Deep Learning Assignment - 2

Report

Question 1.

This is the Link for the question 1 (Link)

Dataset Details: provided a DATASET, which contains pairs of the words (x,y) i.e. akhbaar अख़बार in which the first word is a Latin word(words we usually type while chatting with friends in WhatsApp) and the second word is its corresponding word in native script.
As given in the snippets down the report:

	Hindi	English	Index
0	अं	an	3
1	अंकगणित	ankganit	3
2	अंकल	uncle	4
3	अंकुर	ankur	4
4	अंकुरण	ankuran	3

	Hindi	English	Index
0	अंक	ank	5
1	अंक	anka	1
2	अंकित	ankit	3
3	अंकों	anakon	1
4	अंकों	ankhon	1

	Hindi	English	Index
0	अंकन	ankan	3
1	अंगकोर	angkor	3
2	अंगिरा	angira	3
3	अंगीठी	angithi	3
4	अंग्रेज	angrej	3

Fig: for training data for testing data for validation data

Preprocessing Phase :

- **Tokenization:** for the tokenization we are using the pytorch library and it's function for applying it , there are some snippets of the tokenized words as given below

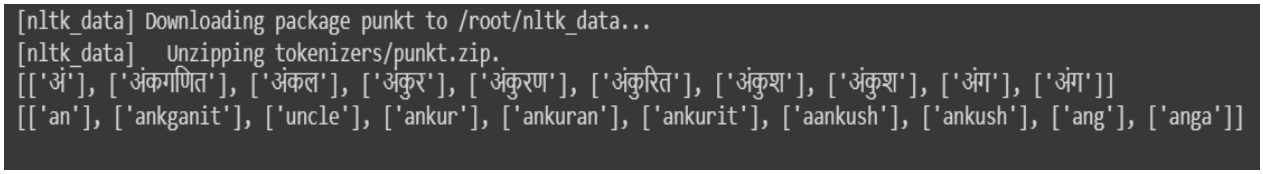


Fig: for the training dataset

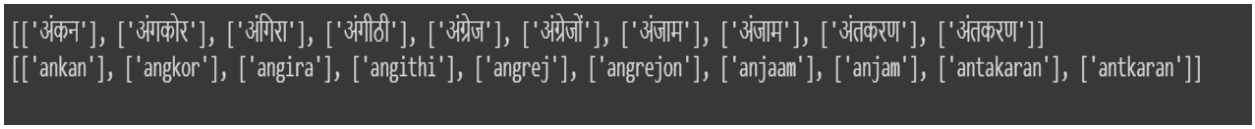


Fig: for the validation dataset

- **Vocabulary Making** : for making the vocabulary we are using the library of collection and pointing out the unique words for making the vocabulary
  For training dataset we are making the vocabulary as given below:

And for the hindi part vocabulary:

After defining the Seq2Seq model with the Encoder and Decoder for the LSTM model . we are giving the parameters and hyperparameter to the model as given below:

- Number of Epoch = 10
- Learning rate = 0.001
- Batch size = 64
- Encoder and decoder dropout ratio = 0.5

The hyperparameters given in the question is given below

(i) Input embedding size: 64

(ii) number of encoder layers: 3
(iii) number of decoder layers: 3
(iv) hidden layer size: 64

After this I defined the Seq2Seq model with the Encoder and Decoder for the LSTM model with the attention Layer we are giving the parameters and hyperparameter to the model as given below:

- Number of Epoch = 10
- Learning rate = 0.001
- Batch size = 64
- Encoder and decoder dropout ratio = 0.5

The hyperparameters given in the question is given below
(i) Input embedding size: 64
(ii) number of encoder layers: 3
(iii) number of decoder layers: 3
(iv) hidden layer size: 64

Question 2.

