

# REPORT

## INLP ASSIGNMENT 2

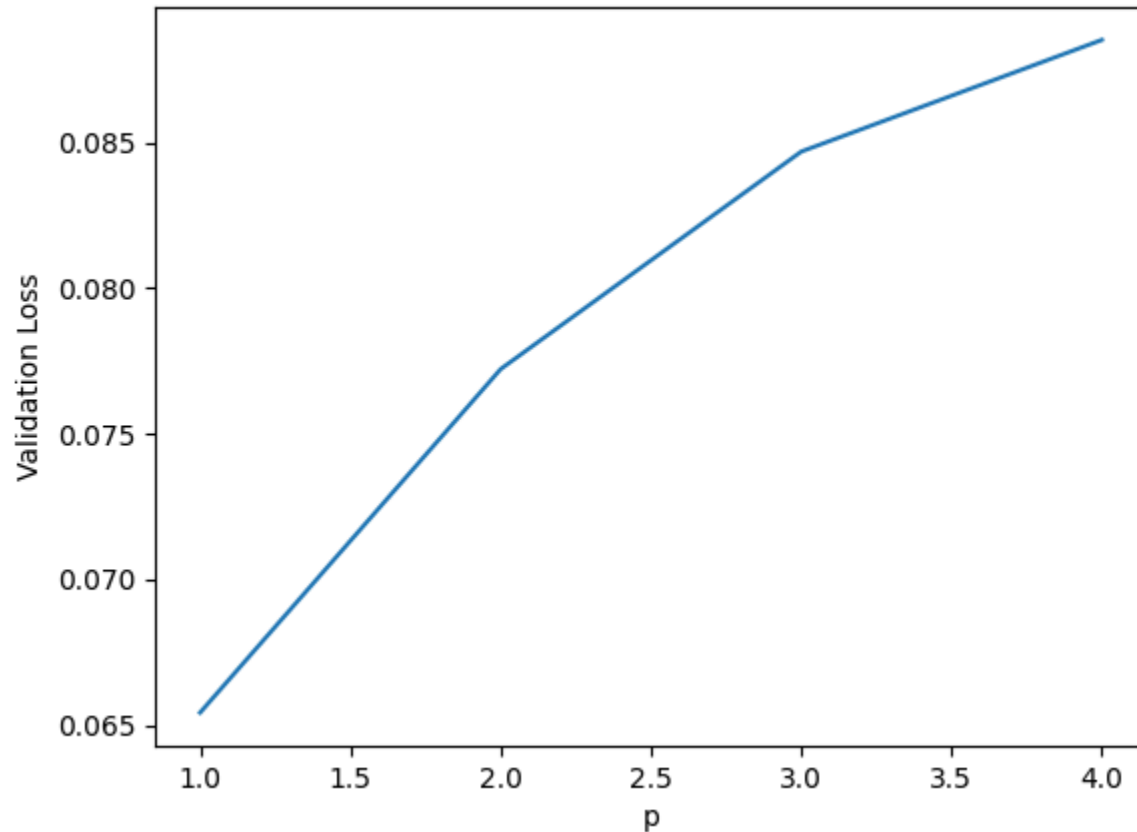
### Feed Forward Neural Network

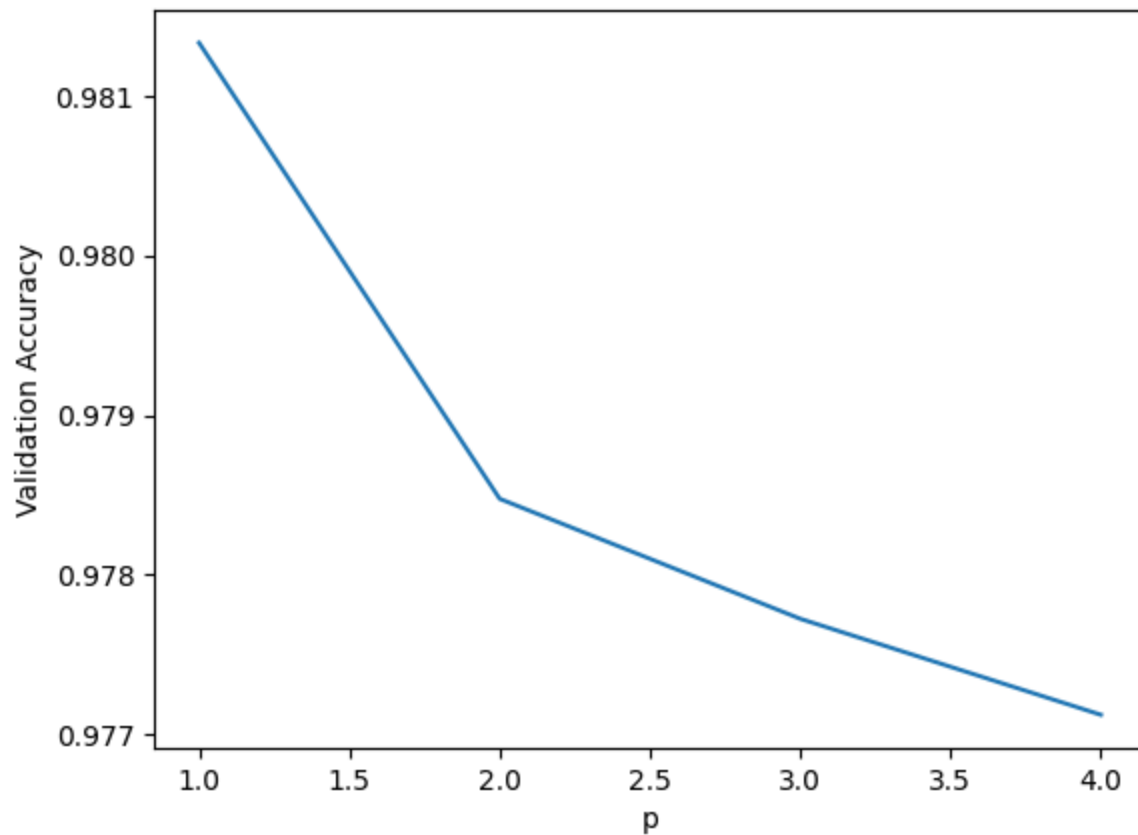
#### Best Hyperparameters:

```
num_layers= 1
hidden_dim= 64
embedding_dim= 128
lr= 0.001
activation_fn= tanh
epochs: 5
```

P and s were kept constant while doing hyperparameter tuning.  
WandB report can be checked here: [Report\\_FFNN](#)

#### P and S Graphs:





Keeping the above hyperparameters constant and changing the values of  $p$ , the results obtained are shown in the above graphs.

