summarization-using-spacy-library

May 4, 2024

```
[1]: pip install spacy
```

Requirement already satisfied: spacy in c:\users\sai viswa\anaconda3\lib\site-
packages (3.7.4)
Requirement already satisfied: spacy-legacy<3.1.0,>=3.0.11 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (3.0.12)
Requirement already satisfied: spacy-loggers<2.0.0,>=1.0.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (1.0.5)
Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (1.0.10)
Requirement already satisfied: cymem<2.1.0,>=2.0.2 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (2.0.8)
Requirement already satisfied: preshed<3.1.0,>=3.0.2 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (3.0.9)
Requirement already satisfied: thinc<8.3.0,>=8.2.2 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (8.2.3)
Requirement already satisfied: wasabi<1.2.0,>=0.9.1 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (1.1.2)
Requirement already satisfied: srsly<3.0.0,>=2.4.3 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (2.4.8)
Requirement already satisfied: catalogue<2.1.0,>=2.0.6 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (2.0.10)
Requirement already satisfied: weasel<0.4.0,>=0.1.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (0.3.4)
Requirement already satisfied: typer<0.10.0,>=0.3.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (0.9.4)
Requirement already satisfied: smart-open<7.0.0,>=5.2.1 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (5.2.1)
Requirement already satisfied: tqdm<5.0.0,>=4.38.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (4.65.0)
Requirement already satisfied: requests<3.0.0,>=2.13.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (2.31.0)
Requirement already satisfied: pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4 in
c:\users\sai viswa\anaconda3\lib\site-packages (from spacy) (1.10.12)
Requirement already satisfied: jinja2 in c:\users\sai viswa\anaconda3\lib\site-
packages (from spacy) (3.1.3)
Requirement already satisfied: setuptools in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (68.2.2)

Requirement already satisfied: packaging>=20.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (23.1)
Requirement already satisfied: langcodes<4.0.0,>=3.2.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (3.4.0)
Requirement already satisfied: numpy>=1.19.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy) (1.26.4)
Requirement already satisfied: language-data>=1.2 in c:\users\sai
viswa\anaconda3\lib\site-packages (from langcodes<4.0.0,>=3.2.0->spacy) (1.2.0)
Requirement already satisfied: typing-extensions>=4.2.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from
pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4->spacy) (4.9.0)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\users\sai
viswa\anaconda3\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy) (2.0.4)
Requirement already satisfied: idna<4,>=2.5 in c:\users\sai
viswa\anaconda3\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy) (3.4)
Requirement already satisfied: urllib3<3,>=1.21.1 in c:\users\sai
viswa\anaconda3\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy) (2.0.7)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\sai
viswa\anaconda3\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy)
(2024.2.2)
Requirement already satisfied: blis<0.8.0,>=0.7.8 in c:\users\sai
viswa\anaconda3\lib\site-packages (from thinc<8.3.0,>=8.2.2->spacy) (0.7.11)
Requirement already satisfied: confection<1.0.0,>=0.0.1 in c:\users\sai
viswa\anaconda3\lib\site-packages (from thinc<8.3.0,>=8.2.2->spacy) (0.1.4)
Requirement already satisfied: colorama in c:\users\sai
viswa\anaconda3\lib\site-packages (from tqdm<5.0.0,>=4.38.0->spacy) (0.4.6)
Requirement already satisfied: click<9.0.0,>=7.1.1 in c:\users\sai
viswa\anaconda3\lib\site-packages (from typer<0.10.0,>=0.3.0->spacy) (8.1.7)
Requirement already satisfied: cloudpathlib<0.17.0,>=0.7.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from weasel<0.4.0,>=0.1.0->spacy) (0.16.0)
Requirement already satisfied: MarkupSafe>=2.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from jinja2->spacy) (2.1.3)
Requirement already satisfied: marisa-trie>=0.7.7 in c:\users\sai
viswa\anaconda3\lib\site-packages (from language-
data>=1.2->langcodes<4.0.0,>=3.2.0->spacy) (1.1.0)
Note: you may need to restart the kernel to use updated packages.

