

```
text="I am feeling very happy today!!..."
print(text)
```

```
I am feeling very happy today!!...
```

```
#conv in lowercase bcz Happy !=happy
text=text.lower()
print(text)
```

```
i am feeling very happy today!!...
```

```
#remov e punctuation
#everything except latters and spaces
# re= regular expressions
import re
text=re.sub(r'^\w\s',' ',text)
print(text)#without punctuation
```

```
i am feeling very happy today
```

```
# tokenization
tokens=text.split()
print("Tokens: ",tokens)
```

```
Tokens: ['i', 'am', 'feeling', 'very', 'happy', 'today']
```

```
#Remove stop word like ...I,am,are,is.....
stopwords=["i","am","are","very"]
filter_token=[]
for word in tokens:
    if word not in stopwords:
        filter_token.append(word)
print(filter_token)
```

```
['feeling', 'happy', 'today']
```

```
def stem(word):
    if word.endswith("ing"):
        return word[:-3]
    return word
stem_word=[]
for word in filter_token:
    stem_word.append(stem(word))
print(stem_word)#stemming
```

```
['feel', 'happy', 'today']
```

NLP PHASE 2

why vector?

bcz ML understan Vector

Bag of word

```
##help in convert text to count
from sklearn.feature_extraction.text import CountVectorizer
```

```
sentences=[
    "i am good","i am happy","i am sad","i am bored btw"]
```

```
print( sentences)
```

```
['i am good', 'i am happy', 'i am sad', 'i am bored btw']
```

```
#vectorise
vectorizer=CountVectorizer() #create object
x=vectorizer.fit_transform(sentences) #fit and transform,, learn vocab and conv sentence to number
print(x)
```

```
<Compressed Sparse Row sparse matrix of dtype 'int64'
  with 9 stored elements and shape (4, 6)>
Coords      Values
(0, 0)       1
(0, 3)       1
(1, 0)       1
(1, 4)       1
(2, 0)       1
(2, 5)       1
(3, 0)       1
(3, 1)       1
(3, 2)       1
```

```
print("Vocabulary: ", vectorizer.get_feature_names_out())
```

```
Vocabulary:  ['am' 'bored' 'btw' 'good' 'happy' 'sad']
```

```
print("vector: ")
print(x.toarray())
print( sentences)
print("match from vocab and see am is in all 4 sentence so 1st col is filled with 1 in all like wise see all")
```

```
vector:
[[1 0 0 1 0 0]
 [1 0 0 0 1 0]
 [1 0 0 0 0 1]
 [1 1 1 0 0 0]]
['i am good', 'i am happy', 'i am sad', 'i am bored btw']
match from vocab and see am is in all 4 sentence so 1st col is filled with 1 in all like wise see all
```

Start coding or [generate](#) with AI.

Example with Repeated Words

```
repeated_words_sentences = [
    "happy happy joy joy",
    "a dog a cat a mouse",
    "the quick brown fox and the quick brown dog"
]
print("Sentences with repeated words:", repeated_words_sentences)
```

```
Sentences with repeated words: ['happy happy joy joy', 'a dog a cat a mouse', 'the quick brown fox and the quick brown dog']
```

```
repeated_vectorizer = CountVectorizer()
repeated_x = repeated_vectorizer.fit_transform(repeated_words_sentences)
print("Vocabulary:", repeated_vectorizer.get_feature_names_out())
print("Vectors with repeated word counts:\n", repeated_x.toarray())
```

```
Vocabulary: ['and' 'brown' 'cat' 'dog' 'fox' 'happy' 'joy' 'mouse' 'quick' 'the']
Vectors with repeated word counts:
[[0 0 0 0 0 2 2 0 0 0]
 [0 0 1 1 0 0 0 1 0 0]
 [1 2 0 1 1 0 0 0 2 2]]
```

Another CountVectorizer Example

```
new_sentences = [
    "the quick brown fox",
    "fox jumps over the lazy dog",
    "the dog is brown"
]
print("New sentences:", new_sentences)
```

```
New sentences: ['the quick brown fox', 'fox jumps over the lazy dog', 'the dog is brown']
```

```
new_vectorizer = CountVectorizer()
new_x = new_vectorizer.fit_transform(new_sentences)
print("New Vocabulary:", new_vectorizer.get_feature_names_out())
print("New Vectors:\n", new_x.toarray())
```

```
New Vocabulary: ['brown' 'dog' 'fox' 'is' 'jumps' 'lazy' 'over' 'quick' 'the']
New Vectors:
[[1 0 1 0 0 0 0 1 1]
```

```
[0 1 1 0 1 1 1 0 1]
[1 1 0 1 0 0 0 0 1]]
```

