

# CNN Report

## Submitted by

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**1) Learning rate : 0.04**

**Training Set(19,451 samples)**

Epoch No.	Training Loss	Training Accuracy(%)
1	0.009	11.23
2	0.018	13.232
3	0.011	14.456
4	0.009	14.754
5	0.0067	19.22

**Validation set(4,934 samples)**

Epoch No.	Training Loss	Accuracy(%)	F1_Score
1	2.307	9.93	0.018
2	2.302	10.7	0.0445
3	2.2043	14.8	0.07534
4	2.134	16.67	0.0822
5	2.012	15.56	0.0817

## 2) Learning rate : 0.001

**Training Set(19,451 samples)**

Epoch No.	Training Loss	Training Accuracy(%)
1	0.00953	9.23
2	0.006006	12.5
3	0.00672	15.6
4	0.003143	20.7
5	0.0152	27.56

**Validation set(4,934 samples)**

Epoch No.	Training Loss	Training Accuracy(%)	F1_Score
1	2.332	8.96	0.0023
2	2.3341	11.34	0.0162
3	2.2031	17.76	0.0115
4	2.02	16.97	0.0193
5	1.853	19.223	0.019903

### 3) Learning Rate(0.24)

**Training Set(16,164 samples)**

Epoch No.	Loss	Accuracy
1	0.0176	11.03
2	0.009067	12.22
3	0.00604	9.96
4	0.006001	15.7
5	0.00546	18.456

**Validation Set(4,042 samples)**

Epoch	Loss	Accuracy	F1_Score
1	2.412	9.99	0.0014
2	2.1343	9.977	0.0123
3	2.1134	14.67	0.0122
4	1.8912	14.73	0.0156
5	1.674	11.885	0.01377

### 3) Learning Rate(0.02)

**Training Set(16,164 samples)**

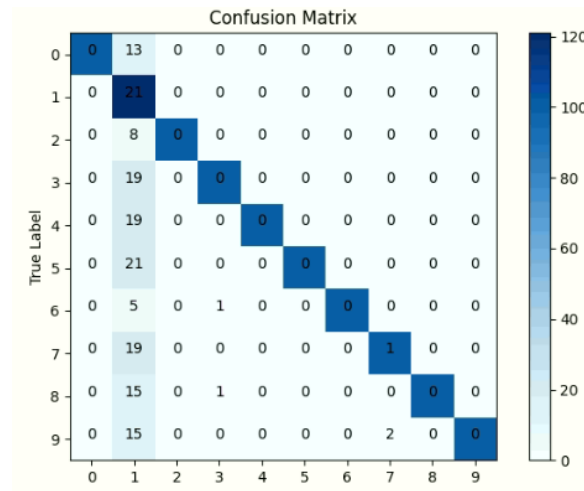
Epoch No.	Loss	Accuracy
1	0.0239	10.73
2	0.01196	19.518
3	0.00797	24.314
4	0.00598	26.30218
5	0.004784	35.308

**Validation Set(4,042 samples)**

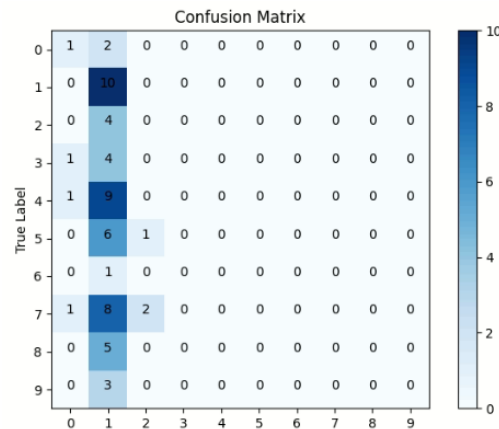
Epoch	Loss	Accuracy	F1_Score
1	2.412	9.99	0.0246
2	2.1343	9.977	0.0532
3	2.1134	14.67	0.135
4	1.8912	17.73	0.1432
5	1.674	15.885	0.1113

