TOPICS IN PATTERN RECOGNITION ASSIGNMENT 3

MANASVI AGGARWAL

SR NO. 16223
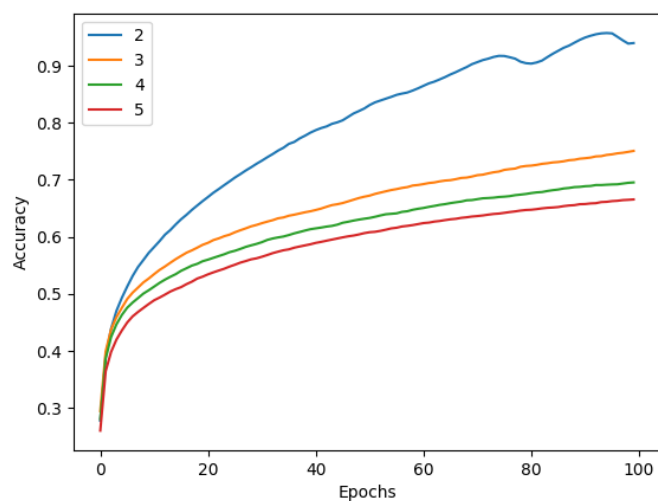
INSTRUCTIONS TO ADD MODEL TO THE DIRECTORY:
1) ADD fmnist folder and cifar1 folder(present in my repository) to the current working directory. These folders contain the model files. These files are necessary and required to restore the model and test the stored model on the test set.
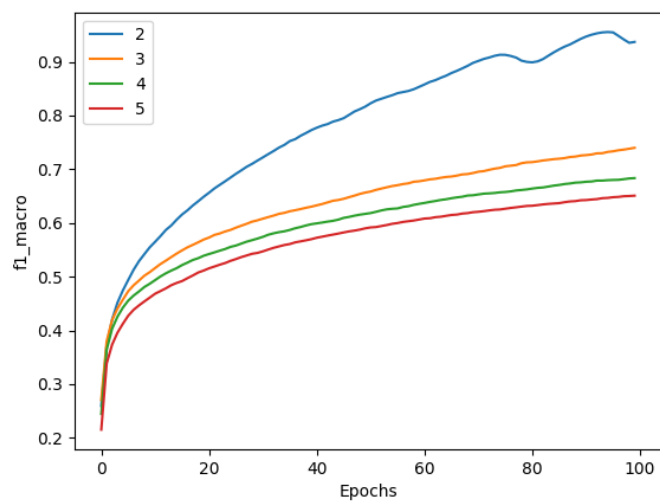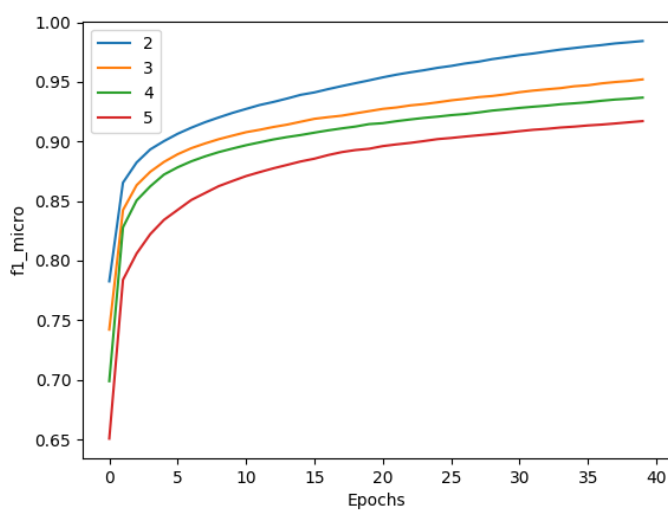
1 PART 1 CIFAR-10 DATASET:
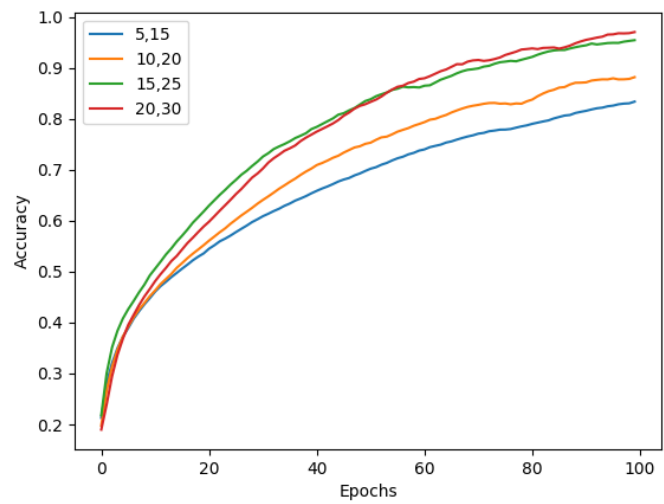
1.1 TASK 1:

