
4. I then used inception block between the convolution and Fully connected network to train and test the performance.
5. I have added two inception blocks to improve the accuracy of the network.
6. I then used residual block between the convolution and Fully connected network to train and test the performance.

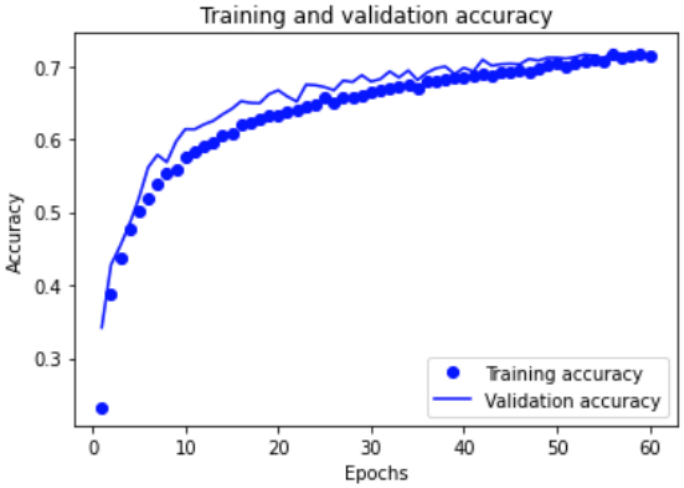
Results:

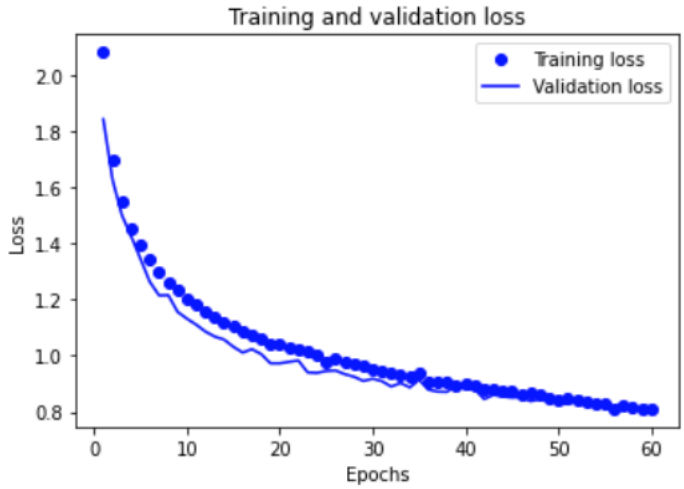
Below are my results for CIFAR-10 Dataset : I have measured the Test accuracy for a normal convnet model, convnet model with Inception block and Convnet model with residual block.

These are my results:

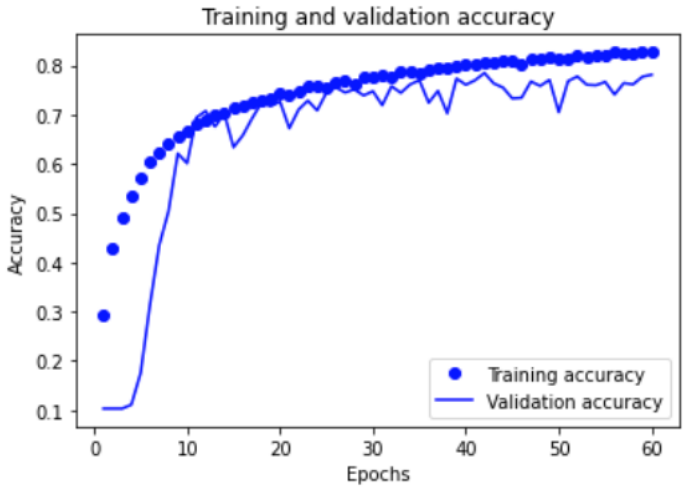
Model	**Accuracy**
Normal Convnet model	71.66
Convnet model with Inception Block	77.60
Convnet model with Residual block	76.71

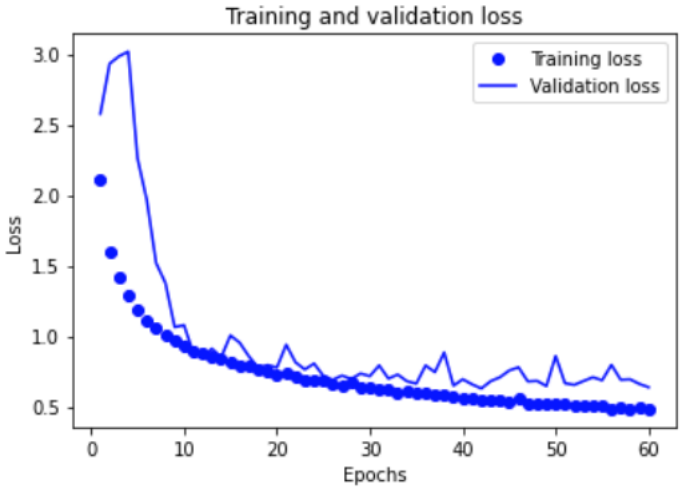
Normal Convnet:



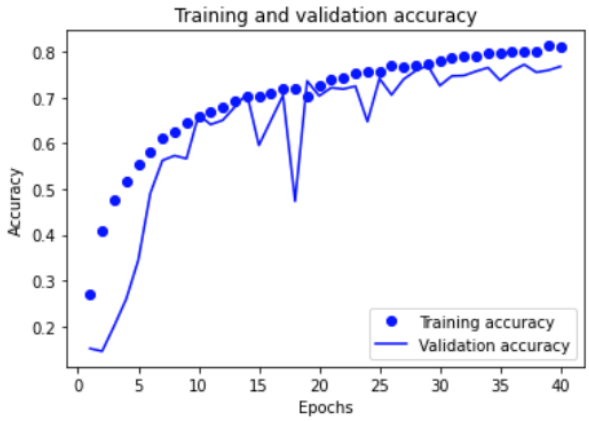


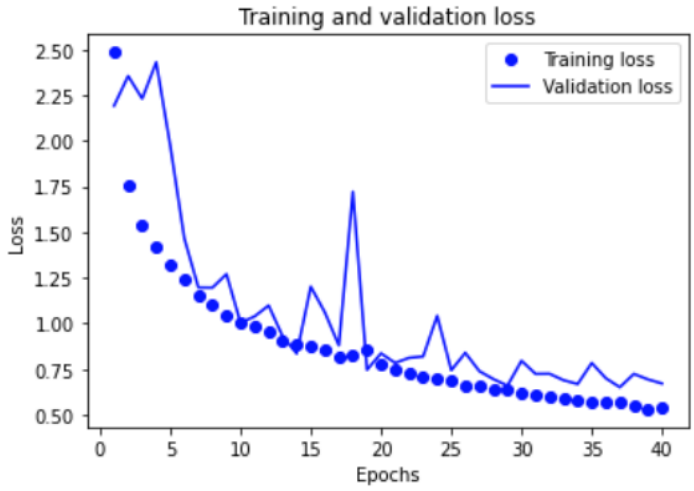
Convnet with Inception block:





Convnet with residual block:





Conclusion:

I got the best results by adding two inception blocks in between the convolution and pooling layers i.e. 77.60%.