# Confusion Matrix :

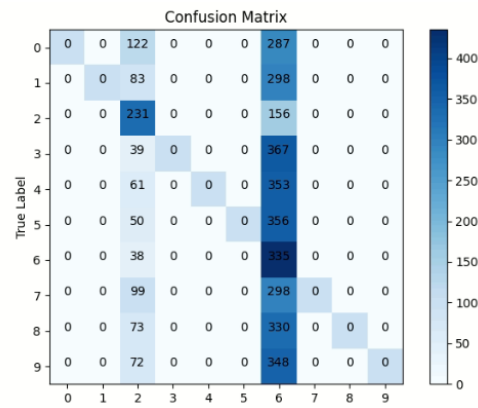
Confusion Matrix(lr = 0.001,epoch = 1,samples = 160)



Confusion Matrix(lr = 0.04,epoch = 1,samples = 62)

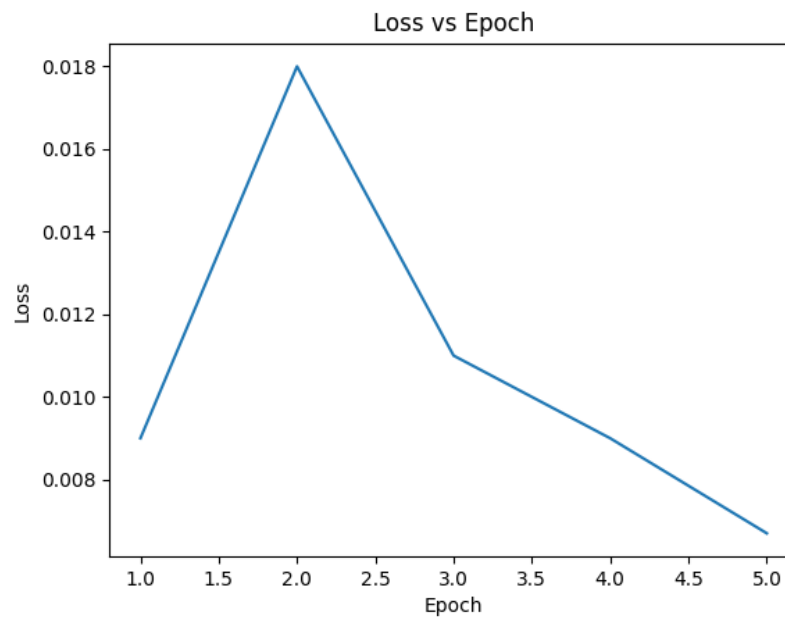
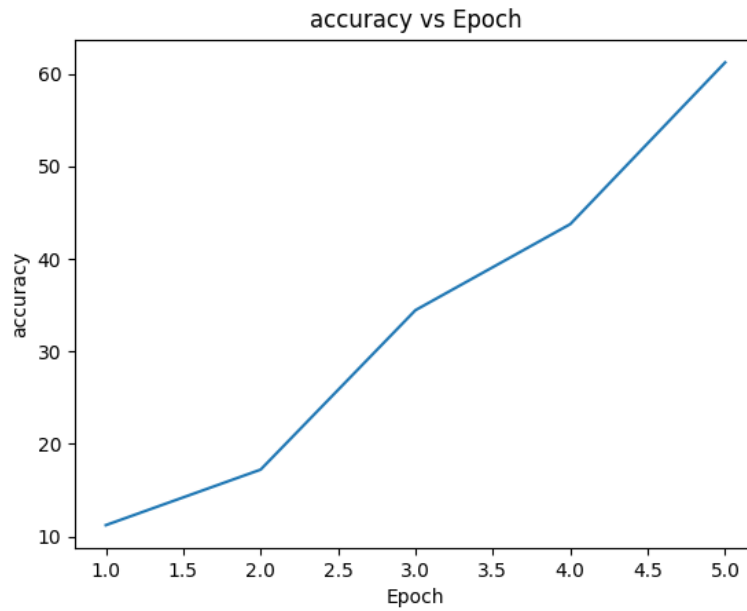


Confusion Matrix(lr = 0.002,epoch=5,samples = 3,996)

