INDIAN INSTITUTE OF TECHNOLOGY DELHI

COL 774
Machine Learning
Assignment 5

Abstract

Machine Learning models based on CNN and RNN architectures

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Non-Competitive

CNN

```
Time taken to run 6 epochs = 684 seconds
Train set accuracy = 0.334
Test set accuracy = 0.146
```

RNN

```
Time taken to run 50 epochs = 71 seconds
Train set accuracy = 0.917719298245614
Test set accuracy = 0.4149122807017544
```

Competitive

For competitive part we tried to combine a classifier for image and a classifier for text at the logits level.

Text classifiers

1. Basic RNN
2. Bert Base Uncased Bert Base Cased
3. Bert Large Uncased

Image classifiers

1. Basic CNN
2. Efficient Net VIT Base
3. VIT Large

We decided to use Bert Large Uncased with VIT Base. Combined the output of both at logits level. Tu tune the model we ran many epochs with manually changing learning rates roughly from 10^{-5} to 10^{7} between successive epochs. Due to the large sizes to Bert and VIT, the batch size reduced too much. To compensate that, we used gradient accumulation technique. While training, each epoch took around 18 mins. and trained for 3 epochs. We obtained an accuracy of 65.176 on test data.