[2]: `!python -m spacy download en_core_web_sm`

Collecting en-core-web-sm==3.7.1
  Downloading https://github.com/explosion/spacy-
models/releases/download/en_core_web_sm-3.7.1/en_core_web_sm-3.7.1-py3-none-
any.whl (12.8 MB)
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Requirement already satisfied: spacy<3.8.0,>=3.7.2 in c:\users\sai
viswa\anaconda3\lib\site-packages (from en-core-web-sm==3.7.1) (3.7.4)
Requirement already satisfied: spacy-legacy<3.1.0,>=3.0.11 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-
sm==3.7.1) (3.0.12)
Requirement already satisfied: spacy-loggers<2.0.0,>=1.0.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-
sm==3.7.1) (1.0.5)
Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-
sm==3.7.1) (1.0.10)
Requirement already satisfied: cymem<2.1.0,>=2.0.2 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-
sm==3.7.1) (2.0.8)
Requirement already satisfied: preshed<3.1.0,>=3.0.2 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-
sm==3.7.1) (3.0.9)
Requirement already satisfied: thinc<8.3.0,>=8.2.2 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-
sm==3.7.1) (8.2.3)
Requirement already satisfied: wasabi<1.2.0,>=0.9.1 in c:\users\sai
viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-
sm==3.7.1) (1.1.2)
Requirement already satisfied: srsly<3.0.0,>=2.4.3 in c:\users\sai

viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (2.4.8)
Requirement already satisfied: catalogue<2.1.0,>=2.0.6 in c:\users\sai viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (2.0.10)
Requirement already satisfied: weasel<0.4.0,>=0.1.0 in c:\users\sai viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (0.3.4)
Requirement already satisfied: typer<0.10.0,>=0.3.0 in c:\users\sai viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (0.9.4)
Requirement already satisfied: smart-open<7.0.0,>=5.2.1 in c:\users\sai viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (5.2.1)
Requirement already satisfied: tqdm<5.0.0,>=4.38.0 in c:\users\sai viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (4.65.0)
Requirement already satisfied: requests<3.0.0,>=2.13.0 in c:\users\sai viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (2.31.0)
Requirement already satisfied: pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4 in c:\users\sai viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (1.10.12)
Requirement already satisfied: jinja2 in c:\users\sai viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (3.1.3)
Requirement already satisfied: setuptools in c:\users\sai viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (68.2.2)
Requirement already satisfied: packaging>=20.0 in c:\users\sai viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (23.1)
Requirement already satisfied: langcodes<4.0.0,>=3.2.0 in c:\users\sai viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (3.4.0)
Requirement already satisfied: numpy>=1.19.0 in c:\users\sai viswa\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (1.26.4)
Requirement already satisfied: language-data>=1.2 in c:\users\sai viswa\anaconda3\lib\site-packages (from langcodes<4.0.0,>=3.2.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (1.2.0)
Requirement already satisfied: typing-extensions>=4.2.0 in c:\users\sai viswa\anaconda3\lib\site-packages (from pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (4.9.0)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\users\sai viswa\anaconda3\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (2.0.4)
Requirement already satisfied: idna<4,>=2.5 in c:\users\sai

```
viswa\anaconda3\lib\site-packages (from
requests<3.0.0,>=2.13.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (3.4)
Requirement already satisfied: urllib3<3,>=1.21.1 in c:\users\sai
viswa\anaconda3\lib\site-packages (from
requests<3.0.0,>=2.13.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (2.0.7)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\sai
viswa\anaconda3\lib\site-packages (from
requests<3.0.0,>=2.13.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (2024.2.2)
Requirement already satisfied: blis<0.8.0,>=0.7.8 in c:\users\sai
viswa\anaconda3\lib\site-packages (from
thinc<8.3.0,>=8.2.2->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (0.7.11)
Requirement already satisfied: confection<1.0.0,>=0.0.1 in c:\users\sai
viswa\anaconda3\lib\site-packages (from
thinc<8.3.0,>=8.2.2->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (0.1.4)
Requirement already satisfied: colorama in c:\users\sai
viswa\anaconda3\lib\site-packages (from
tqdm<5.0.0,>=4.38.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (0.4.6)
Requirement already satisfied: click<9.0.0,>=7.1.1 in c:\users\sai
viswa\anaconda3\lib\site-packages (from
typer<0.10.0,>=0.3.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (8.1.7)
Requirement already satisfied: cloudpathlib<0.17.0,>=0.7.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from
weasel<0.4.0,>=0.1.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (0.16.0)
Requirement already satisfied: MarkupSafe>=2.0 in c:\users\sai
viswa\anaconda3\lib\site-packages (from jinja2->spacy<3.8.0,>=3.7.2->en-core-
web-sm==3.7.1) (2.1.3)
Requirement already satisfied: marisa-trie>=0.7.7 in c:\users\sai
viswa\anaconda3\lib\site-packages (from language-
data>=1.2->langcodes<4.0.0,>=3.2.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1)
(1.1.0)
[+] Download and installation successful
You can now load the package via spacy.load('en_core_web_sm')
```

```python
import spacy
nlp = spacy.load("en_core_web_sm")
doc=nlp("Amidst the whispers of the wind, a lone star twinkled in the velvet␣
 ↪sky")
doc
```