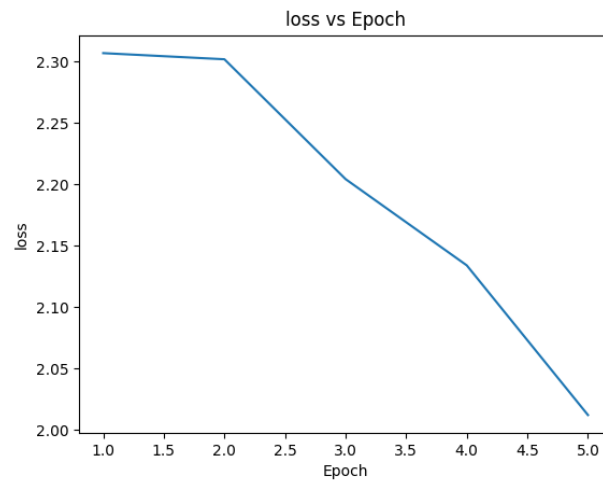
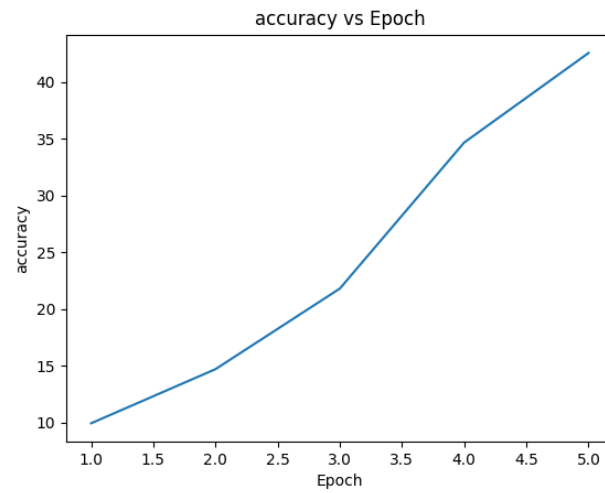
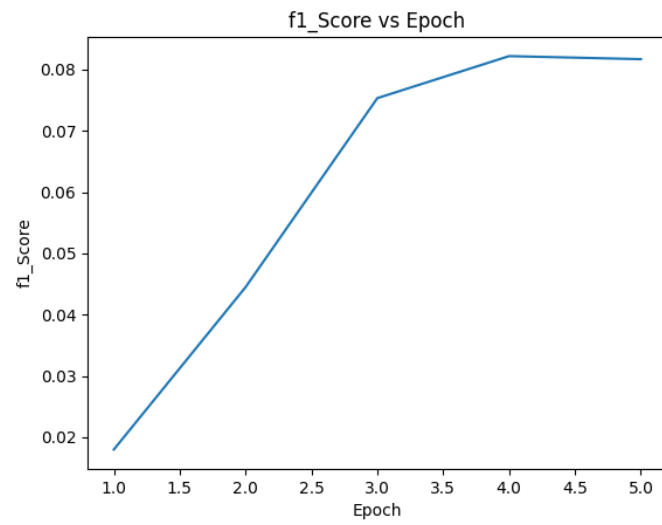