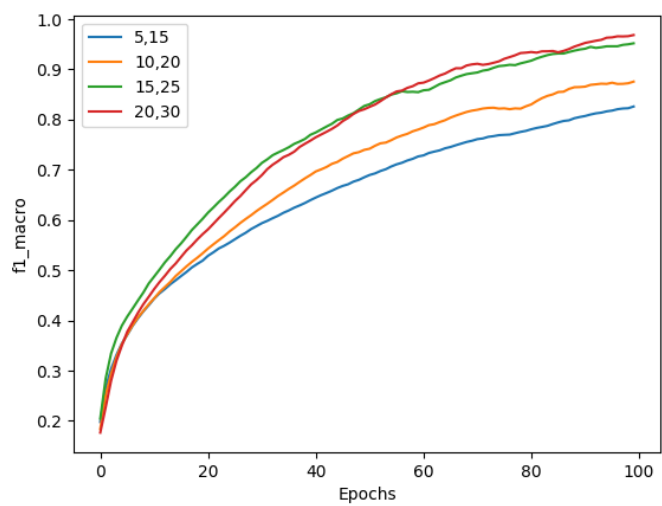DIFFERENT NUMBER OF LAYERS

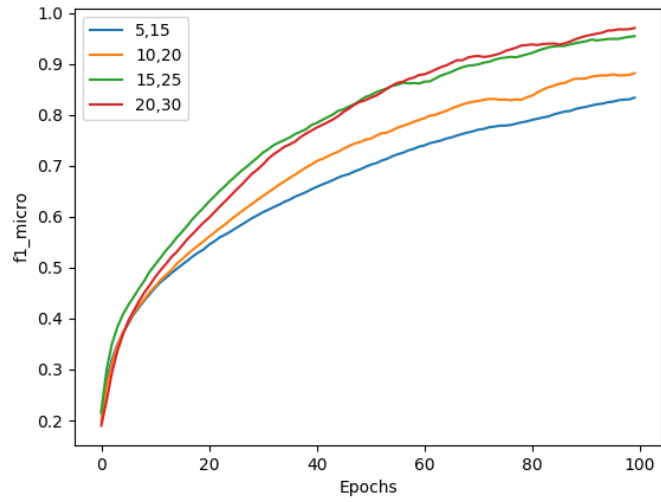
ACCURACY

F1-MACRO-SCORE

F1-MICRO-SCORE
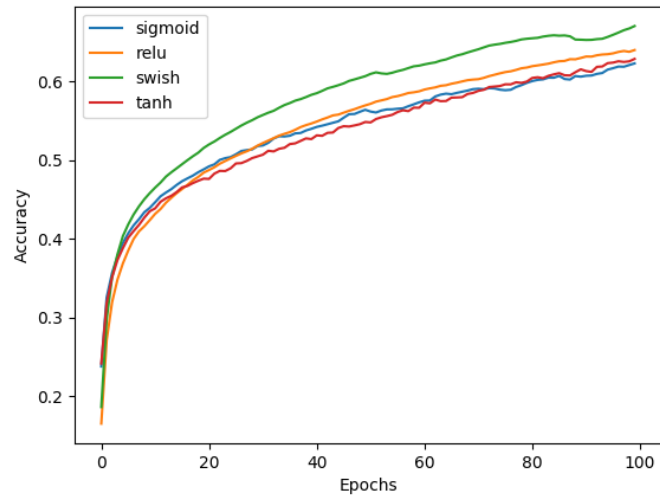
1.2 TASK 2:

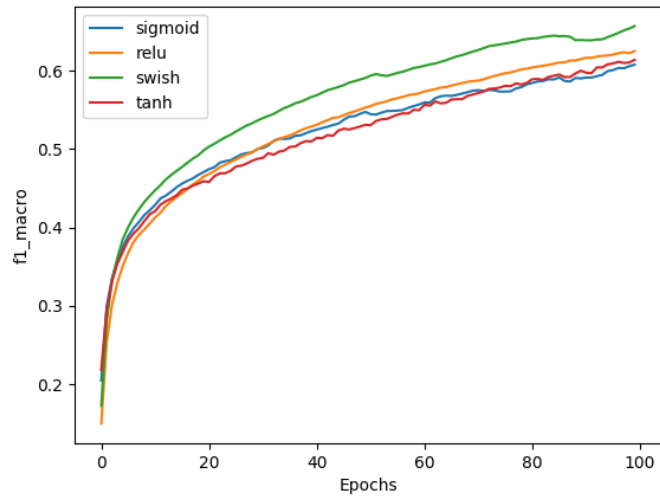VARYING NUMBER OF NEURONS

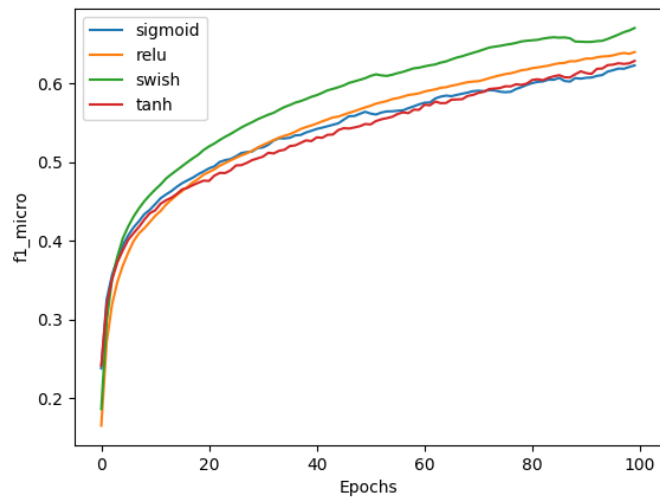ACCURACY

F1-MACRO-SCORE

F1-MICRO-SCORE

1.3 TASK 3:

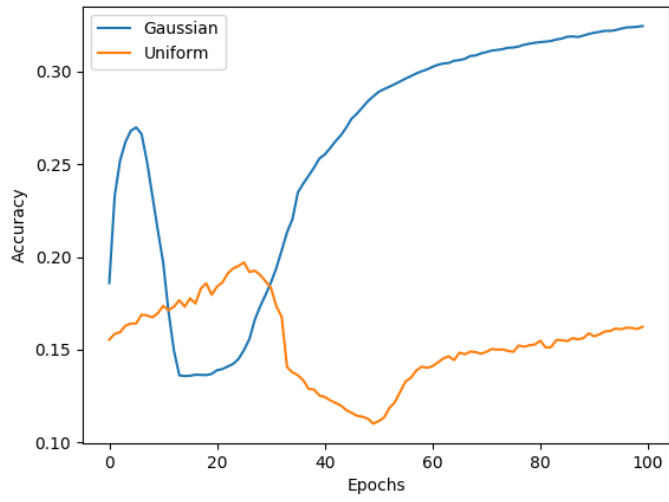VARYING ACTIVATION FUNCTIONS
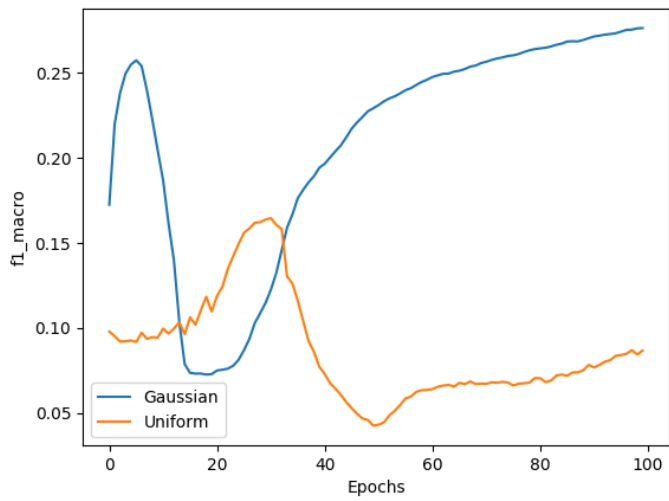

