自然語言實作 第13週

書信寫作的常用同義詞、詞彙束，例句

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本週課程大綱

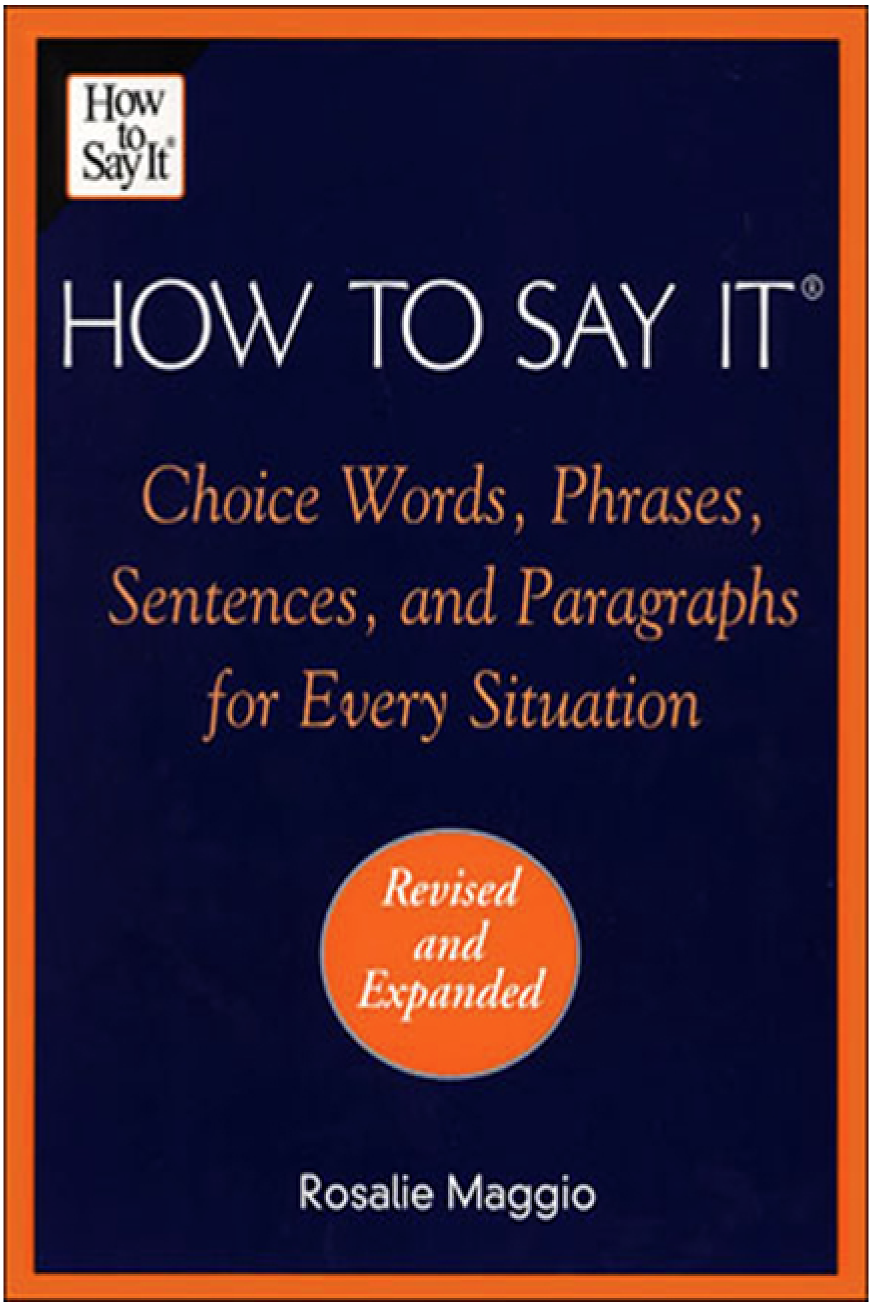
1. 計算全書關鍵詞

2. 計算各章的關鍵詞

3. 計算各章的詞彙束（關鍵片語）

4. 做各章關鍵詞的 cluster analysis （利用 Linggle 的 A and B 查詢）

5. 顯示各章的關鍵詞 cluster、詞彙束、例句


How to Say It
HOW TO SAY IT®
Choice Words, Phrases, Sentences, and Paragraphs for Every Situation
Revised and Expanded
Rosalie Maggio