[10]: Amidst the whispers of the wind, a lone star twinkled in the velvet sky

```python
for token in doc:
    print(token.text)
```

```
Amidst
the
whispers
of
```

```
the
wind
,
a
lone
star
twinkled
in
the
velvet
sky
```

[13]:
```python
for token in doc:
    print(token.lemma_)
```

```
amidst
the
whisper
of
the
wind
,
a
lone
star
twinkle
in
the
velvet
sky
```

[14]:
```python
for token in doc:
    print(token.pos_)
```

```
ADP
DET
NOUN
ADP
DET
NOUN
PUNCT
DET
ADJ
NOUN
VERB
ADP
DET
NOUN
```

```
    NOUN
```

```
[18]: for token in doc:
          print(token.text+":",token.pos_)
```

```
Amidst: ADP
the: DET
whispers: NOUN
of: ADP
the: DET
wind: NOUN
,: PUNCT
a: DET
lone: ADJ
star: NOUN
twinkled: VERB
in: ADP
the: DET
velvet: NOUN
sky: NOUN
```

```
[19]: for token in doc:
          print(token.text+"-->", token.lemma_+"-->", token.pos_)
```

```
Amidst--> amidst--> ADP
the--> the--> DET
whispers--> whisper--> NOUN
of--> of--> ADP
the--> the--> DET
wind--> wind--> NOUN
,--> ,--> PUNCT
a--> a--> DET
lone--> lone--> ADJ
star--> star--> NOUN
twinkled--> twinkle--> VERB
in--> in--> ADP
the--> the--> DET
velvet--> velvet--> NOUN
sky--> sky--> NOUN
```

```
[22]: for token in doc:
          print(token.text,":", token.lemma_,":", token.pos_,":", token.dep_,":",
                token.shape_,":", token.is_alpha,":", token.is_stop)
```

```
Amidst : amidst : ADP : prep : Xxxxx : True : False
the : the : DET : det : xxx : True : True
whispers : whisper : NOUN : pobj : xxxx : True : False
of : of : ADP : prep : xx : True : True
```

```
the : the : DET : det : xxx : True : True
wind : wind : NOUN : pobj : xxxx : True : False
, : , : PUNCT : punct : , : False : False
a : a : DET : det : x : True : True
lone : lone : ADJ : amod : xxxx : True : False
star : star : NOUN : ROOT : xxxx : True : False
twinkled : twinkle : VERB : acl : xxxx : True : False
in : in : ADP : prep : xx : True : True
the : the : DET : det : xxx : True : True
velvet : velvet : NOUN : compound : xxxx : True : False
sky : sky : NOUN : pobj : xxx : True : False
```

[33]:
```python
text='''In a world where clouds are made of cotton candy and rivers flow with
   liquid gold, there exists a secret garden hidden deep within the
enchanted forest. Here, flowers bloom in every color imaginable, their petals
   shimmering with the whispers of ancient spells. The trees are not mere trees
   but guardians
of time, their branches reaching towards the stars to pluck stories from the
   night sky. Creatures of myth and legend roam freely, from mischievous
   fairies
weaving dreams to majestic unicorns with coats as soft as moonlight. And in the
   heart of this magical realm lies a forgotten library,
its shelves lined with books that hold the keys to unlocking the mysteries of
   the universe.'''
```

[34]:
```python
text
```

[34]:
```
'In a world where clouds are made of cotton candy and rivers flow with liquid
gold, there exists a secret garden hidden deep within the\nenchanted forest.
Here, flowers bloom in every color imaginable, their petals shimmering with the
whispers of ancient spells. The trees are not mere trees but guardians\nof time,
their branches reaching towards the stars to pluck stories from the night sky.
Creatures of myth and legend roam freely, from mischievous fairies \nweaving
dreams to majestic unicorns with coats as soft as moonlight. And in the heart of
this magical realm lies a forgotten library, \nits shelves lined with books that
hold the keys to unlocking the mysteries of the universe.'
```

