NLU Assignment-1 Report

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1 Task 1

- **Model** - This model uses a learned word embedding in the input layer.In this case we will use a 10-dimensional projection.The input sequence contains a single word, therefore the input length of 1. I am using single layer LSTM model with 75 hidden layers, which is tuned on 25 % validation split.
  The output layer is comprised of one neuron for each word in the vocabulary and uses a softmax activation function to ensure the output is normalized to look like a probability.
- **Dataset** - The whole text "carroll-alice.txt" with 75% training split and 25% validation split for testing.
- **Results** - I am using 250 epochs and getting the lowest validation loss of 6.0053.The corresponding perplexity is $e^{6.0053}$ that is **405.57** and the corresponding accuracy is 13.07% on validation(test) set.

2 Task 2 - Character level

- **Model** - Input is a sequence of 15 characters and the corresponding output is the next character.Training set is same as above that is 75% of "carroll-alice.txt" and the testset is remaining 25%. This is a single layer LSTM with 75 hidden units.
- **Results** - I am using 250 epochs and getting the lowest validation loss of 1.5531.The corresponding perplexity is $e^{1.5531}$ that is **4.726**.The corresponding accuracy is 54.82% on validation(test) set.

3 Task3 - Sentence Generation

- **Word level** - I am putting a random seed as my first word manually every time and generating the sentences as follows -
  1. Your little hare was a little hare
  2. This time i m afraid i m afraid i m
  3. Alice said the queen and was a
- **Character level** - I am putting a set of words of character length 15 as my random seed manually every time and generating the sentences as follows -
  1. when she thought it was the rabbit and the caterpillar and the morth
  2. and she went on planning to hersel
  3. she found herself and the more there