1. 計算語料庫特徵關鍵詞

References

1. Paquot, Magali, and Yves Bestgen. "Distinctive words in academic writing: A comparison of three statistical tests for keyword extraction." Corpora: Pragmatics and discourse. Brill Rodopi, 2009. 247-269.

In [8]:

```
import re, math
from collections import defaultdict
import nltk, pickle
import pprint
sent_detector = nltk.data.load('tokenizers/punkt/english.pickle')

def words(text): return re.findall("([a-z'-]+|[0-9]+)", text.lower())

count_web1t = [ line.strip().split('\t') for line in open('count_1w.txt').readlines(

count_web1t = dict([ (word, int(count)) for word, count in count_web1t ])

count_how_to = defaultdict(lambda: 0)

chapterno = 1
for chapter in open('how.to.say.it.(raw).txt').read().split('<chapter>')[1:-1]:
    sentences = sent_detector.tokenize(chapter[chapter.index('\nPHRASES\n')+len('\nP
    for sentence in sentences:
        for word in words(sentence):
            count_how_to[word] += 1
    chapterno += 1

#segmenter_file = open('english.pickle', 'r')
#sentence_segmenter = pickle.Unpickler(sent_detector).load()

def is_key(word, count, total):
    if word not in count_web1t: return False
    rate = math.log10(count)-math.log10(total)-(math.log10(count_web1t[word])-12)
    return rate >= 1

total = sum(count_how_to.values())
keywords = [ (word, count) for word, count in count_how_to.items() if is_key(word, c
print ('There are', len(keywords), 'keywords in %s.'%('how.to.say.it.bundles.%s.%s+.
#with open('how.to.say.it.bundles.%s.%s+.txt'%(NGRAM_DEGREE,MIN_COUNT), 'w') as out
for word, count in sorted(keywords, key=lambda x: -x[1]):
    print ('\t'.join([word, str(count)]))
```

```
---------------------------------------------------------------------------
-----
NameError                                 Traceback (most recent call
 last)
<ipython-input-8-5e352125cfd3> in <module>
     31 total = sum(count_how_to.values())
     32 keywords = [ (word, count) for word, count in count_how_to.ite
ms() if is_key(word, count, total) and count>3]
---> 33 print ('There are', len(keywords), 'keywords in %s.'%('how.to.
say.it.bundles.%s.%s+.txt'%(NGRAM_DEGREE,MIN_COUNT)))
     34 #with open('how.to.say.it.bundles.%s.%s+.txt'%(NGRAM_DEGREE,MI
N_COUNT), 'w') as outfile:
     35 for word, count in sorted(keywords, key=lambda x: -x[1]):

NameError: name 'NGRAM_DEGREE' is not defined
```

2. 計算詞彙束（關鍵片語）

In [ ]:

```
import re
def words(text): return re.findall("([a-zA-Z'-]+|[0-9]+)", text)

count_chapter = defaultdict(lambda: defaultdict(lambda: 0))
```

3. 計算各章的詞彙束（關鍵片語）

各章關鍵片語的條件，次數出現超過平均值的章節

例如 accept 出現在各章的次數 (1, 8), (2, 2), (15, 1)

8 > (8+2+1)/3 所以 accept 是第 1 章的關鍵詞

In [ ]:

```
import re
def words(text): return re.findall("([a-zA-Z'-]+|[0-9]+)", text)
def ngrams(tokens, n=4): return [' '.join(tokens[i:i+n]) for i in range(len(tokens)-
```