[36]:
```python
import spacy
from spacy.lang.en.stop_words import STOP_WORDS
from string import punctuation
```

[37]:
```python
stopwords = list(STOP_WORDS)
stopwords
```

[37]:
```
['ten',
 'should',
 'among',
```

```
'whither',
'just',
'no',
'and',
'hers',
'somehow',
're',
'be',
'please',
'such',
'last',
'over',
'few',
'n't',
'seems',
'becomes',
'anyone',
'throughout',
''s',
'call',
'sometime',
'front',
'amount',
''ll',
''ve',
'already',
'otherwise',
'elsewhere',
''d',
'others',
'per',
'them',
'thence',
'again',
'serious',
'give',
'neither',
'about',
'but',
''m',
'been',
'if',
'in',
'still',
'these',
'i',
'enough',
```

```
'none',
'go',
'full',
'until',
'thus',
"'d",
'all',
'four',
'fifty',
'ever',
'eight',
'to',
'behind',
'sixty',
'toward',
'someone',
'seem',
'ca',
'mostly',
'made',
'doing',
'side',
'there',
'using',
'an',
"'s",
'however',
'across',
'somewhere',
'below',
'whence',
'ours',
'nor',
'whoever',
'due',
'everyone',
'fifteen',
'had',
'many',
'they',
'you',
'whenever',
'also',
'really',
'first',
'anyway',
'between',
```

'never',
'other',
'afterwards',
'one',
'both',
'does',
'nine',
'mine',
'quite',
'wherever',
'that',
'the',
'bottom',
'under',
'us',
'it',
'yourself',
'herself',
'least',
"'re",
'whereafter',
'ourselves',
'anywhere',
'from',
'name',
'his',
'often',
'against',
'my',
'those',
'not',
'upon',
'besides',
'twelve',
'within',
'via',
'whom',
'either',
'further',
''s',
'for',
'at',
'see',
'twenty',
'some',
'how',
'anyhow',

```
'more',
'her',
'say',
'themselves',
'became',
'part',
'him',
'almost',
'beforehand',
'above',
'could',
'so',
'back',
'with',
'alone',
'then',
'was',
'our',
'forty',
'latterly',
'take',
'regarding',
'seeming',
'everywhere',
'everything',
"'ve",
'your',
'yours',
'hereupon',
'on',
'now',
'thereafter',
''m',
'always',
'noone',
'nowhere',
''ll',
'less',
'during',
'out',
'onto',
'perhaps',
'which',
''ve',
'before',
'as',
'a',
```

```
'although',
'of',
'myself',
'its',
'anything',
'yet',
'after',
'where',
'along',
'can',
'himself',
'because',
'their',
'we',
'own',
'therein',
'every',
'third',
'once',
"'ll",
'‘re',
'might',
'thru',
'around',
'keep',
'are',
'would',
'whereupon',
'is',
'latter',
'did',
'towards',
'formerly',
'except',
'she',
'three',
'do',
'each',
'hereby',
'whereas',
'rather',
'well',
'else',
'me',
'here',
'while',
'whereby',
```

```
'must',
'off',
'this',
'when',
'too',
'may',
'any',
'through',
'various',
'beside',
'get',
'whole',
'herein',
'show',
'whose',
'empty',
'whatever',
'wherein',
'moreover',
"n't",
'whether',
'together',
'has',
'top',
'become',
'seemed',
'am',
'five',
'since',
'becoming',
'have',
'were',
'thereupon',
'without',
'‘d',
'same',
'by',
'even',
'two',
"'m",
'six',
'who',
'indeed',
'most',
'up',
'into',
'why',
```

```
         'will',
         'eleven',
         'make',
         'meanwhile',
         'hundred',
         'next',
         'move',
         'beyond',
         'several',
         'hereafter',
         'very',
         'former',
         'cannot',
         'itself',
         'he',
         'nobody',
         'amongst',
         'yourselves',
         'n't',
         'what',
         'thereby',
         'though',
         'used',
         'nevertheless',
         'than',
         'or',
         'unless',
         'therefore',
         'another',
         'put',
         'nothing',
         'done',
         'something',
         'much',
         'hence',
         'namely',
         'only',
         'down',
         'being',
         'sometimes',
         ''re']
```

[38]: `len(stopwords)`

[38]: 326

[39]: `text`

[39]: 'In a world where clouds are made of cotton candy and rivers flow with liquid gold, there exists a secret garden hidden deep within the\nenchanted forest. Here, flowers bloom in every color imaginable, their petals shimmering with the whispers of ancient spells. The trees are not mere trees but guardians\nof time, their branches reaching towards the stars to pluck stories from the night sky. Creatures of myth and legend roam freely, from mischievous fairies \nweaving dreams to majestic unicorns with coats as soft as moonlight. And in the heart of this magical realm lies a forgotten library, \nits shelves lined with books that hold the keys to unlocking the mysteries of the universe.'