ACCURACY

F1-MACRO-SCORE
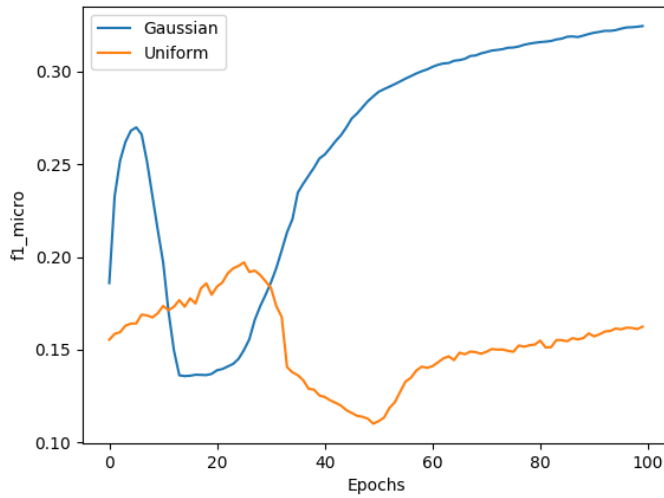

F1-MICRO-SCORE

1.4 TASK 4:

TESTING DIFFERENT INITIALIZATION

ACCURACY

F1-MACRO-SCORE

F1-MICRO-SCORE

1.5 TASK 5:

I have saved all the embedding and corresponding accuracies in the text files separately for every percent of train/test data as mentioned in question.

ACCURACY FOR 10% TRAIN-DATA: 38.3417
ACCURACY FOR 20% TRAIN-DATA: 38.950
ACCURACY FOR 30% TRAIN-DATA: 40.280
ACCURACY FOR 40% TRAIN-DATA: 43.9133
ACCURACY FOR 50% TRAIN-DATA: 43.724
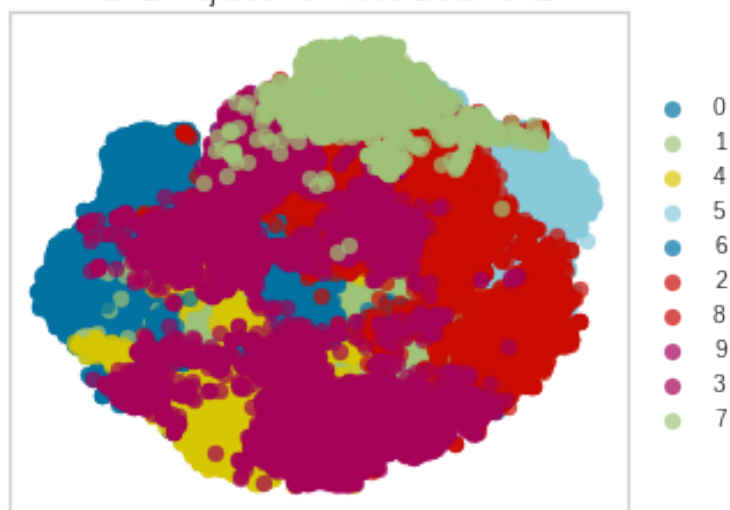
1.6 TASK 6:

FOR DIFFERENT PERCENT

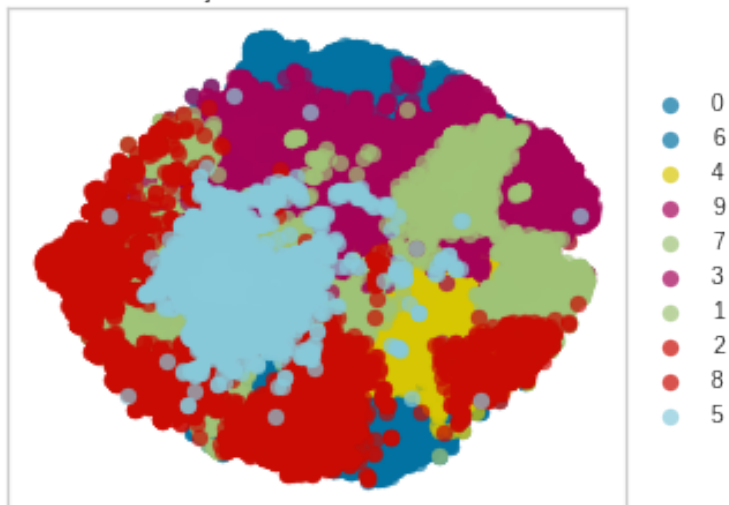TSNE Projection of 45000 Documents
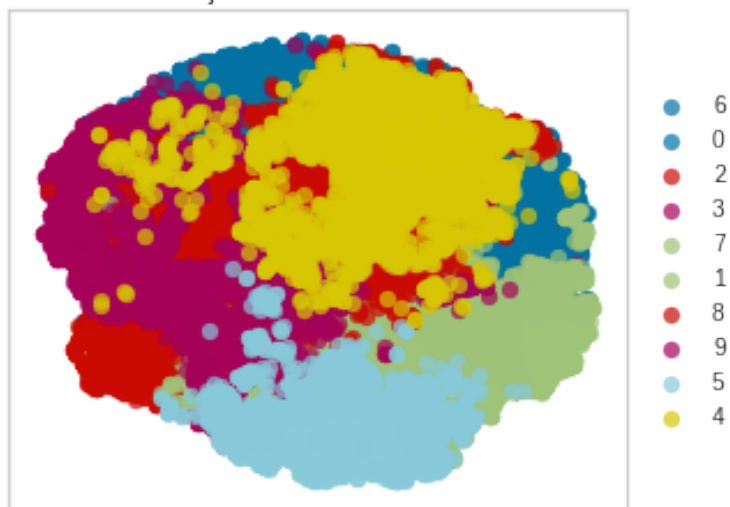
PERCENT: 10

