**Deep-Learning ass3 – report 2**

Eilon Bashari & Daniel Greenspan

308576933 308243948

after trying a number of classes of sequences that the RNN cannot distinguish, even after seeing many training examples, and running for many training iterations we found out the most hard to distinguish are the next classes:

1. the double-word class:

language description:

Alphabet : {0-9,a-z,A-Z}

words is from the form: ww - where w is a sequence from the Albabet.

we thought that the language will be hard to distinguish because the LSTM acceptor doesn't have the ability to break the word into two parts due to the fact it checks 1-2-3 chars each time and not a whole sequence.

Our neural network could not get accuracy level above 53% with training set of 1000 sequences, dev set of 1000 sequences and test set of 300 sequences. We got these result when trying different sizes of layers and number of epochs(more then 5 is useless).

\* 500 words examples can be found in file “double\_word\_example”

2. The palindrom class:

language description:

Alphabet : {0-9,a-z,A-Z}

words is from the form: w#w’ - where w is a sequence from the Albabet and w’ is the reverse form of w.

we thought that the language will be hard to distinguish due to the fact that the LSTM acceptor only moves forward (while our bi-LSTM is bi-directional) and has no way of “learning” that the w’ part of the word is the same as w but reversed.

Our neural network could not get accuracy level above 49% with training set of 1000 sequences, dev set of 1000 sequences and test set of 300 sequences. We got these result when trying different sizes of layers and number of epochs(more then 3 is useless).

\* 500 words examples can be found in file “palindrom\_example”

3. mod5 class:

language description:

Alphabet : {0-9}

words is from the form: w - where (w % 5) == 0

we thought that the language will be hard to distinguish due to the fact that the LSTM acceptor reads one char at a time and is not considering the whole word/sentence value which is needed if training a mod5 language (because in order to tell if w is in the language we need to check its holw value %5).

Our neural network could not get accuracy level above 50% with training set of 1000 sequences, dev set of 1000 sequences and test set of 300 sequences. We got these result when trying different sizes of layers and number of epochs(more then 2 is useless).

\* 500 words examples can be found in file “mos\_five\_example”