Assignment-4
Roll No-2022201046

Elmo Model:
ELMo is a novel way to represent words in vectors or embeddings. These word embeddings are helpful in achieving state-of-the-art (SOTA) results in several NLP tasks
Dataset used:

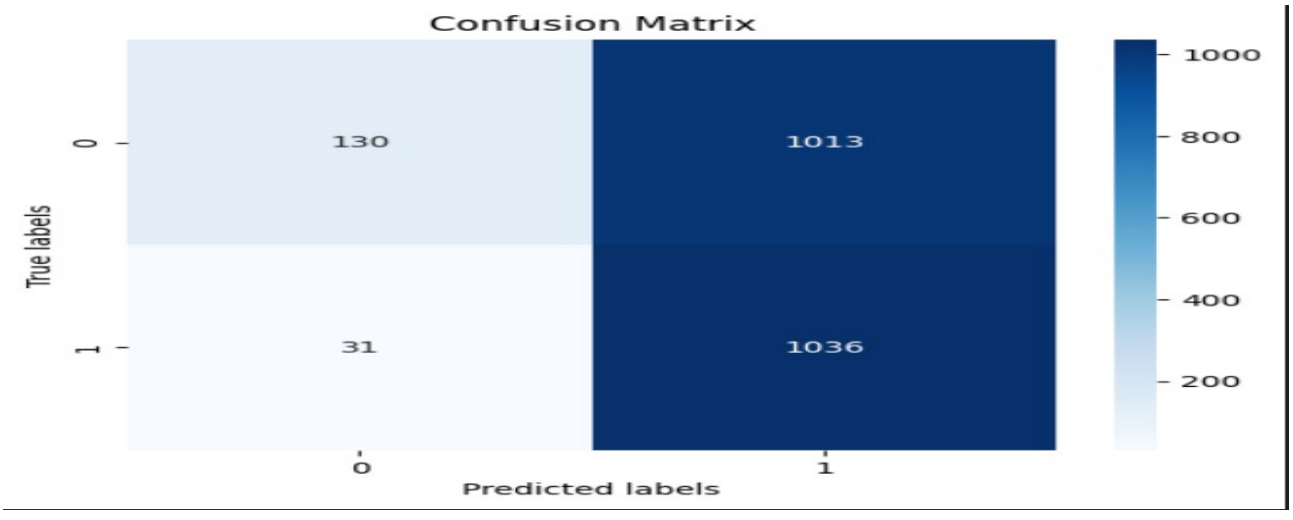
- Sentiment Analysis:
  Stanford Sentiment Treebank (https://huggingface.co/datasets/sst)
- Natural Language Inference:
  multi-Genre NLI Corpus (https://huggingface.co/datasets/multi_nli)

Elmo-SST:

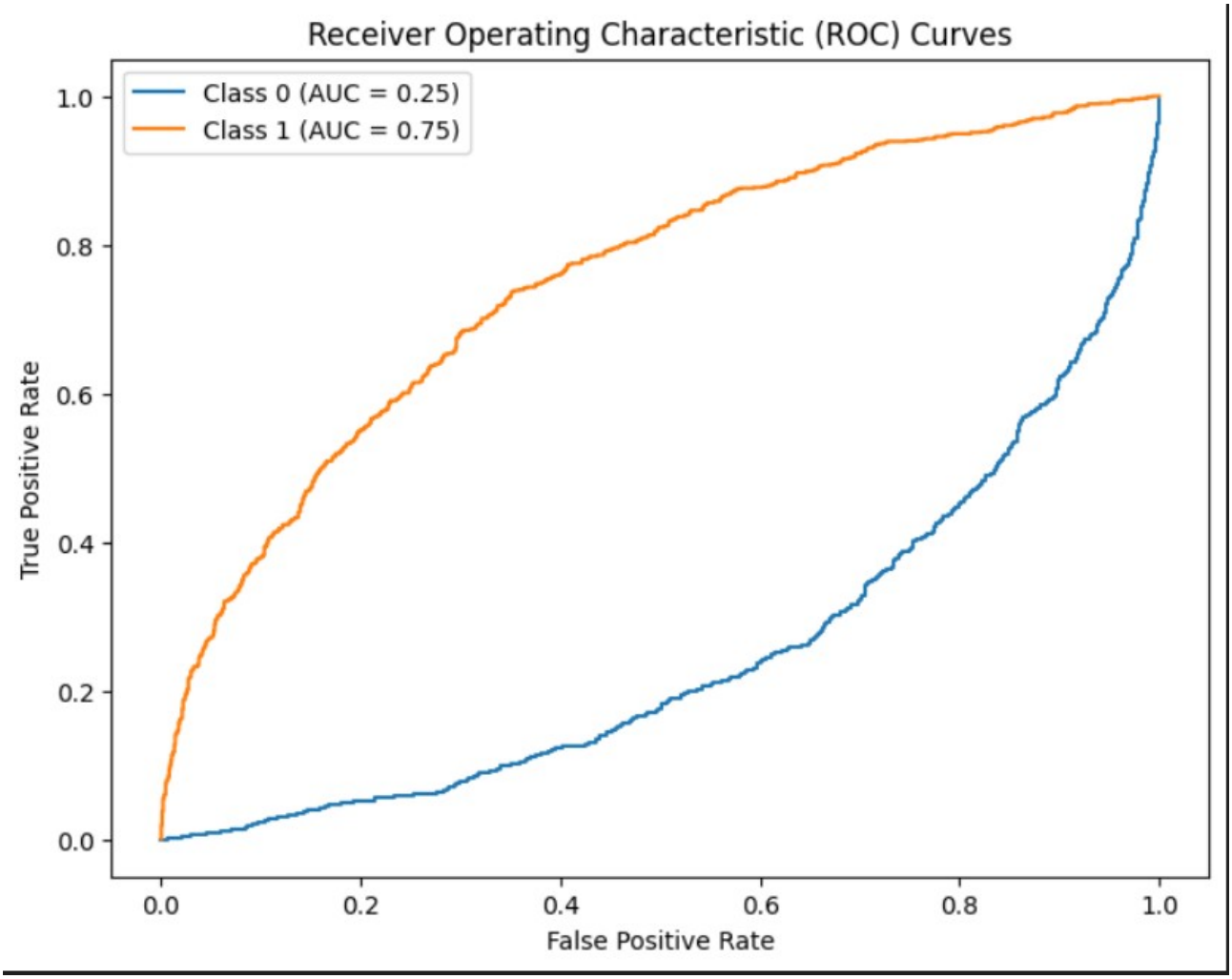
Build the Elmo model using pytorch. It should
contain a 2 layered stacked Bi-LSTM each of which gives the embedding for a word in a sentence, and a trainable parameter for weighing the word embeddings obtained at each layer of the ELMo network. Use GloVe or FastText or word2vec as pre-trained static embeddings followed by an Elmo embedding layer which will be trained as a part of the model.

Analysis of SST model:-

	precision	recall	f1-score	support
0	0.81	0.11	0.20	1143
1	0.51	0.97	0.66	1067
accuracy			0.53	2210
macro avg	0.66	0.54	0.43	2210
weighted avg	0.66	0.53	0.42	2210



ROC for SST model:

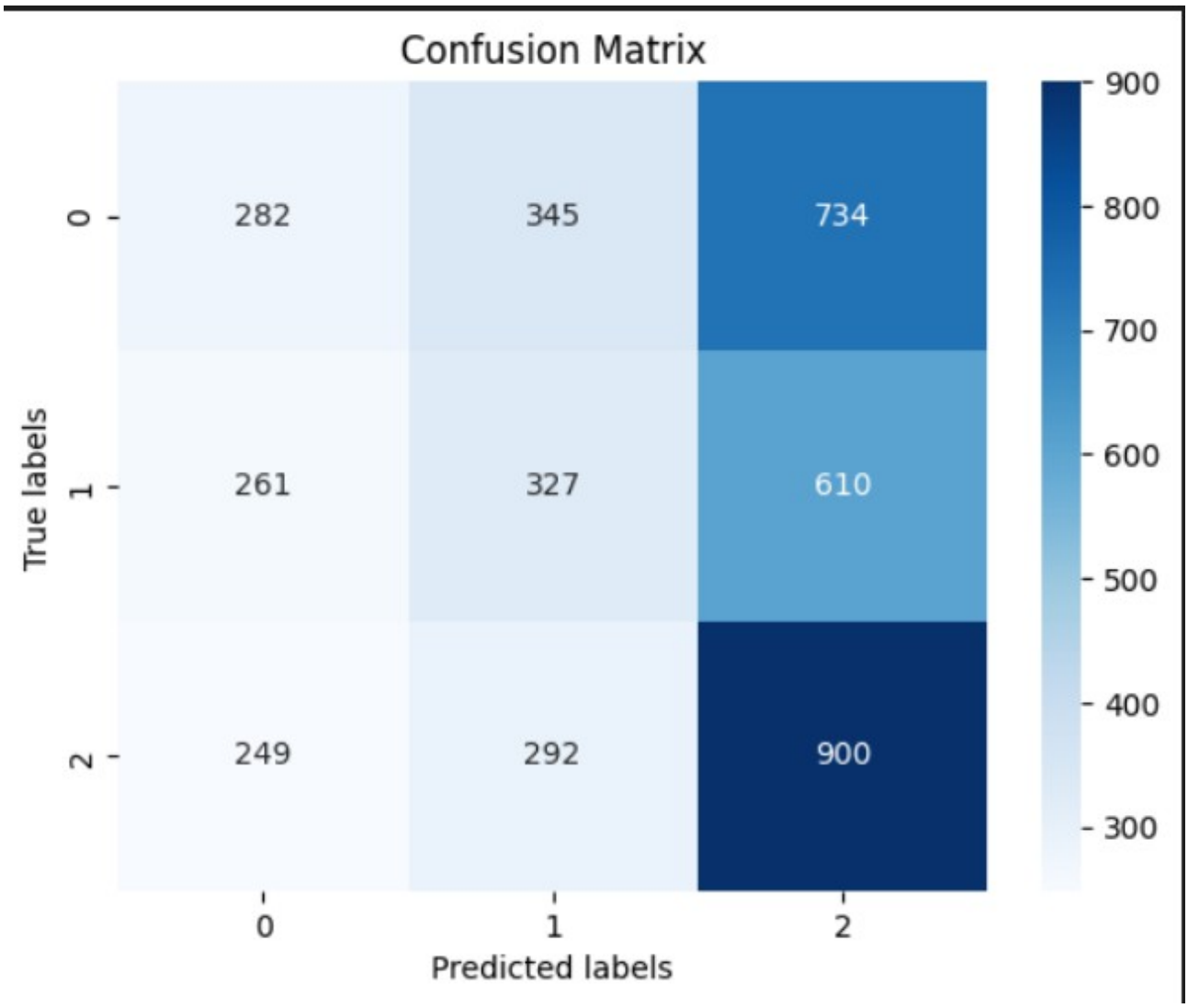


NLI Dataset:

Training dataset for Hypothesis and Premise of NLI dataset. Same model is used to train for Premise.

Analyis of NLI model :-

	precision	recall	f1-score	support
0	0.36	0.21	0.26	1361
1	0.34	0.27	0.30	1198
2	0.40	0.62	0.49	1441
accuracy			0.38	4000
macro avg	0.37	0.37	0.35	4000
weighted avg	0.37	0.38	0.36	4000



ACCURACIES:-

Accuracy on SST test dataset: 53%
Accuracy on MNLI test dataset: 38%