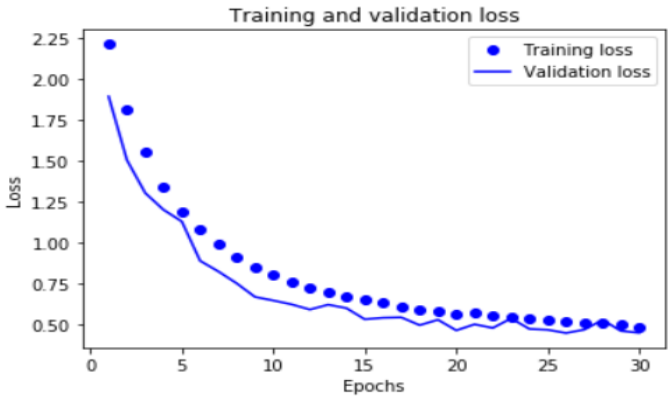
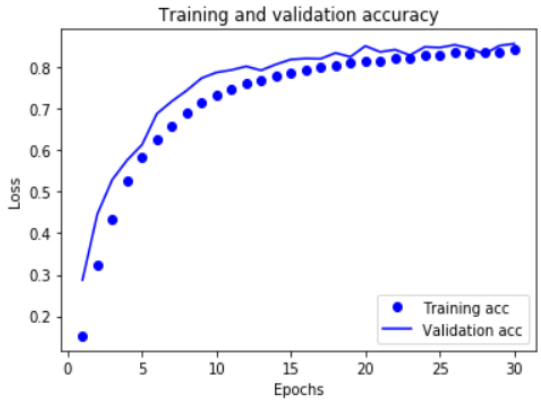
Part 1: Convolutional Neural Network

Dataset – CIFAR-10

Our task for the assignment was to do a comparative study of the different types of Optimizers used in improvising the performance of a ML Algorithm. We have applied a handful of optimizers and validated our choice as below:

1) **ADADELTA**





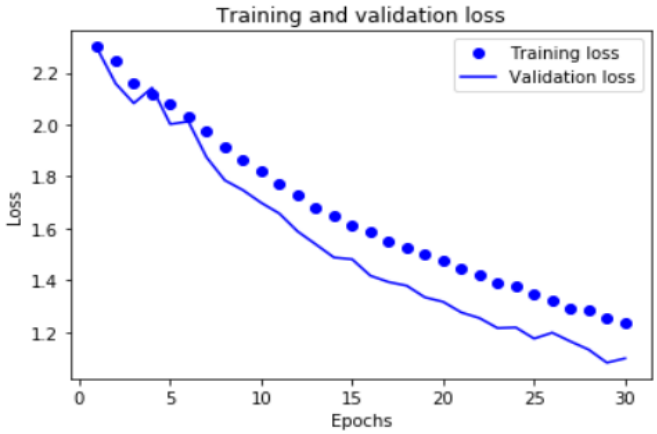

```
accuracy(x_test, y_test, model)
```

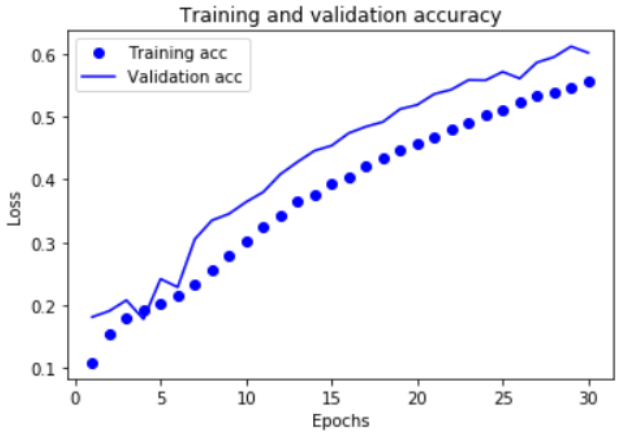
```
85.57000000000001
```

```
accuracy(x_train, y_train, model)
```

```
89.684
```

2) SGD





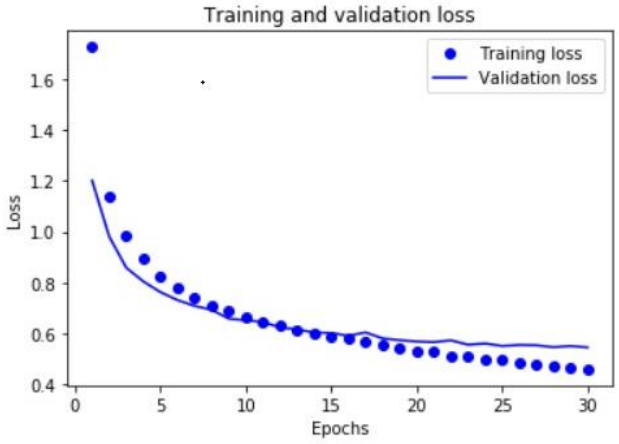

```
accuracy(x_test, y_test, model)
```

```
60.19
```

```
accuracy(x_train, y_train, model)
```

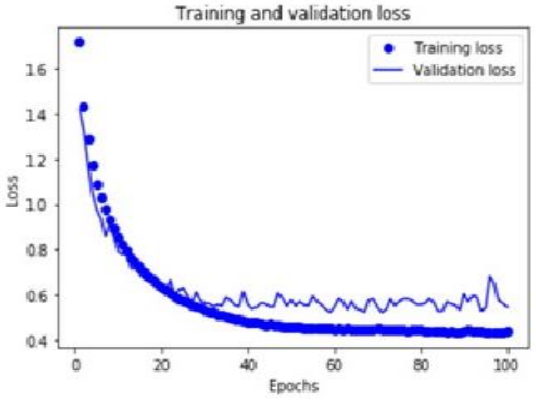
```
60.756
```

3) ADAGRAD



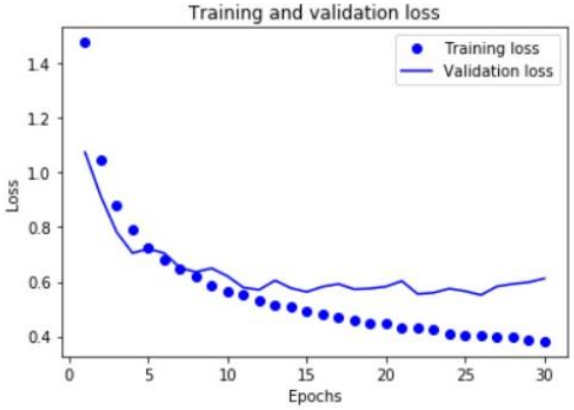

```
10000/10000 [==============================
Test loss: 0.5453300515174866
Test accuracy: 0.8153
```

4) RMSPROP




```
Saved trained model at /home/ubuntu/
10000/10000 [==============================
Test loss: 0.546309899520874
Test accuracy: 0.8221
```

5) ADAM




```
Epoch 30/30
1563/1563 [==============================] - 25
Saved trained model at /home/ubuntu/mynotebooks
10000/10000 [==============================] -
Test loss: 0.6117798939466477
Test accuracy: 0.812
```