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**Part 1**

Considerations:

1. **“What do you do with a word that appears in the train set and not in the dev set? Which word embeddings will you assign to it?”**

We’ve built a vocabulary based on the train set. We added a word ‘\*UNKNOWN\*’ to it and gave its own word embedding. So, every ‘new’ word we encounter in the dev set (or in train set), we change this word to be \*UNKNOWN\*.

For example, if we get the sentence “John is graduating in August” and the word ‘graduating’ is not in our vocabulary, we’ll get “John is \*UNKNOWN\* in August”

1. **“What vectors will you use for the words surrounding the first word in the sequence? And for the last word?”**

In order to be able to slide a window of size 5 on the whole sentence, we padded each sentence at the beginning and at the end. We added 2 words to the vocabulary: \*START\* and \*END\*. Each of them gets its word embedding.

So for the example from above we get:

“\*START\* \*START\* John is \*UNKNOWN\* in August \*END\* \*END”.

The first window is [‘\*START\*’, ‘\*START\*’, \*John’, ‘is’, ‘\*UNKNOWN\*’]

…

And the last window is [‘\*UNKNOWN\*’, ‘in’, ‘August’, ‘\*END\*’, ‘\*END\*’]

Parameters for NER:

epochs: 15

learning rate: 0.01

hidden-layer: 200

Parameters for POS:

epochs: 8

learning rate: 0.01

hidden-layer: 150