This is the Link for the question 1 (Link)

Dataset Details: The dataset you have been given is Individual household electric power consumption dataset.
Global active power is a target variable for the prediction and the other entities are feature vectors. The snippet for this dataset detail is given below :

dt	Global_active_power	Global_reactive_power	Voltage	Global_intensity	Sub_metering_1	Sub_metering_2	Sub_metering_3
2006-12-16 17:24:00	4.216	0.418	234.84	18.4	0.0	1.0	17.0
2006-12-16 17:25:00	5.360	0.436	233.63	23.0	0.0	1.0	16.0
2006-12-16 17:26:00	5.374	0.498	233.29	23.0	0.0	2.0	17.0
2006-12-16 17:27:00	5.388	0.502	233.74	23.0	0.0	1.0	17.0
2006-12-16 17:28:00	3.666	0.528	235.68	15.8	0.0	1.0	17.0

We are using the LSTM for predicting the Global active power by using the different set of train and test split , which is given below :

- **For Split the dataset into train and test (80:20) :** we are using the different hyperparameters and parameters for training the LSTM model , and this information is given below:

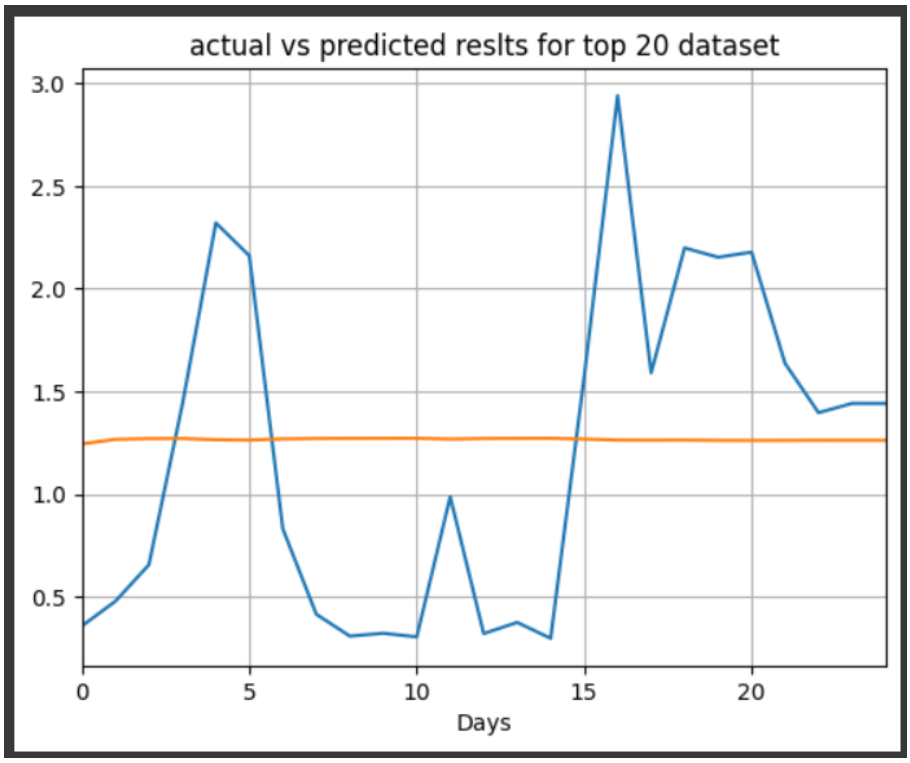
  Input size = 7
  Output size = 1
  Hidden layer size is = 100

  We are using the Mean Square Error Loss

  Using the Adam Optimizer with Learning rate = 0.001

  Number of Epoch = 15

  Using the above information we are able to draw a diagram of the prediction which is given below



- **For Split the dataset into train and test (70:30) :** we are using the different hyperparameters and parameters for training the LSTM model , and this information is given below:

  Input size = 7
  Output size = 1
  Hidden layer size is = 100

  We are using the Mean Square Error Loss

  Using the Adam Optimizer with Learning rate = 0.001

  Number of Epoch = 15

Using the above information we are able to draw a diagram of the prediction which is given below