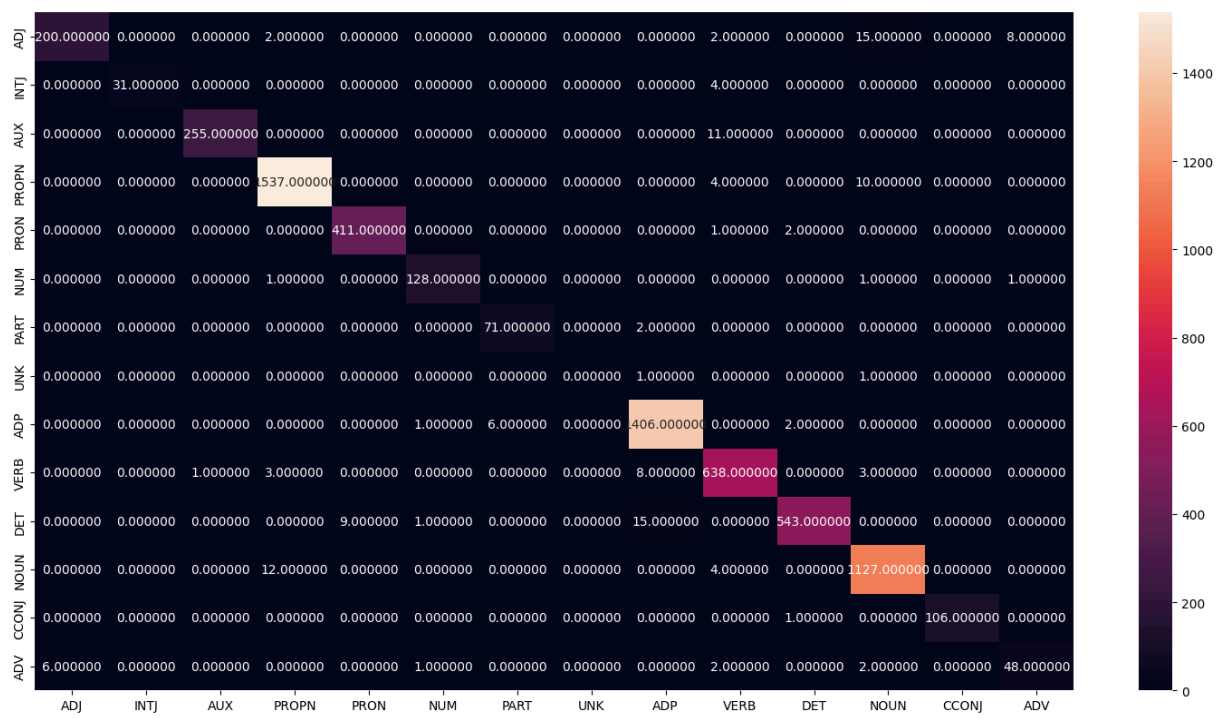
### **Analysis:**

When the context window( $2p+1$ ) gets bigger with a higher value of  $p$ , the model looks at more words around the target word to make predictions. This makes the model more complicated. As a result, it becomes harder for the model to understand the important patterns and connections in the data. This can cause the model to perform less well, with lower accuracy and higher loss when tested on the validation set.

Using the above hyperparameters and  $p=s=1$ , the validation and test set metrics are as follows:

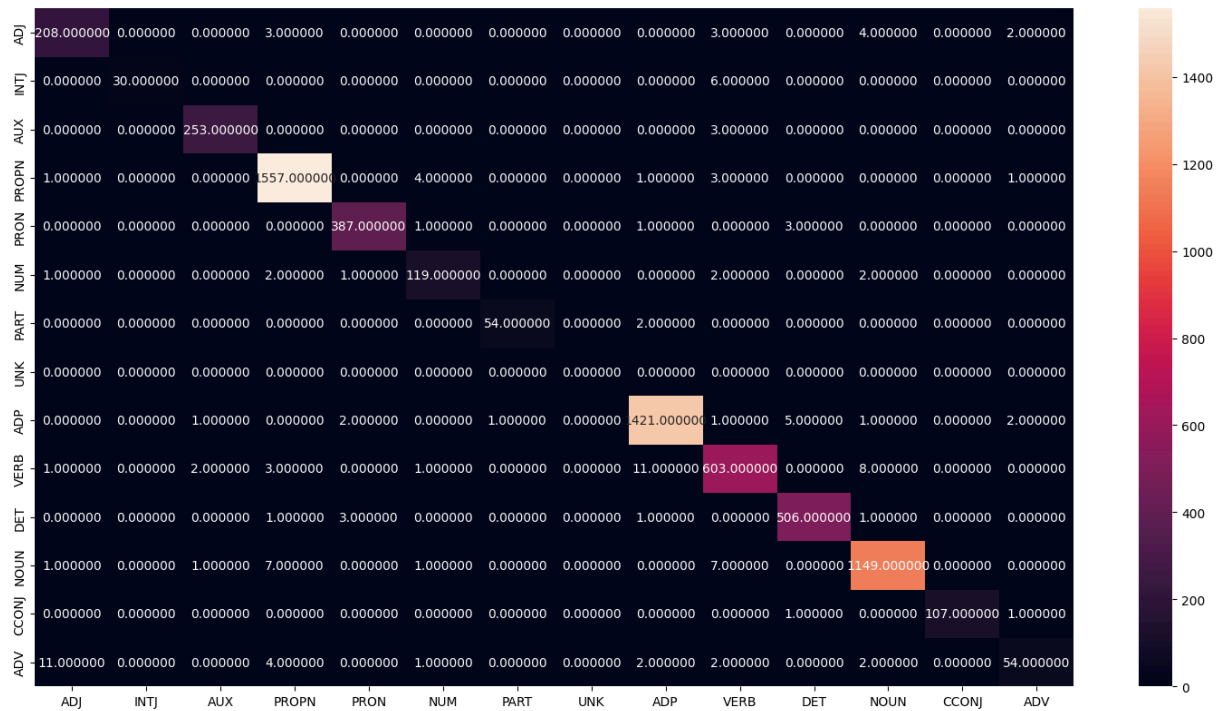
Validation Metrics:

VALIDATION RESULTS		
Average loss	:	0.07231941695156913
Accuracy	:	0.9784768211920529
Macro		
Precision	:	0.9675625585625272
Recall	:	0.9519782462569653
F1 score	:	0.9591947581916812
Micro		
Precision	:	0.9784768211920529
Recall	:	0.9784768211920529
F1 score	:	0.9784768211920529



Test Metrics:

TEST RESULTS		
Average loss	:	0.06571719006564895
Accuracy	:	0.9799392097264438
Macro		
Precision	:	0.970752467202373
Recall	:	0.9434387824756599
F1 score	:	0.9556374851546876
Micro		
Precision	:	0.9799392097264438
Recall	:	0.9799392097264438
F1 score	:	0.9799392097264438



## LSTM

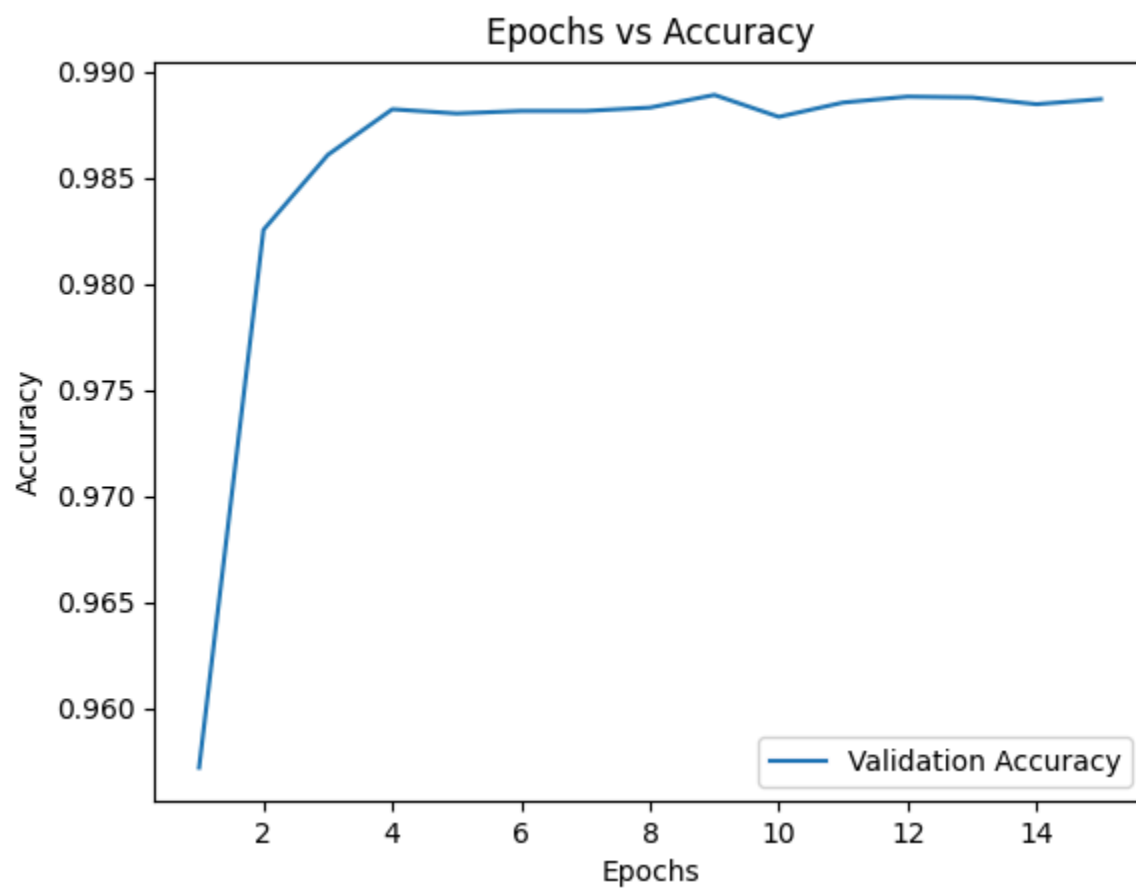
### Best Hyperparameters:

```
num_layers= 1  
hidden_dim= 128  
embedding_dim= 128  
lr= 0.001  
activation_fn= tanh  
epochs= 15  
bidirectional= True
```

