

## CSC8637 – Deep Learning

### Task 3 – Language Model

I approached this task with LSTM model after I set the text file for pre-processing. First, I replaced all Unicode characters with white spaces and removed punctuations. Then I split the values with the next line character into separate texts.

Then I removed all ascii values and take the values from the cell 112 since the content of the writings start from there. I changed all the letters into lower case to make it standardized. The start of each word starts with the index of 50 as a random number and append all the values which I split earlier. With the use of Tokenizer, I can map each word to a number and then the text to sequences. I converted the sequences to numpy array to split into the sequences from start to the word before the last one into one array as X and the last value into one array as Y. With utils to\_categorical, we changed the y numpy array as a categorical value with the vocab size as the number of classes. Vocabsize defines as the length of word index with tokenizer plus 1.

I build model with the embedding layer, two LSTM layer of 100 units, one dense of 100 units and one of vocabsize with the softmax activation function whereas the previous dense layer with relu activation function. I used adam optimizer and categorical\_crossentropy loss function to compile the model. I plotted the curve of accuracy and loss in two different plots over 200 epochs. I can achieve upto 91% accuracy with the model I created.

Then I created a function to generate a text with a line from the training model and the function will generate the next words (we need to initialize the number of words we need) as a return value.

#### Output:

**Seed text** – 'rang below what did i tell you that is miss marvell as usual  
poirot was right after a short interval the american film star was ushered  
in and we rose to our feet mary marvell was undoubtedly one of the most  
popular actresses on the screen she had only lately arrived'

#### Generated text –

'in england in company with her husband gregory b rolf also a film actor  
their marriage had taken place about two time we were going at the lift one  
course have put himself at once look here my friend consider ive arrived  
late bien im afraid for a cat quiet hold up is that you will leave it alone  
at the time with the large jewels was a minute he strikes all i turn  
forward by himself how looked over in spite of its cheeks by new york the  
steward course had not to wear them any slight bonne actress'

**Seed text** - 'mary marvell on the screen mon cher i thought about a dozen times perhaps and i once yet i recognize her and you do not she looks so different i replied rather feebly ah sacr cried poirot is it that you expect her to promenade herself in the streets of london in'

**Generated text** - 'a cowboy hat or with bare feet and a bunch of curls as an irish colleen always with you it is the non essentials remember the case of the dancer valerie saintclair i shrugged my shoulders slightly annoyed but console yourself mon ami said poirot calming down all cannot be as hercule poirot i know i pull the leg only poirots shoulders my friend were demanded in the first attack method of the room the identical clothes took place last his wife left the chambermaid advancing in our cabin egyptologist once more satisfaction from anyone to fear very serious you'

**Seed text** - 'so what drama is this being played is the girl a crook and are the shadowers detectives preparing to arrest her or are they the scoundrels and are they plotting to attack an innocent victim what does the great detective say the great detective mon ami chooses as ever the simplest'

**Generated text** - 'course he rises to see for himself and my friend joined me at the window in a minute he gave vent to an amused chuckle as usual the door had stolen that more unmade the event the gang was stiff reported for miss violet done too at it when you never been on the matter at last the burglary seems quite weve got a thorough coffee which have unmistakable that marsdon manor was as yet as she exclaimed as yet have would return to attach to the question and we like to give what shooting meant the official gentleman mr'