[40]: ```python
doc=nlp(text)
doc
```

[40]: In a world where clouds are made of cotton candy and rivers flow with liquid gold, there exists a secret garden hidden deep within the
enchanted forest. Here, flowers bloom in every color imaginable, their petals shimmering with the whispers of ancient spells. The trees are not mere trees but guardians
of time, their branches reaching towards the stars to pluck stories from the night sky. Creatures of myth and legend roam freely, from mischievous fairies weaving dreams to majestic unicorns with coats as soft as moonlight. And in the heart of this magical realm lies a forgotten library,
its shelves lined with books that hold the keys to unlocking the mysteries of the universe.

[44]: ```python
tokens = [token.text for token in doc]
print(tokens)
```

['In', 'a', 'world', 'where', 'clouds', 'are', 'made', 'of', 'cotton', 'candy', 'and', 'rivers', 'flow', 'with', 'liquid', 'gold', ',', 'there', 'exists', 'a', 'secret', 'garden', 'hidden', 'deep', 'within', 'the', '\n', 'enchanted', 'forest', '.', 'Here', ',', 'flowers', 'bloom', 'in', 'every', 'color', 'imaginable', ',', 'their', 'petals', 'shimmering', 'with', 'the', 'whispers', 'of', 'ancient', 'spells', '.', 'The', 'trees', 'are', 'not', 'mere', 'trees', 'but', 'guardians', '\n', 'of', 'time', ',', 'their', 'branches', 'reaching', 'towards', 'the', 'stars', 'to', 'pluck', 'stories', 'from', 'the', 'night', 'sky', '.', 'Creatures', 'of', 'myth', 'and', 'legend', 'roam', 'freely', ',', 'from', 'mischievous', 'fairies', '\n', 'weaving', 'dreams', 'to', 'majestic', 'unicorns', 'with', 'coats', 'as', 'soft', 'as', 'moonlight', '.', 'And', 'in', 'the', 'heart', 'of', 'this', 'magical', 'realm', 'lies', 'a', 'forgotten', 'library', ',', '\n', 'its', 'shelves', 'lined', 'with', 'books', 'that', 'hold', 'the', 'keys', 'to', 'unlocking', 'the', 'mysteries', 'of', 'the', 'universe', '.']

[45]: ```python
tokens
```

```python
[45]: ['In',
       'a',
       'world',
       'where',
       'clouds',
       'are',
       'made',
       'of',
       'cotton',
       'candy',
       'and',
       'rivers',
       'flow',
       'with',
       'liquid',
       'gold',
       ',',
       'there',
       'exists',
       'a',
       'secret',
       'garden',
       'hidden',
       'deep',
       'within',
       'the',
       '\n',
       'enchanted',
       'forest',
       '.',
       'Here',
       ',',
       'flowers',
       'bloom',
       'in',
       'every',
       'color',
       'imaginable',
       ',',
       'their',
       'petals',
       'shimmering',
       'with',
       'the',
       'whispers',
       'of',
       'ancient',
```

```
'spells',
'.',
'The',
'trees',
'are',
'not',
'mere',
'trees',
'but',
'guardians',
'\n',
'of',
'time',
',',
'their',
'branches',
'reaching',
'towards',
'the',
'stars',
'to',
'pluck',
'stories',
'from',
'the',
'night',
'sky',
'.',
'Creatures',
'of',
'myth',
'and',
'legend',
'roam',
'freely',
',',
'from',
'mischievous',
'fairies',
'\n',
'weaving',
'dreams',
'to',
'majestic',
'unicorns',
'with',
'coats',
```

