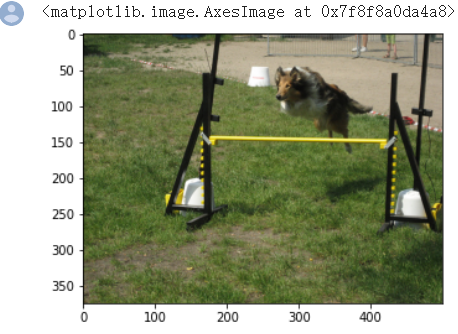
**COMP5623 Coursework on Image Caption Generation**

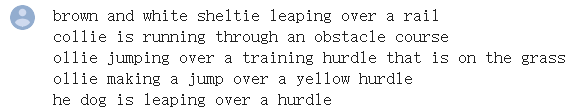
Fanhui Meng (sc19fm) 201373470

1. Lemmatize means to restore a language vocabulary of any form to a general form (can express complete semantics), which means people can use fewer words to express the meaning of a sentence. So the sentence made of lemmatize words can be short. It can be much more efficient and useful when applying this method to information retrieval and text and natural language process. As for the regular sentence, it may contain a lot of meanless words, and it may cause inefficiency during the natural language process.

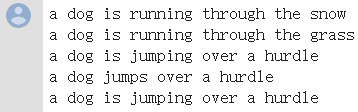
However, the process of lemmatizing words can be complicated and hard to implement. It needs to return the original form of the word, analyze the form of the word, etc. No one can guarantee those processes are accurate and perfect. Especially for those complicated processes, which are more likely to get wrong and cause imprecise during the natural language process.

1. Below is the first image and it’s original captions.

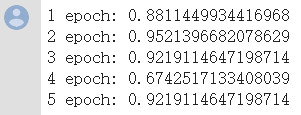




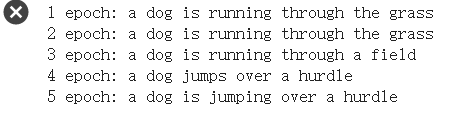
Here’s the generated captions after each epoch of training for RNN decoder:



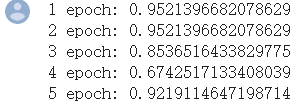
And their BLEU scores for RNN decoder:



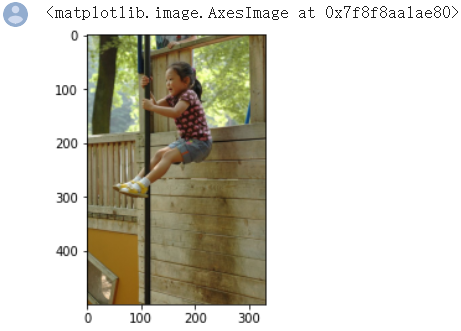
Here’s the generated captions after each epoch of training for LSTM decoder:

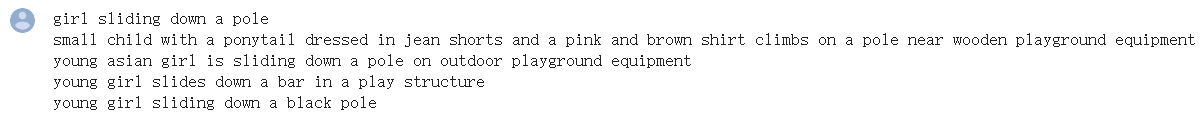


And their BLEU scores for LSTM decoder:

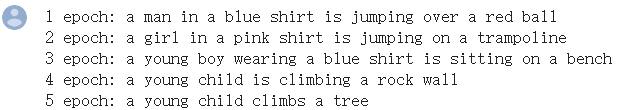


Below is the second image and it’s original captions.

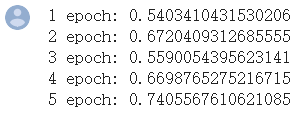




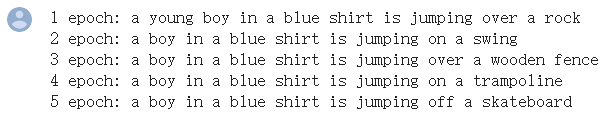
Here’s the generated captions after each epoch of training for RNN decoder:



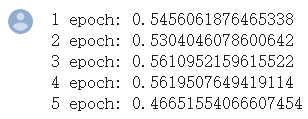
And their BLEU scores for RNN decoder:



Here’s the generated captions after each epoch of training for LSTM decoder:



And their BLEU scores for LSTM decoder:



1. As for loss,