CS STARS Language of Meditation Research (Semester 2)

In this report, I will summarize the words used in the entire corpus of meditations, their frequency, and the top k words in the scripts. These text analytics were done using Python visualizations and libraries.

Table of Contents

Data Collection

Each folder denotes a different meditation category; Anxiety and Stress Meditations, Sleep Meditations, Learning and Growth Meditations.

Number of Words per Data Collection

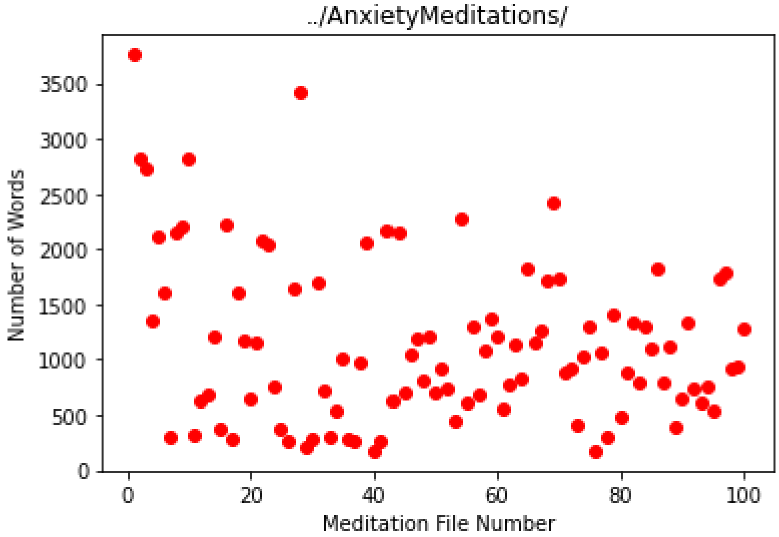
The code snippet and the first four plots below depict a file number of each of the four meditations categories with 100 files in each corresponding to the number of words in that meditation script.

Number of Words across the Corpus

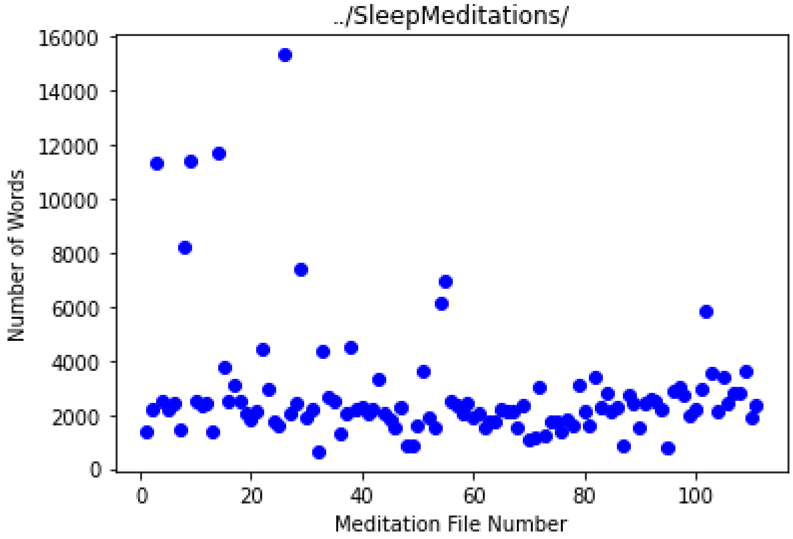
The last graph depicts all 400 meditations collected and a scatterplot showing the general cluster of counts that remain less than 5000 words per meditations, with a few outliers above that range.