```
    'as',
    'soft',
    'as',
    'moonlight',
    '.',
    'And',
    'in',
    'the',
    'heart',
    'of',
    'this',
    'magical',
    'realm',
    'lies',
    'a',
    'forgotten',
    'library',
    ',',
    '\n',
    'its',
    'shelves',
    'lined',
    'with',
    'books',
    'that',
    'hold',
    'the',
    'keys',
    'to',
    'unlocking',
    'the',
    'mysteries',
    'of',
    'the',
    'universe',
    '.']
```

[46]: `len(tokens)`

[46]: 130

[48]: `punctuation`

[48]: `'!"#$%&\'()*+,-./:;<=>?@[\\]^_`{|}~'`

[52]:
```python
wf={}
for word in doc:
```

```
        if word.is_alpha and not word.is_stop:
            wf[word.text]=wf.get(word.text,0)+1
```

[53]: `wf`

[53]: {'world': 1,
    'clouds': 1,
    'cotton': 1,
    'candy': 1,
    'rivers': 1,
    'flow': 1,
    'liquid': 1,
    'gold': 1,
    'exists': 1,
    'secret': 1,
    'garden': 1,
    'hidden': 1,
    'deep': 1,
    'enchanted': 1,
    'forest': 1,
    'flowers': 1,
    'bloom': 1,
    'color': 1,
    'imaginable': 1,
    'petals': 1,
    'shimmering': 1,
    'whispers': 1,
    'ancient': 1,
    'spells': 1,
    'trees': 2,
    'mere': 1,
    'guardians': 1,
    'time': 1,
    'branches': 1,
    'reaching': 1,
    'stars': 1,
    'pluck': 1,
    'stories': 1,
    'night': 1,
    'sky': 1,
    'Creatures': 1,
    'myth': 1,
    'legend': 1,
    'roam': 1,
    'freely': 1,
    'mischievous': 1,
    'fairies': 1,

```

```
 'weaving': 1,
 'dreams': 1,
 'majestic': 1,
 'unicorns': 1,
 'coats': 1,
 'soft': 1,
 'moonlight': 1,
 'heart': 1,
 'magical': 1,
 'realm': 1,
 'lies': 1,
 'forgotten': 1,
 'library': 1,
 'shelves': 1,
 'lined': 1,
 'books': 1,
 'hold': 1,
 'keys': 1,
 'unlocking': 1,
 'mysteries': 1,
 'universe': 1}
```

[54]:
```python
len(wf)
```

[54]: 63

[56]:
```python
mf=max(wf.values())
mf
```

[56]: 2

[59]:
```python
#to get normalized/weighted frequencies you should devide all frequencies with 2
for word in wf.keys():
    wf[word]=wf[word]/mf
wf
```

[59]:
```
{'world': 0.125,
 'clouds': 0.125,
 'cotton': 0.125,
 'candy': 0.125,
 'rivers': 0.125,
 'flow': 0.125,
 'liquid': 0.125,
 'gold': 0.125,
 'exists': 0.125,
 'secret': 0.125,
 'garden': 0.125,
```

```
'hidden': 0.125,
'deep': 0.125,
'enchanted': 0.125,
'forest': 0.125,
'flowers': 0.125,
'bloom': 0.125,
'color': 0.125,
'imaginable': 0.125,
'petals': 0.125,
'shimmering': 0.125,
'whispers': 0.125,
'ancient': 0.125,
'spells': 0.125,
'trees': 0.25,
'mere': 0.125,
'guardians': 0.125,
'time': 0.125,
'branches': 0.125,
'reaching': 0.125,
'stars': 0.125,
'pluck': 0.125,
'stories': 0.125,
'night': 0.125,
'sky': 0.125,
'Creatures': 0.125,
'myth': 0.125,
'legend': 0.125,
'roam': 0.125,
'freely': 0.125,
'mischievous': 0.125,
'fairies': 0.125,
'weaving': 0.125,
'dreams': 0.125,
'majestic': 0.125,
'unicorns': 0.125,
'coats': 0.125,
'soft': 0.125,
'moonlight': 0.125,
'heart': 0.125,
'magical': 0.125,
'realm': 0.125,
'lies': 0.125,
'forgotten': 0.125,
'library': 0.125,
'shelves': 0.125,
'lined': 0.125,
'books': 0.125,
```

```
    'hold': 0.125,
    'keys': 0.125,
    'unlocking': 0.125,
    'mysteries': 0.125,
    'universe': 0.125}
```

[60]:
```
st=[sent for sent in doc.sents]
st
```

[60]: [In a world where clouds are made of cotton candy and rivers flow with liquid
gold, there exists a secret garden hidden deep within the
 enchanted forest.,
 Here, flowers bloom in every color imaginable, their petals shimmering with the
whispers of ancient spells.,
 The trees are not mere trees but guardians
 of time, their branches reaching towards the stars to pluck stories from the
night sky.,
 Creatures of myth and legend roam freely, from mischievous fairies
 weaving dreams to majestic unicorns with coats as soft as moonlight.,
 And in the heart of this magical realm lies a forgotten library,
 its shelves lined with books that hold the keys to unlocking the mysteries of
the universe.]