In [ ]:

```
pters = '''01. Accept; 02. Confirm; 03. Adjust; 04. Advice; 05. Birthday; 06. Announc
pters = [ x.split() for x in chapters.split('; ')]
ptername = dict([ (int(x[:-1]), x+y) for x, y in chapters ])
```

4. 做各章關鍵詞的 cluster analysis （利用 Linggle 的 A and B 查詢）

In [9]:

```
from linggle import Linggle
from collections import defaultdict
import pprint

linggle = Linggle()

def ngramcount(query):
    return linggle[query]

accept_words = '''accept invite approve certainly delighted
gratifying pleased pleasure
satisfying thoughtful thrilled
touched welcome willing'''.split()
#accept_words = '/'.join(accept_words)
print (accept_words)
print ()

and_grams = ngramcount('%s and %s'%('/'.join(accept_words), '/'.join(accept_words)))
pprint.pprint (and_grams)
```

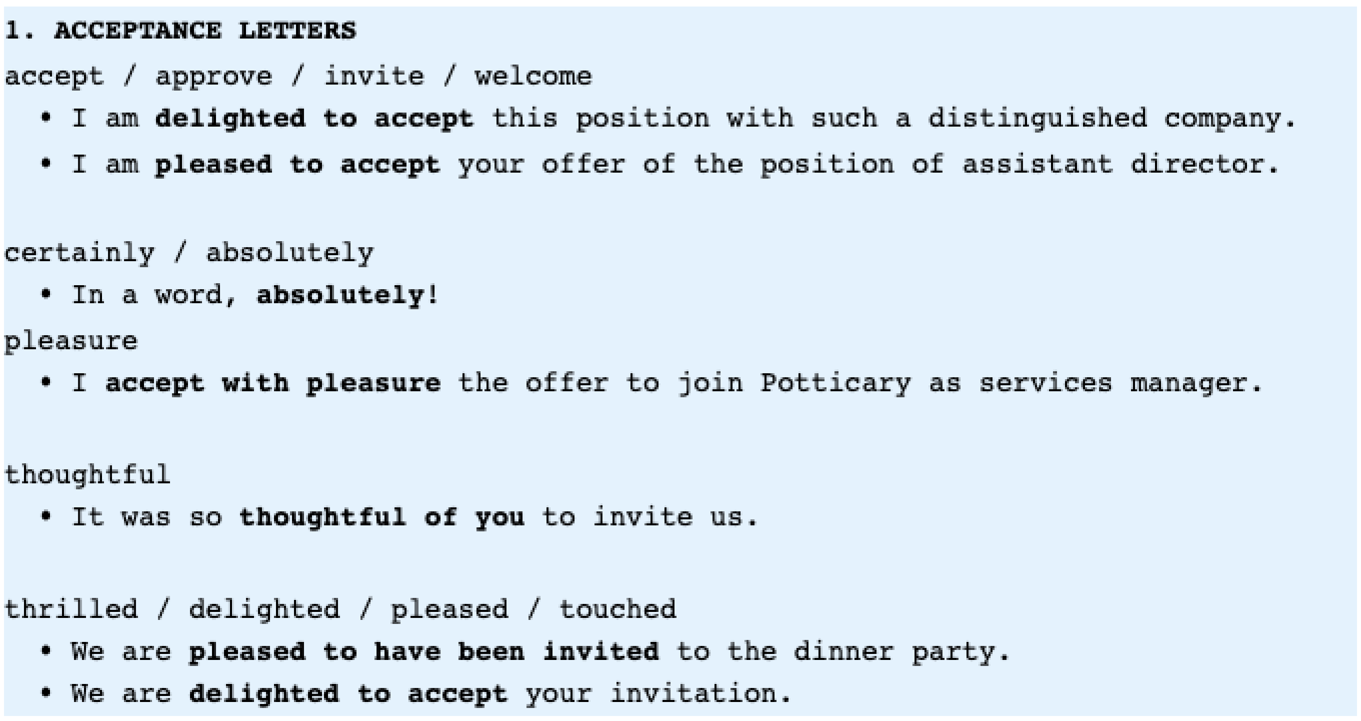
```
['accept', 'invite', 'approve', 'certainly', 'delighted', 'gratifyin
g', 'pleased', 'pleasure', 'satisfying', 'thoughtful', 'thrilled', 'to
uched', 'welcome', 'willing']

[['accept and approve', 5603],
 ['invite and welcome', 2791],
 ['thrilled and delighted', 2612],
 ['approve and accept', 2562],
 ['welcome and invite', 2064],
 ['accept and welcome', 1919],
 ['pleased and delighted', 1854],
 ['welcome and accept', 1290],
 ['invite and accept', 1176],
 ['delighted and pleased', 668],
 ['delighted and thrilled', 607],
 ['touched and pleased', 594],
 ['pleasure and pleasure', 588],
 ['pleased and touched', 477],
 ['accept and accept', 383],
 ['welcome and welcome', 370],
 ['pleased and thrilled', 364],
 ['touched and delighted', 334],
 ['satisfying and gratifying', 327],
 ['thrilled and pleased', 306],
 ['touched and thrilled', 239],
 ['thrilled and touched', 201],
 ['delighted and touched', 198],
 ['welcome and certainly', 187],
 ['gratifying and satisfying', 176],
 ['thoughtful and satisfying', 155],
 ['thoughtful and welcome', 146],
 ['pleasure and accept', 145],
 ['thoughtful and willing', 143],
 ['pleased and willing', 138],
 ['pleasure and welcome', 130],
 ['welcome and thoughtful', 129],
 ['willing and pleased', 122],
 ['touched and touched', 105],
 ['pleasure and certainly', 94],
['welcome and satisfying', 90],
['accept and invite', 89],
['satisfying and certainly', 79],
['thoughtful and certainly', 75],
['pleasure and satisfying', 70],
['willing and certainly', 64],
['pleased and welcome', 62],
['welcome and willing', 58],
['welcome and approve', 58],
['welcome and gratifying', 56],
['satisfying and thoughtful', 55],
['delighted and willing', 42],
['willing and delighted', 41]]
```

