

```

import nltk

import nltk
nltk.download('punkt')
nltk.download('punkt_tab')
nltk.download('stopwords')
nltk.download('averaged_perceptron_tagger')
nltk.download('averaged_perceptron_tagger_eng') # <-- new in recent
versions

from nltk.tokenize import word_tokenize
from nltk.corpus import stopwords
from nltk import pos_tag

text = """Machine learning and natural language processing are
revolutionizing technology.
        They help in building intelligent systems capable of
understanding human language."""

tokens = word_tokenize(text)
stop_words = set(stopwords.words('english'))
filtered_tokens = [word for word in tokens if word.lower() not in
stop_words and word.isalpha()]
pos_tags = pos_tag(filtered_tokens)

noun_count = sum(1 for word, tag in pos_tags if tag.startswith('NN'))
verb_count = sum(1 for word, tag in pos_tags if tag.startswith('VB'))
adj_count = sum(1 for word, tag in pos_tags if tag.startswith('JJ'))

print("Original Tokens:", tokens)
print("Filtered Tokens:", filtered_tokens)
print("POS Tags:", pos_tags)
print(f"Noun count: {noun_count}, Verb count: {verb_count}, Adjective
count: {adj_count}")

[nltk_data] Downloading package punkt to
[nltk_data] C:\Users\user\AppData\Roaming\nltk_data...
[nltk_data] Package punkt is already up-to-date!
[nltk_data] Downloading package punkt_tab to
[nltk_data] C:\Users\user\AppData\Roaming\nltk_data...
[nltk_data] Package punkt_tab is already up-to-date!
[nltk_data] Downloading package stopwords to
[nltk_data] C:\Users\user\AppData\Roaming\nltk_data...
[nltk_data] Package stopwords is already up-to-date!
[nltk_data] Downloading package averaged_perceptron_tagger to
[nltk_data] C:\Users\user\AppData\Roaming\nltk_data...
[nltk_data] Package averaged_perceptron_tagger is already up-to-
[nltk_data] date!
[nltk_data] Downloading package averaged_perceptron_tagger_eng to

```

```
[nltk_data]      C:\Users\user\AppData\Roaming\nltk_data...  
[nltk_data]      Package averaged_perceptron_tagger_eng is already up-to-  
[nltk_data]      date!
```

```
Original Tokens: ['Machine', 'learning', 'and', 'natural', 'language',  
'processing', 'are', 'revolutionizing', 'technology', '.', 'They',  
'help', 'in', 'building', 'intelligent', 'systems', 'capable', 'of',  
'understanding', 'human', 'language', '.']
```

```
Filtered Tokens: ['Machine', 'learning', 'natural', 'language',  
'processing', 'revolutionizing', 'technology', 'help', 'building',  
'intelligent', 'systems', 'capable', 'understanding', 'human',  
'language']
```

```
POS Tags: [('Machine', 'NN'), ('learning', 'VBG'), ('natural', 'JJ'),  
( 'language', 'NN'), ('processing', 'VBG'), ('revolutionizing', 'VBG'),  
( 'technology', 'NN'), ('help', 'NN'), ('building', 'NN'),  
( 'intelligent', 'JJ'), ('systems', 'NNS'), ('capable', 'JJ'),  
( 'understanding', 'JJ'), ('human', 'JJ'), ('language', 'NN')]
```

```
Noun count: 7, Verb count: 3, Adjective count: 5
```