# Graphs

**LR(0.04)**

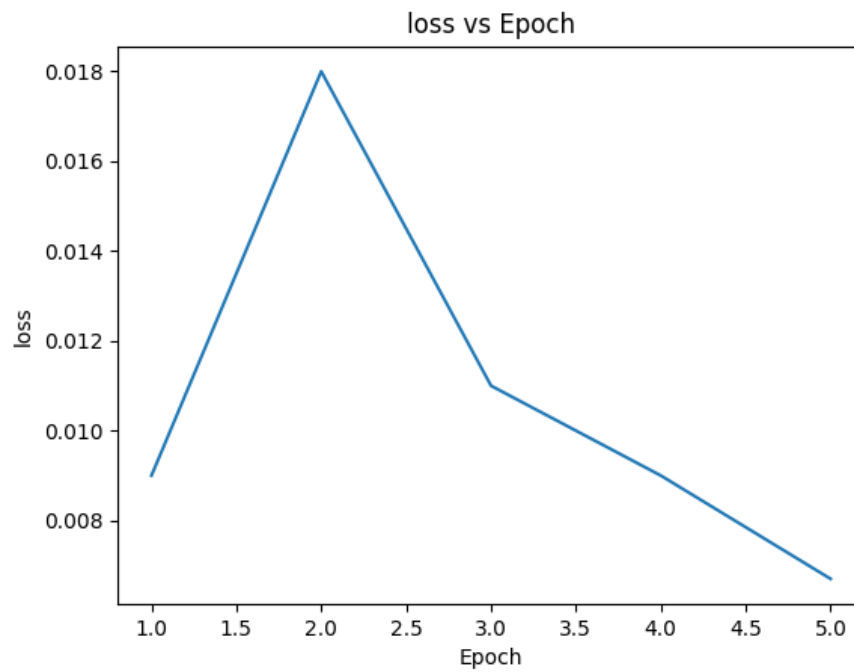
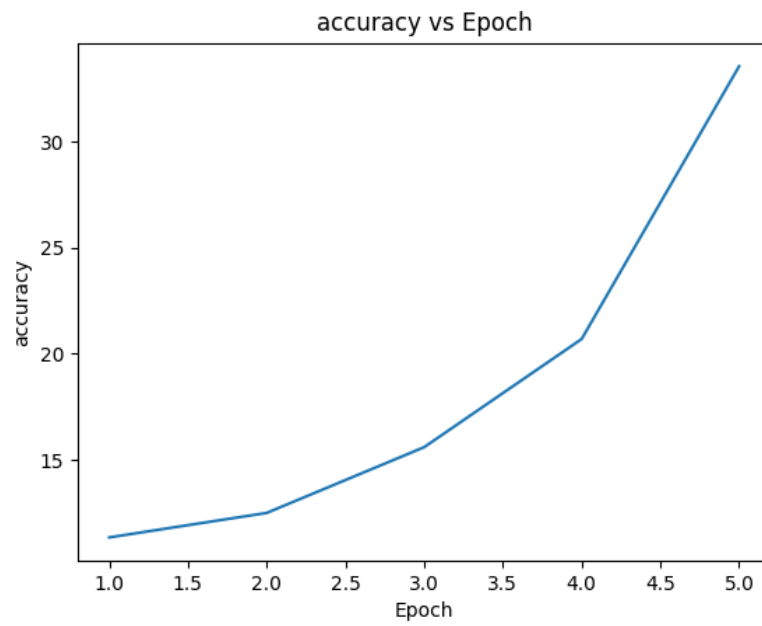


**Training Set**



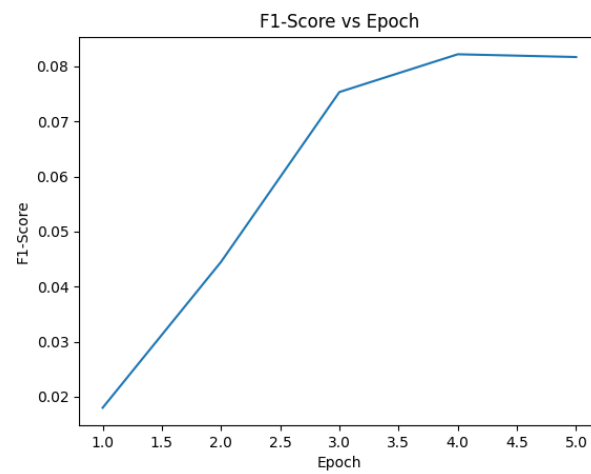
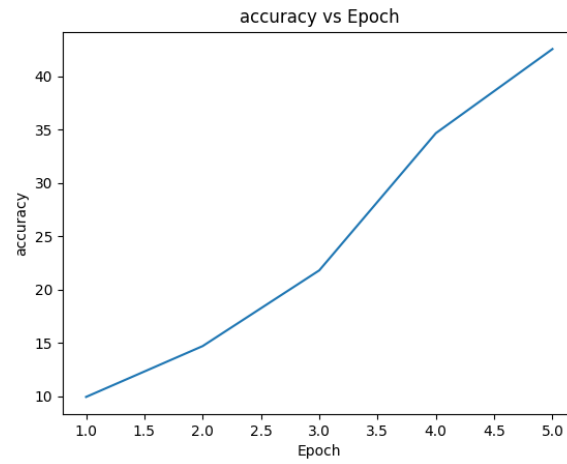
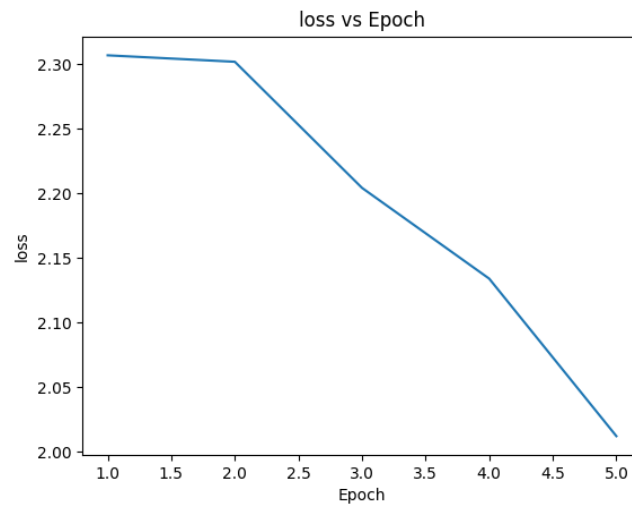
**Validation Set**