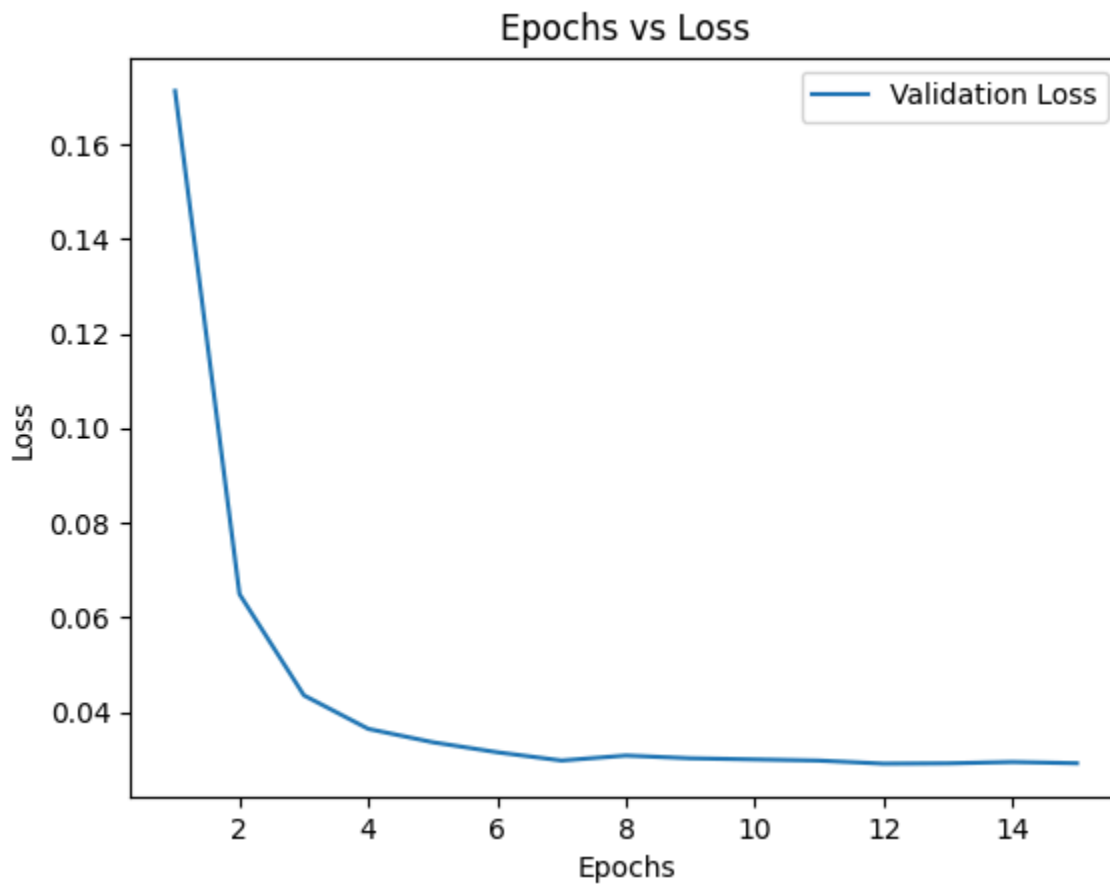
WandB report can be checked here: [Report\\_lstm](#)