5. 顯示各章的關鍵詞 cluster、詞彙束、例句

In [ ]:

```python
import nltk
sent_detector = nltk.data.load('tokenizers/punkt/english.pickle')
for chapter in open('how.to.say.it.(raw).txt').read().split('<chapter>')[1:-1]:
    sentences = sent_detector.tokenize(chapter)
    sentences = [ sentence for sentence in sentences
                  if sentence[0].isupper() and sentence[-1] in '?!.' ]
```

在例句中，用粗體顯示詞彙束



1. ACCEPTANCE LETTERS

accept / approve / invite / welcome

- I am **delighted to accept** this position with such a distinguished company.
- I am **pleased to accept** your offer of the position of assistant director.

certainly / absolutely

- In a word, **absolutely**!

pleasure

- I **accept with pleasure** the offer to join Potticary as services manager.

thoughtful

- It was so **thoughtful of you** to invite us.

thrilled / delighted / pleased / touched

- We are **pleased to have been invited** to the dinner party.
- We are **delighted to accept** your invitation.

In [ ]:

```
from IPython.display import Markdown, display
def printmd(string):
    display(Markdown(string))
printmd("I am **delighted to accept** this position with such a distinguished compar
```

本週任務

LEVEL A. 計算各章關鍵詞、各章詞彙束（關鍵片語）

LEVEL B. 做各章關鍵詞的 cluster analysis （利用 Linggle 的 A and B 查詢）

LEVEL C. 顯示各章的關鍵詞 cluster、詞彙束、例句