In [ ]:

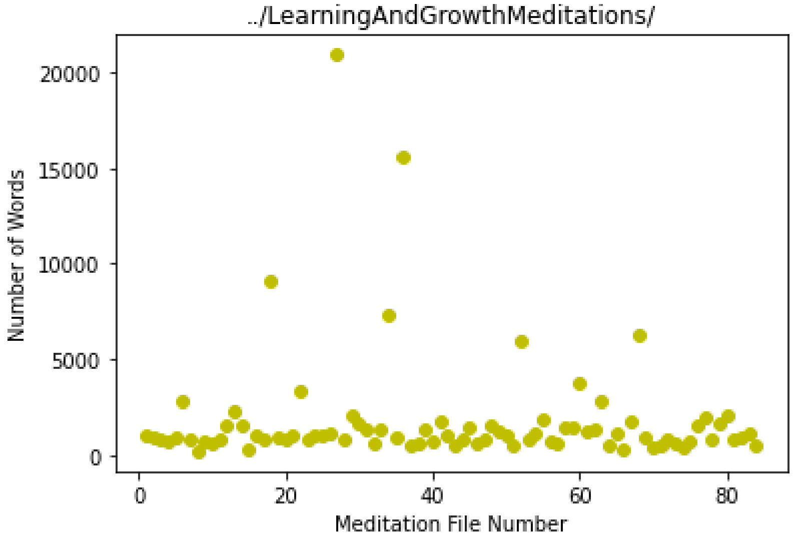
```
# number of words per document and top words
import nltk
import glob
import os
import matplotlib.pyplot as plt
folderpaths = ['../AnxietyMeditations/', '../SleepMeditations/',
               '../LearningAndGrowthMeditations/', '../MorningMeditations/']

lengths = []
file_nums = []
curr_file = 0

# all words combined
all_lengths = []
all_file_nums = []
file_num = 0
colors = ['r', 'b', 'y', 'm']
c_i = 0
for folder in folderpaths:
    for doc in glob.glob(os.path.join(folder, '*.txt')):
        # print(doc)
        with open(doc, 'r') as f:
            text = f.read()
            curr_words = nltk.word_tokenize(text)
            lengths.append(len(curr_words))
            all_lengths.append(len(curr_words))
            curr_file+=1
            file_nums.append(curr_file)
            file_num+=1
            all_file_nums.append(file_num)



    plt.title(f'{folder}')
    plt.xlabel('Meditation File Number')
    plt.ylabel('Number of Words')
    plt.scatter(file_nums, lengths, c=colors[c_i])
    plt.show()
    lengths = []
    file_nums = []
    curr_file = 0
    c_i+=1



# visualize average number of words, lowest, highest
plt.title('Word Count in Entire Corpus')
plt.xlabel('Meditation File Number')
plt.ylabel('Number of Words')
plt.scatter(all_file_nums, all_lengths, c = 'c')
plt.show()
```