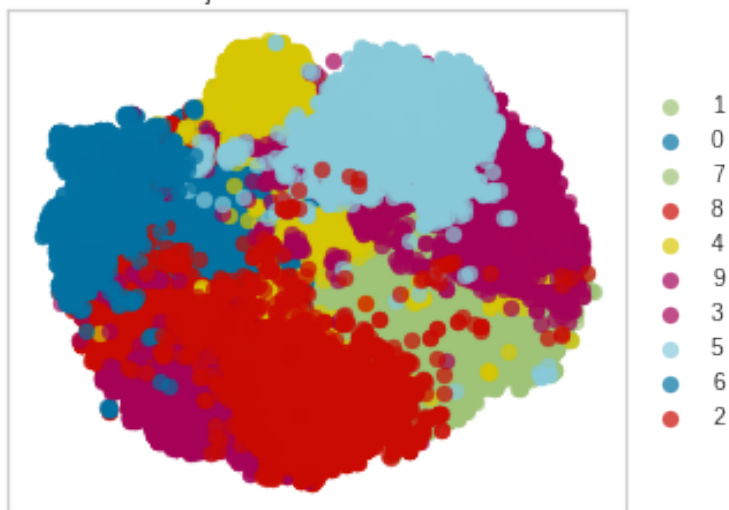TSNE Projection of 40000 Documents
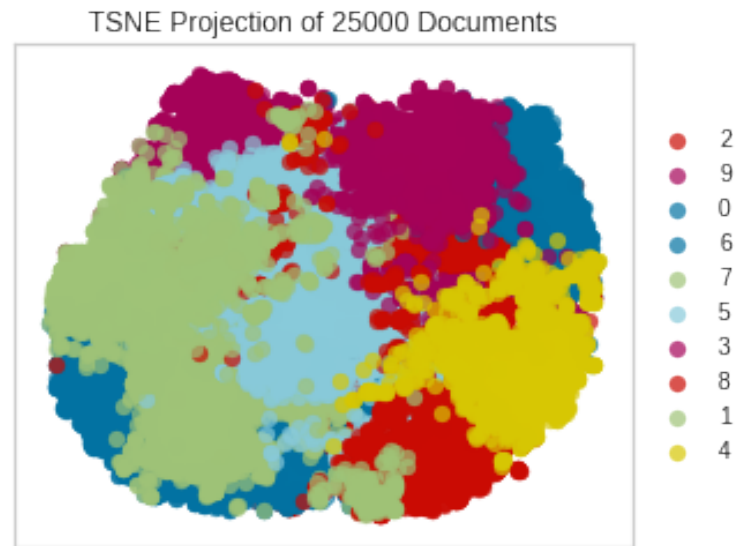

PERCENT: 20

8

TSNE Projection of 35000 Documents

PERCENT: 30

TSNE Projection of 30000 Documents
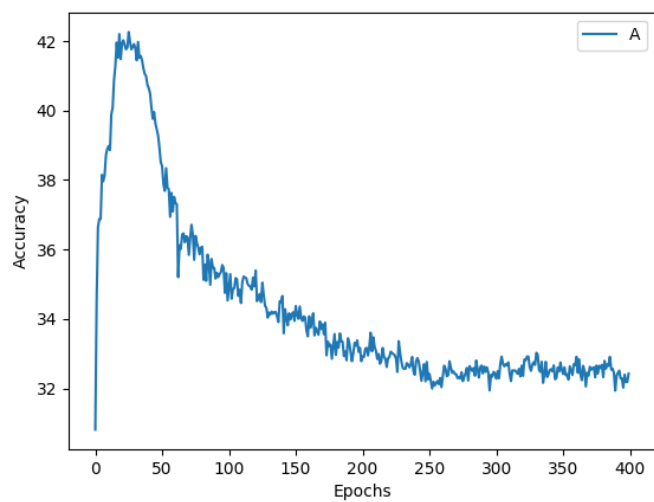

PERCENT: 40

TSNE Projection of 25000 Documents

PERCENT: 50

For CIFAR-10 dataset the data points are clustered in different clusters but not well separated and also clusters formed for FASHION-MNIST dataset are well separated and as we train our model on more and more data we see that clusters are more separated.
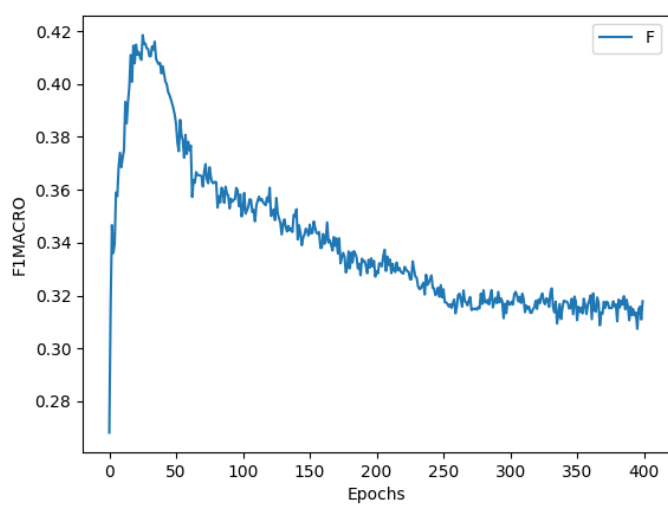
1.7 TASK 7:
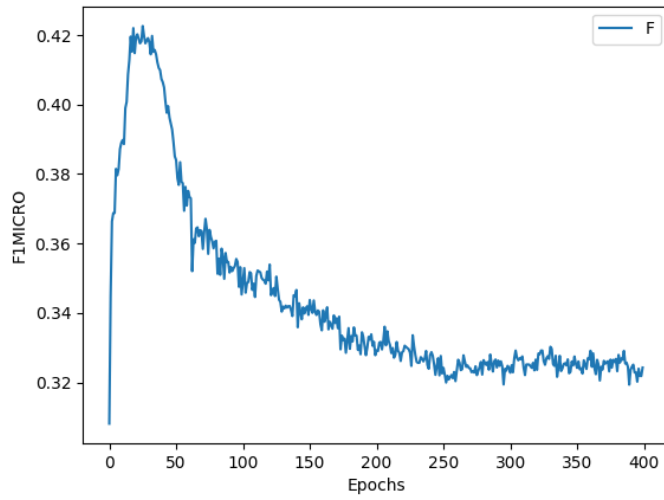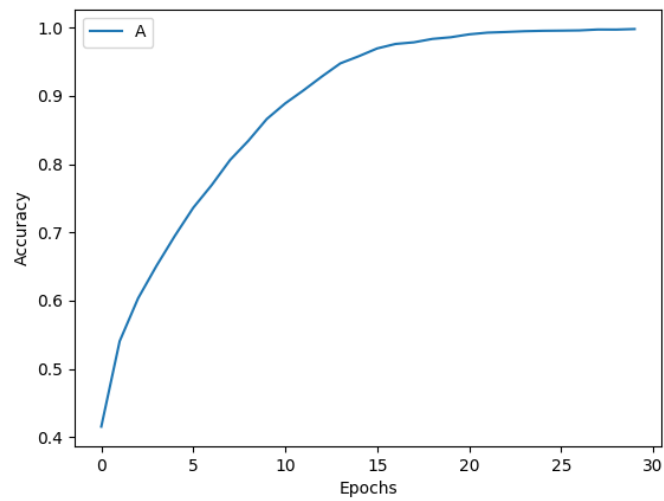
COMPARE OUR MLP AND OUR CNN

