C2_W1_lecture_nb_01_building_the_vocabulary_model

July 6, 2022

1 NLP Course 2 Week 1 Lesson : Building The Model - Lecture Exercise 01

Estimated Time: 10 minutes # Vocabulary Creation Create a tiny vocabulary from a tiny corpus It's time to start small ! ### Imports and Data

[21]:
```
# imports
import re # regular expression library; for tokenization of words
from collections import Counter # collections library; counter: dict subclass␣
↪for counting hashable objects
import matplotlib.pyplot as plt # for data visualization
```

[22]:
```
# the tiny corpus of text !
text = 'red pink pink blue blue yellow ORANGE BLUE BLUE PINK' #
print(text)
print('string length : ',len(text))
```

```
red pink pink blue blue yellow ORANGE BLUE BLUE PINK
string length :  52
```

1.0.1 Preprocessing

[23]:
```
# convert all letters to lower case
text_lowercase = text.lower()
print(text_lowercase)
print('string length : ',len(text_lowercase))
```

```
red pink pink blue blue yellow orange blue blue pink
string length :  52
```

[24]:
```
# some regex to tokenize the string to words and return them in a list
words = re.findall(r'\w+', text_lowercase)
print(words)
print('count : ',len(words))
```

```
['red', 'pink', 'pink', 'blue', 'blue', 'yellow', 'orange', 'blue', 'blue',
'pink']
count :  10
```

1.0.2 Create Vocabulary

Option 1 : A set of distinct words from the text

[25]:
```
# create vocab
vocab = set(words)
print(vocab)
print('count : ',len(vocab))
```

```
{'pink', 'blue', 'red', 'orange', 'yellow'}
count :  5
```

1.0.3 Add Information with Word Counts

Option 2 : Two alternatives for including the word count as well

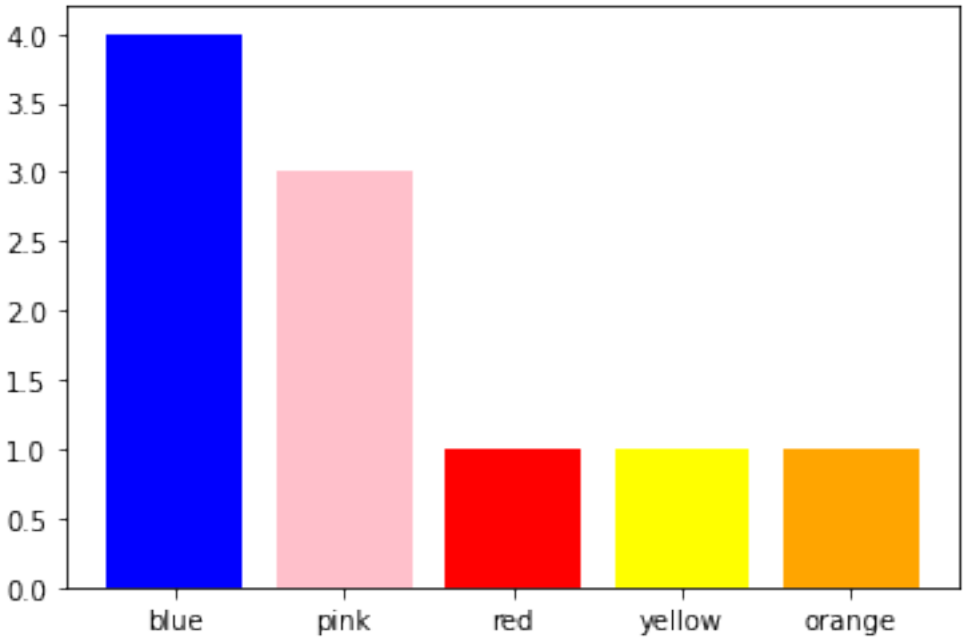
2 create vocab including word count

counts_a = dict() for w in words: counts_a[w] = counts_a.get(w,0)+1 print(counts_a) print('count :',len(counts_a))

[26]:
```
# create vocab including word count using collections.Counter
counts_b = dict()
counts_b = Counter(words)
print(counts_b)
print('count : ',len(counts_b))
```

```
Counter({'blue': 4, 'pink': 3, 'red': 1, 'yellow': 1, 'orange': 1})
count :  5
```

[27]:
```
# barchart of sorted word counts
d = {'blue': counts_b['blue'], 'pink': counts_b['pink'], 'red':␣
 ↪counts_b['red'], 'yellow': counts_b['yellow'], 'orange': counts_b['orange']}
plt.bar(range(len(d)), list(d.values()), align='center', color=d.keys())
_ = plt.xticks(range(len(d)), list(d.keys()))
```



2.0.1 Ungraded Exercise

Note that `counts_b`, above, returned by `collections.Counter` is sorted by word count

Can you modify the tiny corpus of ***text*** so that a new color appears between ***pink*** and ***red*** in `counts_b` ?

Do you need to run all the cells again, or just specific ones ?

[28]:
```
##my implementation. i added this cell
words+=2*["green"]
counts_b = Counter(words)
```

[29]:
```
print('counts_b : ', counts_b)
print('count : ', len(counts_b))
```

```
counts_b :  Counter({'blue': 4, 'pink': 3, 'green': 2, 'red': 1, 'yellow': 1,
'orange': 1})
count :  6
```

Expected Outcome:

counts_b : Counter({'blue': 4, 'pink': 3, **'your_new_color_here': 2**, red': 1, 'yellow': 1, 'orange': 1}) count : 6

2.0.2 Summary

This is a tiny example but the methodology scales very well. In the assignment you will create a large vocabulary of thousands of words, from a corpus of tens of thousands or words! But the mechanics are exactly the same. The only extra things to pay attention to should be; run time, memory management and the vocab data structure. So the choice of approach used in code blocks `counts_a` vs `counts_b`, above, will be important.