TF /IDF...Inverse document freq and Term freq

```
from sklearn.feature_extraction.text import TfidfVectorizer
```

```
sentences=[
    " i am learning python and python is good",
    "i also machine learning with python"
]
```

```
vectorizer= TfidfVectorizer()
x=vectorizer.fit_transform(sentences)
print(vectorizer.get_feature_names_out())
```

```
#internally it will:
#Build vocab
#Calculate TF
#calculate idf
#multiple tf x idf
#generate matrix
```

```
['also' 'am' 'and' 'good' 'is' 'learning' 'machine' 'python' 'with']
```

```
print(x)
```

```
<Compressed Sparse Row sparse matrix of dtype 'float64'
  with 11 stored elements and shape (2, 9)>
  Coords      Values
(0, 1)      0.39129369358468363
(0, 5)      0.2784086857278066
(0, 7)      0.5568173714556132
(0, 2)      0.39129369358468363
(0, 4)      0.39129369358468363
(0, 3)      0.39129369358468363
(1, 5)      0.35520008546852583
(1, 7)      0.35520008546852583
(1, 0)      0.4992213265230509
(1, 6)      0.4992213265230509
(1, 8)      0.4992213265230509
```

```
print(x.toarray())
```

```
[[0.          0.39129369 0.39129369 0.39129369 0.39129369 0.27840869
  0.          0.55681737 0.          ]
 [0.49922133 0.          0.          0.          0.          0.35520009
  0.49922133 0.35520009 0.49922133]]
```

```
# IDF calc
#log(total document / document containing word)
```

To see which word each column (or coordinate) denotes, we can combine the vocabulary with the TF-IDF array. The vocabulary from `vectorizer.get_feature_names_out()` gives us the words in the order of their corresponding columns in the vector representation.

```
vocabulary = vectorizer.get_feature_names_out()
tfidf_array = x.toarray()

print("Vocabulary:", vocabulary)
print("TF-IDF Array:\n", tfidf_array)

print("\nMapping words to their TF-IDF scores for each sentence:")
for i, sentence_vector in enumerate(tfidf_array):
    print(f"Sentence {i+1}:")
    for j, score in enumerate(sentence_vector):
        if score > 0:
            print(f"    '{vocabulary[j]}': {score:.4f}")

Vocabulary: ['also' 'am' 'and' 'good' 'is' 'learning' 'machine' 'python' 'with']
TF-IDF Array:
[[0.          0.39129369 0.39129369 0.39129369 0.39129369 0.27840869
  0.          0.55681737 0.          ]
 [0.49922133 0.          0.          0.          0.          0.35520009
  0.49922133 0.35520009 0.49922133]]

Mapping words to their TF-IDF scores for each sentence:
Sentence 1:
  'am': 0.3913
  'and': 0.3913
```

```
'good': 0.3913
'is': 0.3913
'learning': 0.2784
'python': 0.5568
Sentence 2:
'also': 0.4992
'learning': 0.3552
'machine': 0.4992
'python': 0.3552
'with': 0.4992
```

Task

Please confirm if you have successfully pushed the notebook to your Git repository, or if there are any other tasks you would like assistance with.

Save Notebook

Subtask:

Ensure your Colab notebook is saved to your Google Drive or downloaded to your local machine.

Manual Git Push

Subtask:

Manually push the saved notebook file to your Git repository.

Subtask:

Manually push the saved notebook file to your Git repository.

Instructions

1. If you haven't already, download the `.ipynb` file of your Colab notebook to your local machine (File -> Download -> Download `.ipynb`).
2. Navigate to your local Git repository in your terminal or command prompt.
3. Add the notebook file to your Git staging area using `git add <notebook_file_name>.ipynb`.
4. Commit the changes with a descriptive message using `git commit -m "Add Colab notebook"`.
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Final Task

Subtask:

Confirm that the notebook has been successfully pushed to the Git repository or if there are any other related tasks you'd like assistance with.

Summary:

Q&A

The agent could not directly confirm if the notebook was successfully pushed to the Git repository as this requires manual user action outside its programmatic control. Instead, the agent provided comprehensive instructions for the user to perform this action.

Data Analysis Key Findings

- For the task of saving the Colab notebook, the agent determined that this was a manual action requiring user input. It provided clear instructions on how to save the notebook to Google Drive or download it locally.
- For the task of manually pushing the saved notebook to a Git repository, the agent repeatedly provided detailed, step-by-step instructions. These instructions included guidance on downloading the `.ipynb` file, navigating to the local Git repository, and using `git add`, `git commit`, and `git push` commands, followed by verification.

Insights or Next Steps

- The nature of tasks involving file saving and Git repository operations often necessitates direct user interaction and cannot always be automated programmatically by the agent.
- The user should now follow the provided instructions to save the notebook, push it to their Git repository, and then confirm its successful completion.