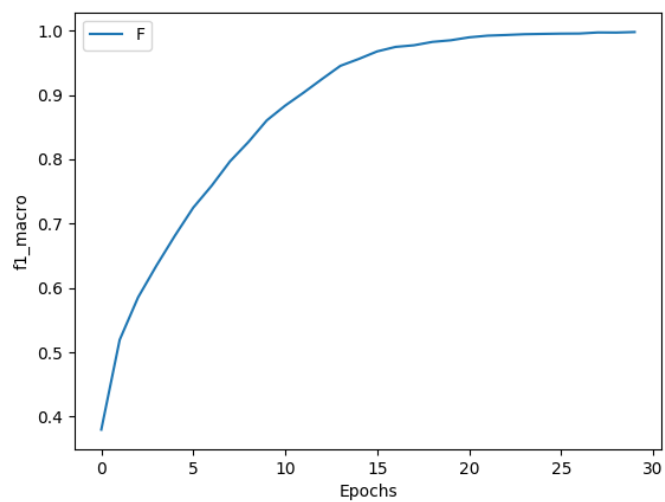1) MLP GRAPHS:
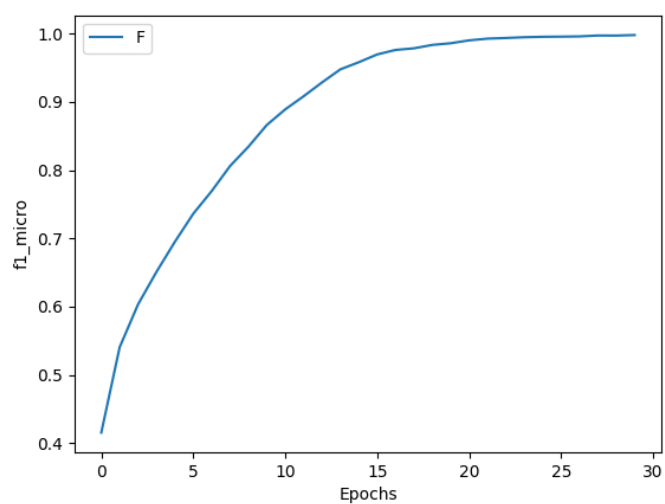
ACCURACY

F1-MACRO-SCORE

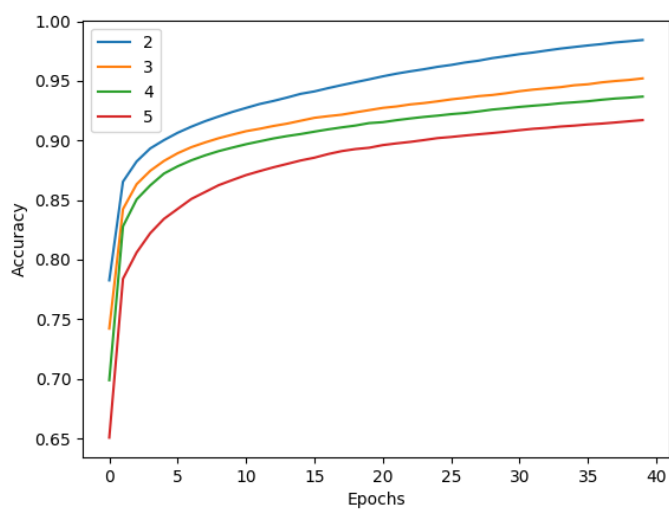F1-MICRO-SCORE

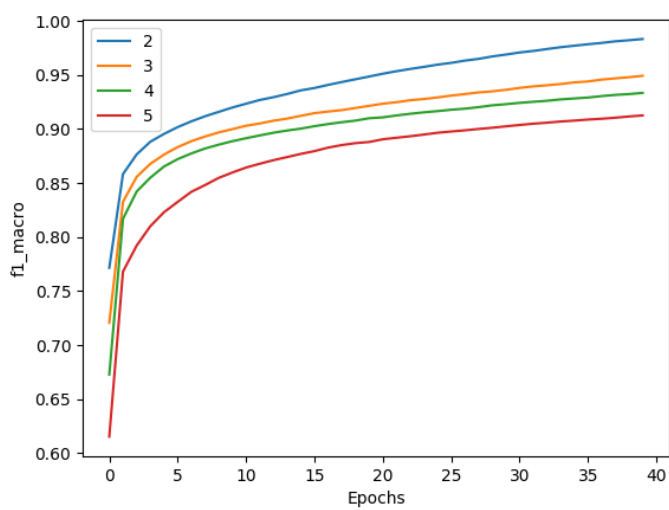2) CNN GRAPHS:

ACCURACY

F1-MACRO-SCORE

F1-MICRO-SCORE
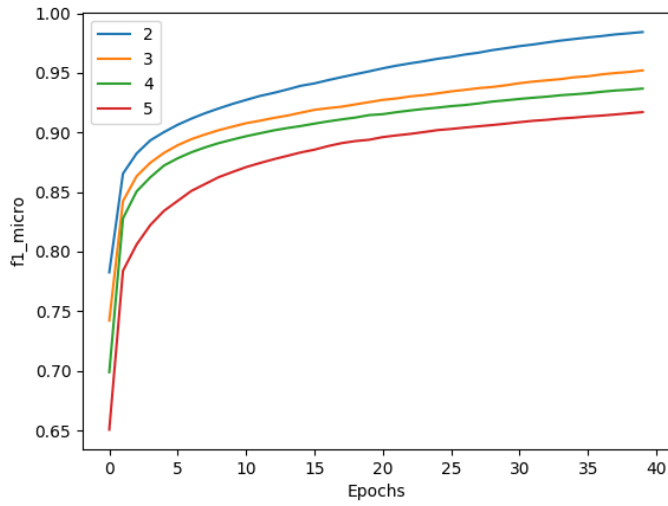
2 PART 2 FASHION-MNIST DATASET:

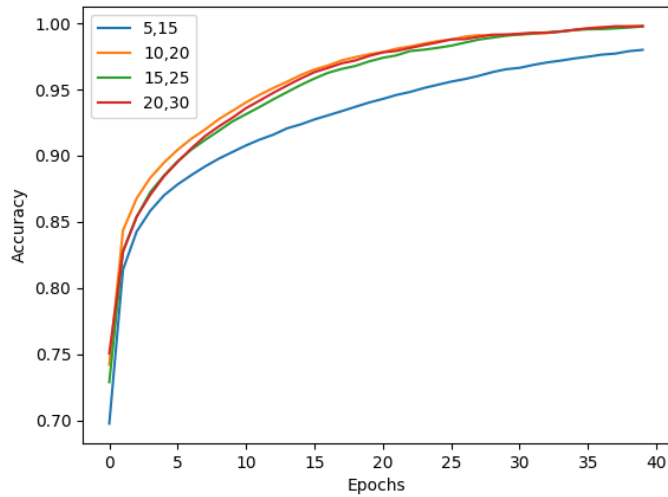## 2.1 TASK 1:

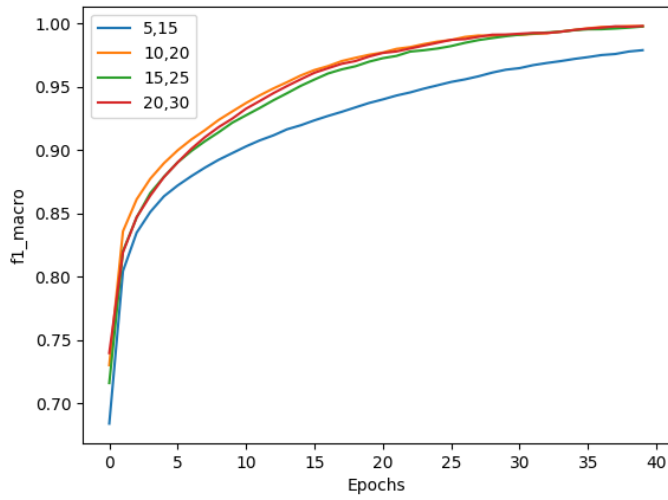DIFFERENT NUMBER OF LAYERS

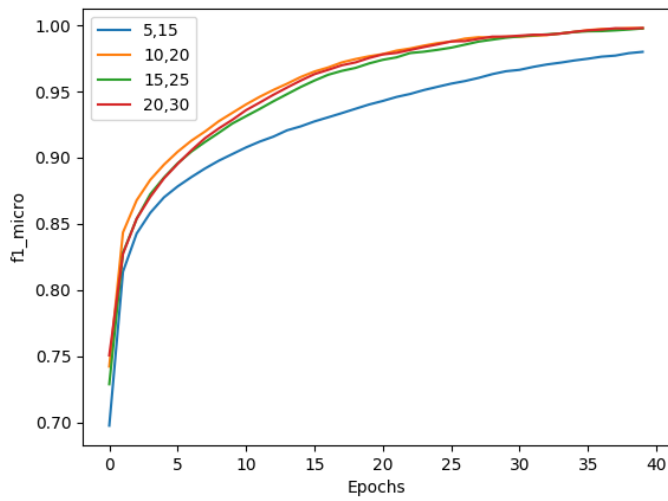ACCURACY

F1-MACRO-SCORE

14

F1-MICRO-SCORE

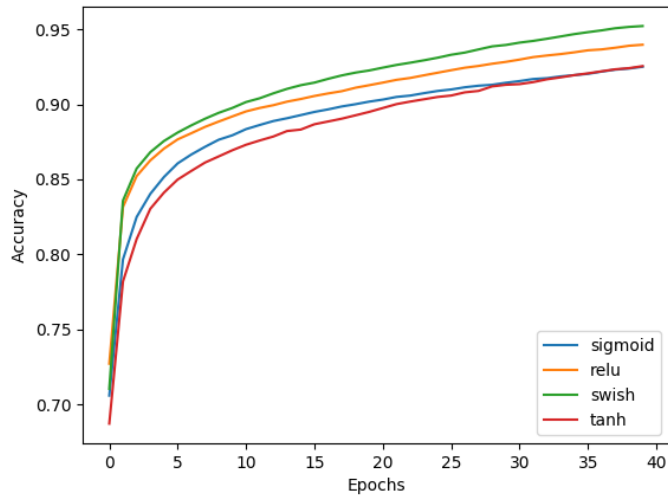## 2.2 TASK 2:

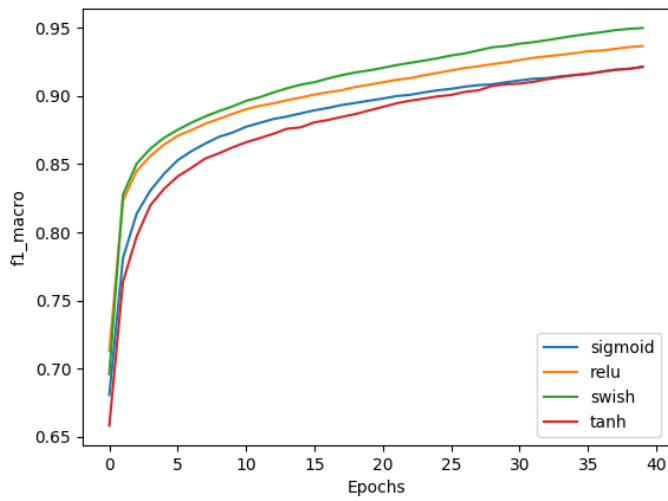VARYING NUMBER OF NEURONS

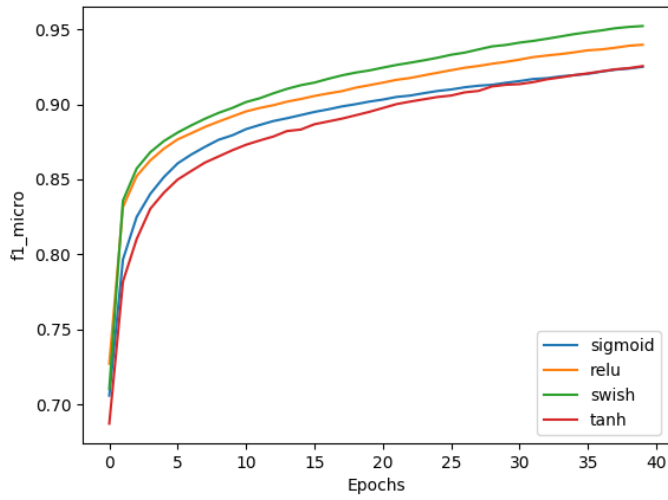ACCURACY

F1-MACRO-SCORE

F1-MICRO-SCORE

2.3 TASK 3:

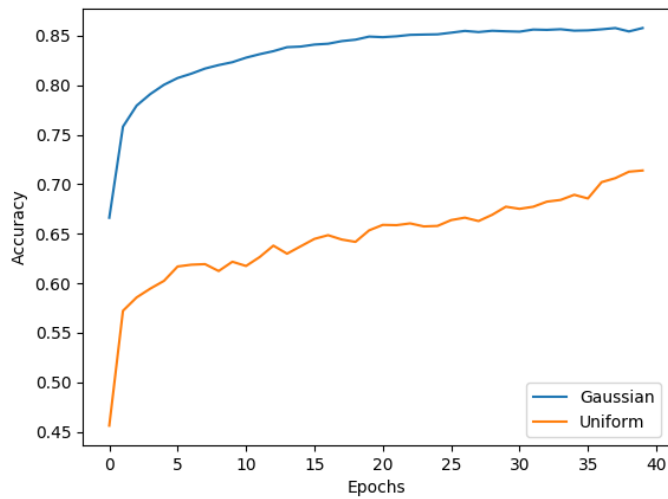VARYING ACTIVATION FUNCTIONS

ACCURACY
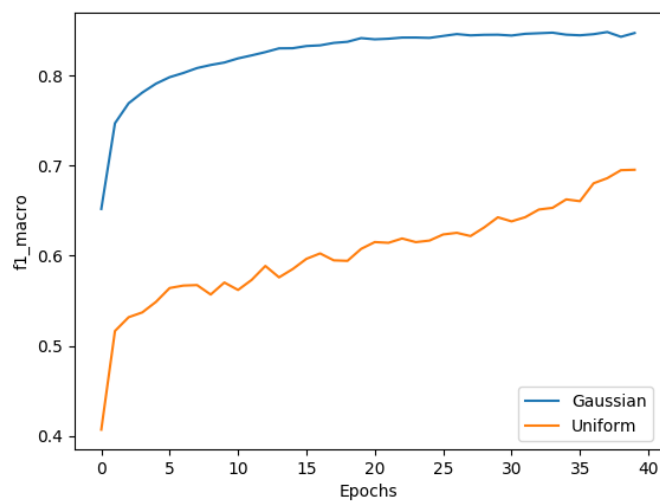

F1-MACRO-SCORE

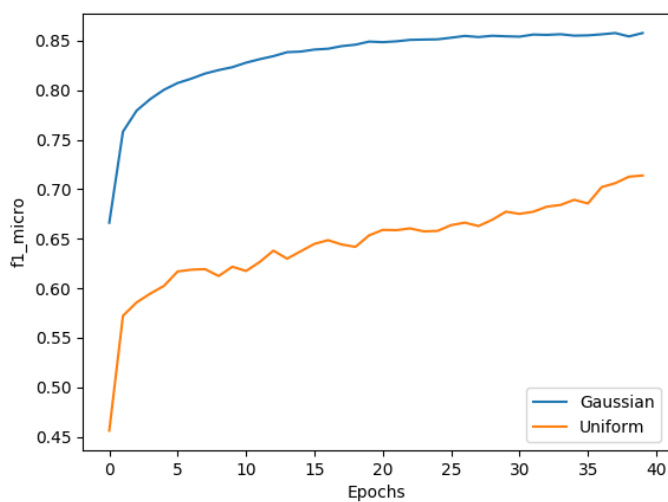F1-MICRO-SCORE

2.4 TASK 4:

TESTING DIFFERENT INITIALIZATION


ACCURACY

F1-MACRO-SCORE

F1-MICRO-SCORE

2.5   TASK 5:

I have saved all the embedding and corresponding accuracies in the text files
separately for every percent of train/test data as mentioned in question.

ACCURACY FOR 10% TRAIN-DATA: 88.7865
ACCURACY FOR 20% TRAIN-DATA: 87.8854
ACCURACY FOR 30% TRAIN-DATA: 88.4190
ACCURACY FOR 40% TRAIN-DATA: 88.2333
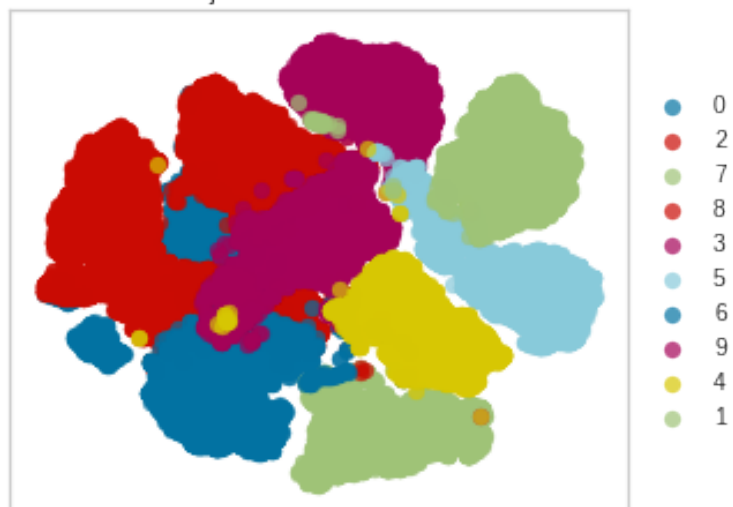ACCURACY FOR 50% TRAIN-DATA: 83.9081

2.6   TASK 6:

FOR DIFFERENT PERCENT

TSNE Projection of 54000 Documents
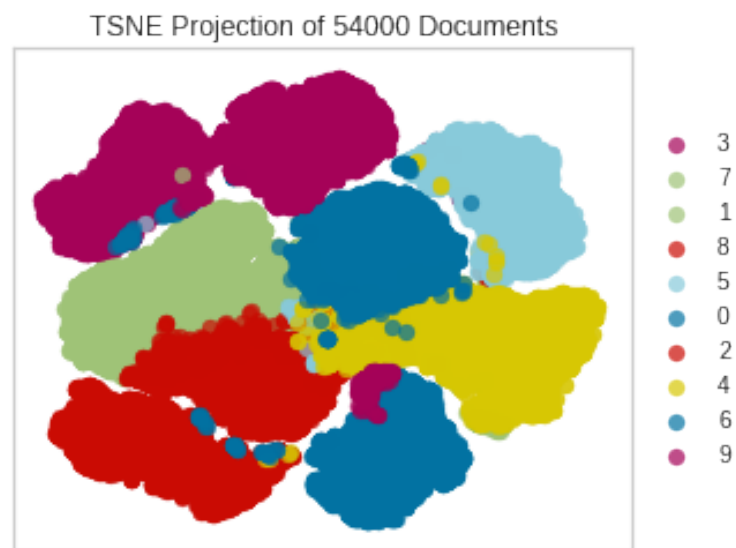
PERCENT: 10