**LR(0.001):**



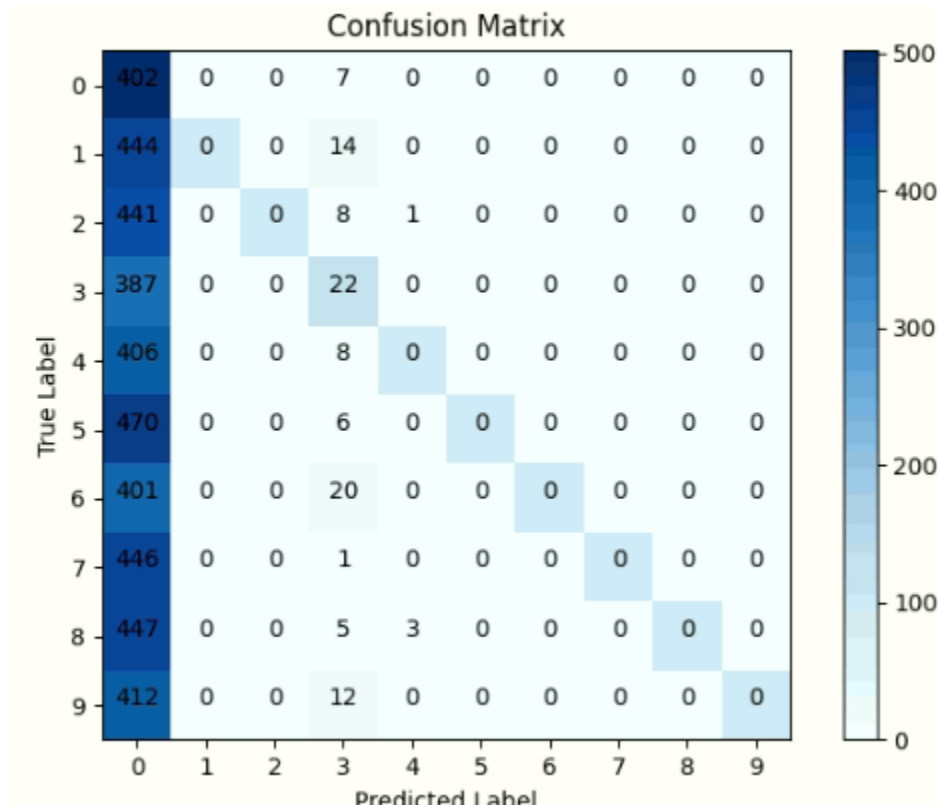
**Training Set**





**Validation Set**

### Independent Test on Best Model:(lr = 0.002)



(40% training-d)

**Metrics - Loss = 2.3002,Accuracy = 9.718%,F1\_score =0.0258**

**Discussion :** Due to limited memory access I only trained my models upto 5 epochs.But we can see from the result analysis, the accuracy tends to increase if I could run it for 50/60 epochs