[61]:
```
len(st)
```

[61]: 5

[62]:
```
st
```

[62]: [In a world where clouds are made of cotton candy and rivers flow with liquid
gold, there exists a secret garden hidden deep within the
 enchanted forest.,
 Here, flowers bloom in every color imaginable, their petals shimmering with the
whispers of ancient spells.,
 The trees are not mere trees but guardians
 of time, their branches reaching towards the stars to pluck stories from the
night sky.,
 Creatures of myth and legend roam freely, from mischievous fairies
 weaving dreams to majestic unicorns with coats as soft as moonlight.,
 And in the heart of this magical realm lies a forgotten library,
 its shelves lined with books that hold the keys to unlocking the mysteries of
the universe.]

[65]:
```
# we are going to calculate the sentence score, to calculate the sentence score
sentence_scores = {}

for sent in st:
```

```
        for word in sent:
            if word.text.lower() in wf.keys():
                if sent not in sentence_scores.keys():
                    sentence_scores[sent] = wf[word.text.lower()]
                else:
                    sentence_scores[sent] += wf[word.text.lower()]
sentence_scores
```

[65]: {In a world where clouds are made of cotton candy and rivers flow with liquid
gold, there exists a secret garden hidden deep within the
 enchanted forest.: 1.875,
 Here, flowers bloom in every color imaginable, their petals shimmering with the
whispers of ancient spells.: 1.125,
 The trees are not mere trees but guardians
 of time, their branches reaching towards the stars to pluck stories from the
night sky.: 1.75,
 Creatures of myth and legend roam freely, from mischievous fairies
 weaving dreams to majestic unicorns with coats as soft as moonlight.: 1.625,
 And in the heart of this magical realm lies a forgotten library,
 its shelves lined with books that hold the keys to unlocking the mysteries of
the universe.: 1.75}

[66]:
```
#lets say our case study was 30% sentence with maximum scores
from heapq import nlargest
```

[68]:
```
select_length = int(len(st)*0.4)
select_length
```

[68]: 2

[69]:
```
#we have to select maximum 4 sentences out of all sentences
summary = nlargest(select_length,sentence_scores, key = sentence_scores.get)
```

[70]:
```
summary
```

[70]: [In a world where clouds are made of cotton candy and rivers flow with liquid
gold, there exists a secret garden hidden deep within the
 enchanted forest.,
 The trees are not mere trees but guardians
 of time, their branches reaching towards the stars to pluck stories from the
night sky.]

[71]:
```
sentence_scores
```

[71]: {In a world where clouds are made of cotton candy and rivers flow with liquid
gold, there exists a secret garden hidden deep within the
 enchanted forest.: 1.875,

Here, flowers bloom in every color imaginable, their petals shimmering with the
whispers of ancient spells.: 1.125,
 The trees are not mere trees but guardians
 of time, their branches reaching towards the stars to pluck stories from the
night sky.: 1.75,
 Creatures of myth and legend roam freely, from mischievous fairies
 weaving dreams to majestic unicorns with coats as soft as moonlight.: 1.625,
 And in the heart of this magical realm lies a forgotten library,
 its shelves lined with books that hold the keys to unlocking the mysteries of
the universe.: 1.75}

```
[74]: # if i need to combine these top 2 sentencs then

      final_summary = [word.text for word in summary]
      final_summary
```

```
[74]: ['In a world where clouds are made of cotton candy and rivers flow with liquid
      gold, there exists a secret garden hidden deep within the\nenchanted forest.',
        'The trees are not mere trees but guardians\nof time, their branches reaching
      towards the stars to pluck stories from the night sky.']
```

```
[75]: print(summary)
```

[In a world where clouds are made of cotton candy and rivers flow with liquid
gold, there exists a secret garden hidden deep within the
enchanted forest., The trees are not mere trees but guardians
of time, their branches reaching towards the stars to pluck stories from the
night sky.]