TSNE Projection of 48000 Documents

PERCENT: 20

TSNE Projection of 42000 Documents

PERCENT: 30

TSNE Projection of 36000 Documents

PERCENT: 40

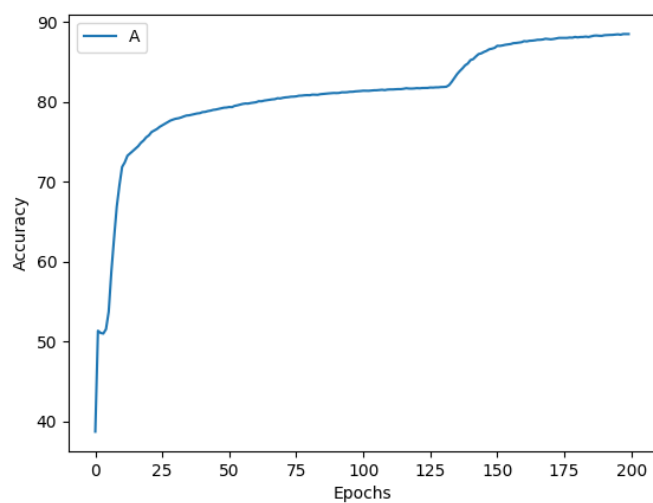TSNE Projection of 30000 Documents

PERCENT: 50

For FASHION-MNIST dataset the data points are clustered in different clusters as expected and as we train our model on more and more data we see that clusters are more separated.
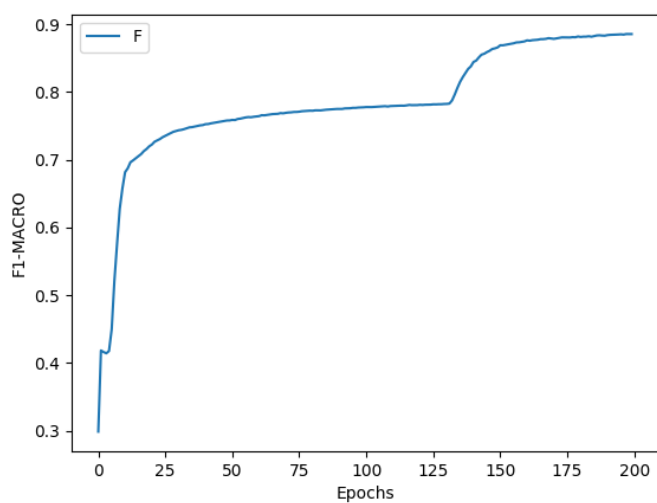
2.7 TASK 7:
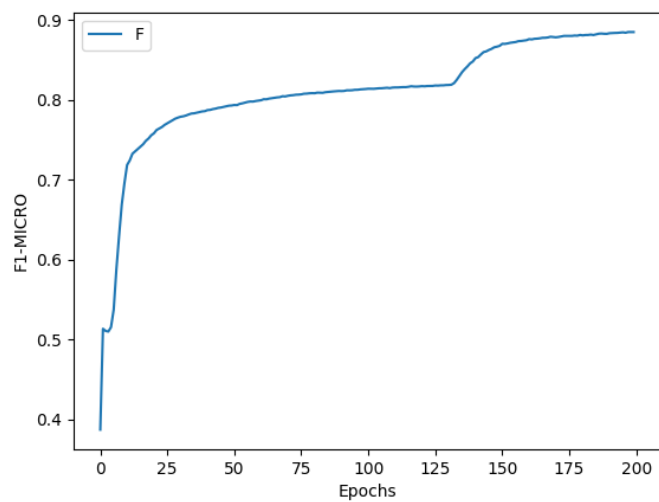
COMPARE OUR MLP AND OUR CNN
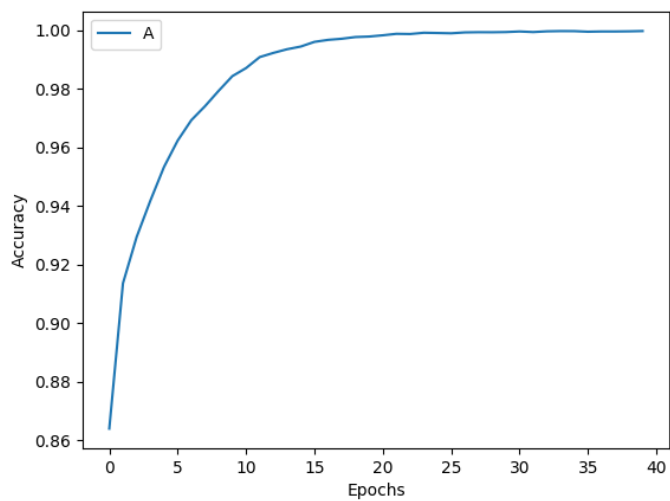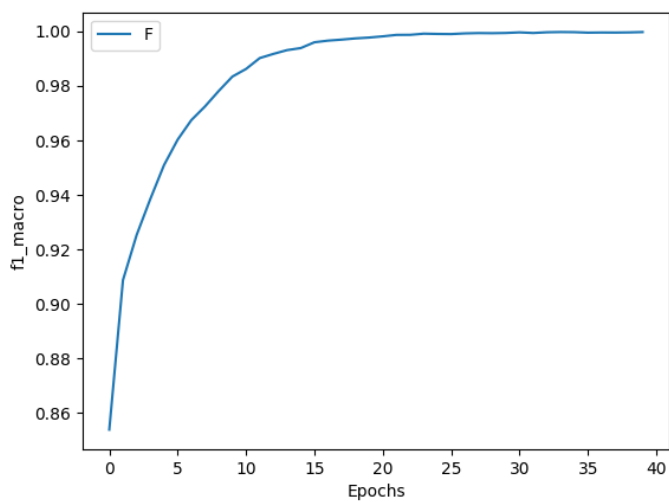
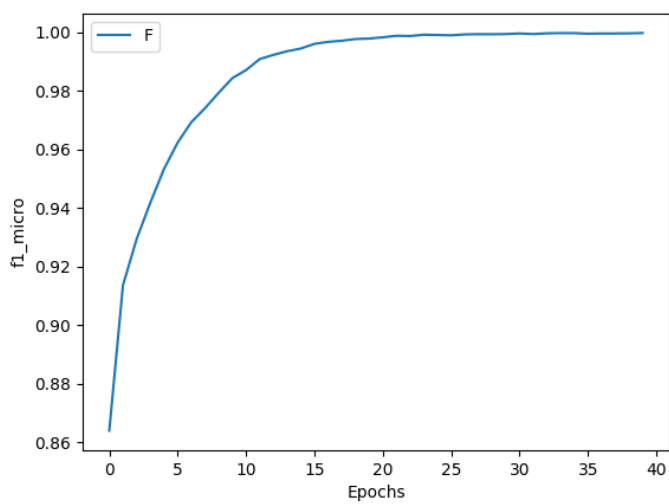1) MLP GRAPHS:

ACCURACY

F1-MACRO-SCORE

F1-MICRO-SCORE

2) CNN GRAPHS:

ACCURACY

F1-MACRO-SCORE

F1-MICRO-SCORE