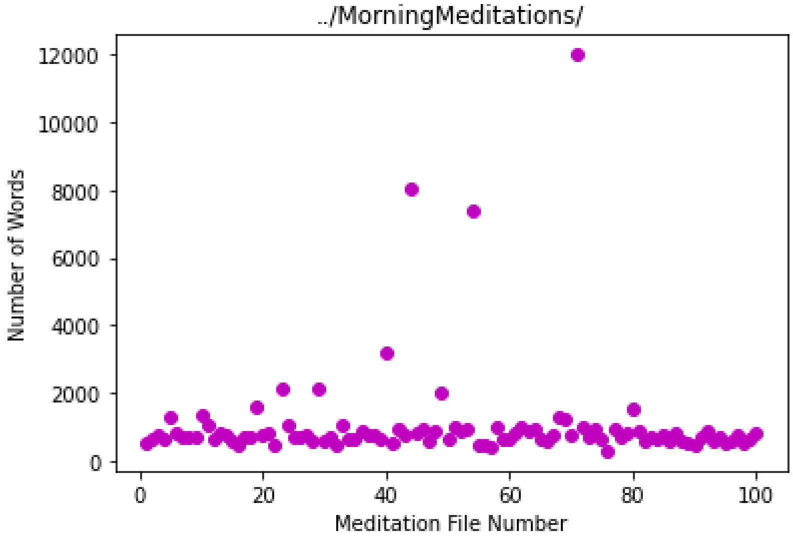
../AnxietyMeditations/

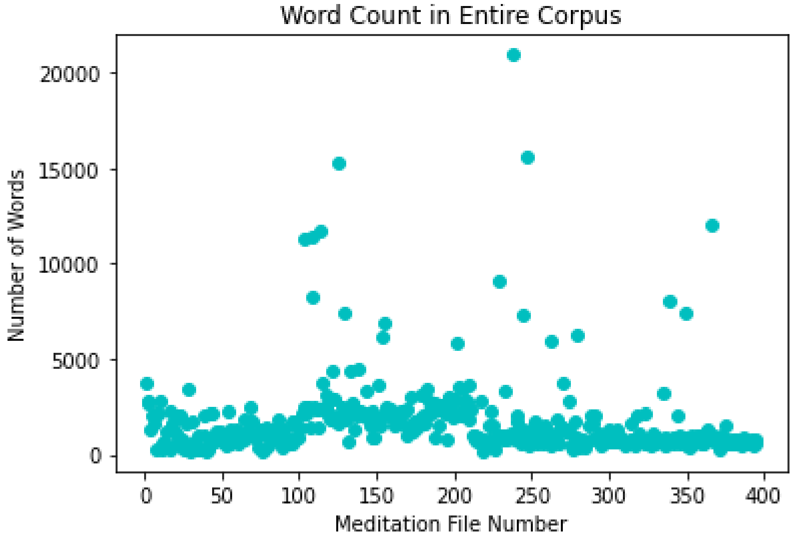


../SleepMeditations/



../LearningAndGrowthMeditations/





Cross Corpus Statistics

Below are the average, minimum, and maximum number of words seen across the entire meditation corpus.

In [ ]:

```
# average number of words, lowest, highest
import numpy as np

avg = np.mean(all_lengths)
print(f'Average number of words across meditations: {avg:.2f}')

min_words = np.min(all_lengths)
print(f'Minimum number of words across meditations: {min_words}')

max_words = np.max(all_lengths)
print(f'Maximum number of words across meditations: {max_words}')
```

```
Average number of words across meditations: 1741.33
Minimum number of words across meditations: 176
Maximum number of words across meditations: 20942
```

Top K Words

Below I read in each word in each folder and proprocessed by normalizing the tokens, stripping puncuation, and removing stop words to only include content words.

In [ ]:

```
# Top k words
import nltk
import glob
import os
import string
folderpaths = ['../AnxietyMeditations/', '../SleepMeditations/',
               '../LearningAndGrowthMeditations/', '../MorningMeditation
s/']

def topKWords(k, folderpaths):
    most_common_words = []
    for folder in folderpaths:
        for doc in glob.glob(os.path.join(folder, '*.txt')):
            with open(doc, 'r') as f:
                text = f.read()
                text = text.translate(
                    str.maketrans('', '', string.punctuation))
                curr_words = nltk.word_tokenize(text)

                #allWordDist = nltk.FreqDist(w.lower() for w in curr_wor
ds)

                stopwords = nltk.corpus.stopwords.words('english')
                allWordExceptStopDist = nltk.FreqDist(
                    w.lower() for w in curr_words if w not in stopwords)

                mostCommon= allWordExceptStopDist.most_common(k)

                most_common_words.append(mostCommon)

    return most_common_words

# remove punctunaction, prepositions, keep only content words

top_k_words_per_doc = topKWords(5, folderpaths)
print(top_k_words_per_doc[:5])
```

```
[[('back', 37), ('youre', 32), ('side', 29), ('right', 28), ('eyes', 2
6)], [('music', 63), ('mind', 15), ('time', 15), ('let', 14), ('see', 1
3)], [('let', 45), ('go', 41), ('body', 24), ('light', 20), ('potentia
l', 19)], [('i', 80), ('relaxation', 15), ('feel', 15), ('accept', 13),
('selfesteem', 11)], [('body', 19), ('breath', 18), ('feel', 16), ('pre
sent', 12), ('place', 12)]]
```