Training on the above hyperparameters

### Epoch vs Validation Accuracy



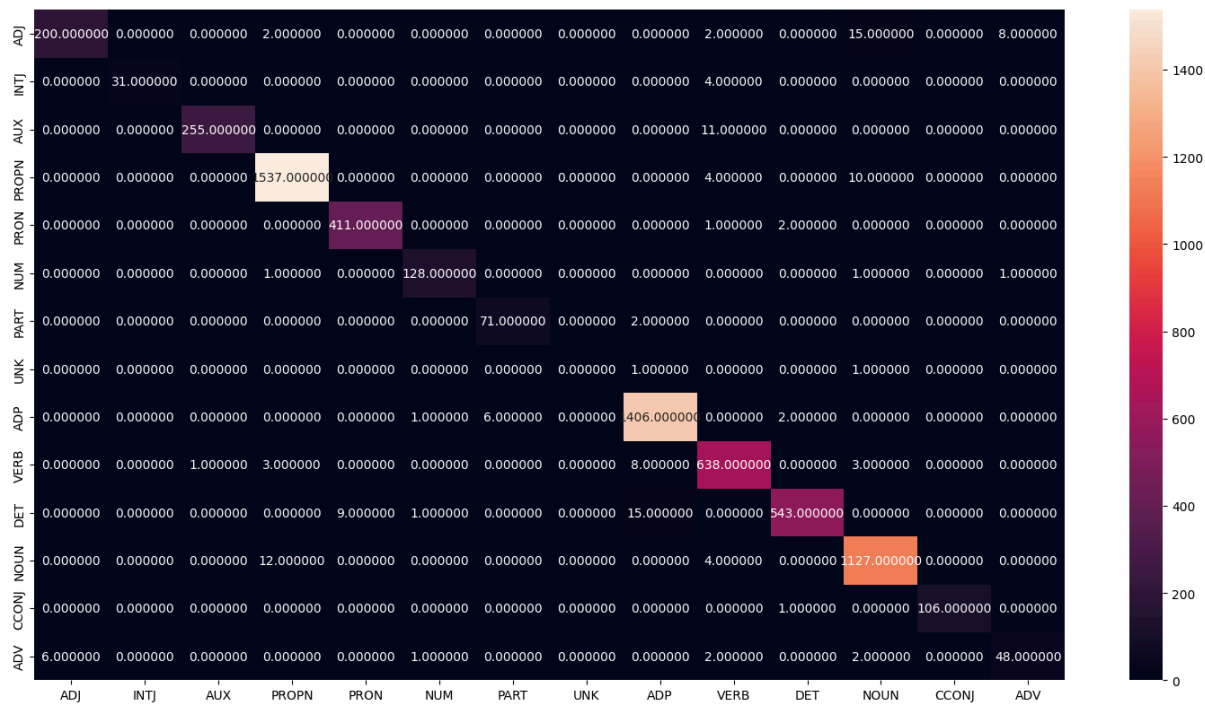
## Epoch vs Validation Loss



## Validation Metrics:

### VALIDATION RESULTS

Average loss	:	0.07224397400265804
Accuracy	:	0.9784768211920529
Macro		
Precision	:	0.9675625585625272
Recall	:	0.9519782462569653
F1 score	:	0.9591947581916812
Micro		
Precision	:	0.9784768211920529
Recall	:	0.9784768211920529
F1 score	:	0.9784768211920529



## Test Metrics:

### TEST RESULTS

```

Average loss      : 0.0657706045486317
Accuracy         : 0.9799392097264438
Macro
Precision        : 0.970752467202373
Recall           : 0.9434387824756599
F1 score         : 0.9556374851546876
Micro
Precision        : 0.9799392097264438
Recall           : 0.9799392097264438
F1 score         : 0.9799392097264438

```

