

# A01-Solution

April 10, 2022

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[2]: from sklearn.feature_extraction.text import TfidfVectorizer
from scipy import spatial
import numpy as np

class Rank:

    def __init__(self,docslst):
        self.docslst = docslst

    def Sort_Tuple(self,tup):

        # getting length of list of tuples
        lst = len(tup)
        for i in range(0, lst):

            for j in range(0, lst-i-1):
                if (tup[j][1] < tup[j + 1][1]):
                    temp = tup[j]
                    tup[j]= tup[j + 1]
                    tup[j + 1]= temp

        return tup

    def vectorization_tf_idf(self,query):
        ranking_list = []

        vec = TfidfVectorizer(stop_words='english')

        matrix = vec.fit_transform(self.docslst)

        # print('features Name : \n',vec.get_feature_names_out())

        docs_array = matrix.toarray()

        # print('tfidf Array :\n' , docs_array)
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query = vec.transform(query)
query_vector = query.toarray()

for count , index in enumerate(range(0, len(self.docslist))):

    print('Count : ',count)

    score = self.cos_sim(query_vector,docs_array[index])
    print("Score : ",score)
    ranking_list.append((count,score))

# sorting the list on the base of seconed index score
sorted_list = self.Sort_Tuple(ranking_list)

# now have sorted index base on the score
# higher score mean higher relevance with query

for index in sorted_list:
    print(self.docslist[ index[0]])

def cos_sim(self, vector1, vector2):
    cosine_similarity = 1 - spatial.distance.cosine(vector1, vector2)
    return cosine_similarity

if __name__ == "__main__":
    docslist = '''A car (or automobile) is a wheeled motor vehicle used for_
    ↪transportation.
    Most definitions of cars say that they run primarily on roads,_
    ↪seat one to
    eight people, have four wheels, and mainly transport people_
    ↪rather than goods.
    Cars came into global use during the 20th century, and_
    ↪developed economies depend on them''' ,
    '''The purpose of a gasoline car engine is to convert gasoline_
    ↪into motion so that your car can move.
    Currently the easiest way to create motion from gasoline is to_
    ↪burn the gasoline inside an engine.
    Therefore, a car engine is an internal combustion engine -_
    ↪combustion takes place internally
    ''' ,
    '''Airplanes are transportation devices which are designed to_
    ↪move people and cargo from one place to another.

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        Airplanes come in many different shapes and sizes depending on
→the mission of the aircraft'',
        '''The cycle function cycles through an array of values. It is
→useful for alternating values within a loop.
        It must be used within a for loop'',
        '''The number one language to be utilized (to keep being
→utilized), JavaScript is a high-level,
        multi-paradigm dynamic programming language that will remain
→the most popular in the world for many more years.'',
        '''React. js is an open-source JavaScript library that is used
→for building user interfaces specifically
        for single-page applications. It's used for handling the view
→layer for web and mobile apps.
        React also allows us to create reusable UI components'',
        '''With React, we write HTML using JavaScript. We rely on the
→power of JavaScript to generate HTML that depends on some data,
        rather than enhancing HTML to make it work with that data'',
        '''Django is a high-level Python web framework that encourages
→rapid development and clean, pragmatic design.
        Built by experienced developers, it takes care of much of the
→hassle of web development,
        so you can focus on writing your app without needing to
→reinvent the wheel. It's free and open source.'',
        '''A PHP framework is a platform to build PHP web applications.
        PHP frameworks provide libraries for commonly used functions,
        which helps to cut down on the amount of original code
→developers need to write from scratch.
        A PHP framework provides a basic foundation for the development
→of web applications in PHP'',
        '''js is a progressive framework for building user interfaces.
→It is an up-and-coming framework
        that helps developers in integrating with other libraries and
→existing projects.
        It has an ecosystem of libraries that allow developers to
→create complex and solid single-page applications'''

    ]

    query = ['The best framework is Python web framework is django']
    Rankobj = Rank(docslist)
    Rankobj.vectorization_tf_idf(query)

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Count : 0
Score : 0.0
Count : 1
Score : 0.0

```

Count : 2  
Score : 0.0  
Count : 3  
Score : 0.0  
Count : 4  
Score : 0.0  
Count : 5  
Score : 0.05212019217836894  
Count : 6  
Score : 0.0  
Count : 7  
Score : 0.365832200272883  
Count : 8  
Score : 0.21604055067914962  
Count : 9  
Score : 0.21375914492291426

Django is a high-level Python web framework that encourages rapid development and clean, pragmatic design.

Built by experienced developers, it takes care of much of the hassle of web development,

so you can focus on writing your app without needing to reinvent the wheel. It's free and open source.

A PHP framework is a platform to build PHP web applications.

PHP frameworks provide libraries for commonly used functions, which helps to cut down on the amount of original code developers need to write from scratch.

A PHP framework provides a basic foundation for the development of web applications in PHP

js is a progressive framework for building user interfaces. It is an up-and-coming framework

that helps developers in integrating with other libraries and existing projects.

It has an ecosystem of libraries that allow developers to create complex and solid single-page applications

React. js is an open-source JavaScript library that is used for building user interfaces specifically

for single-page applications. It's used for handling the view layer for web and mobile apps.

React also allows us to create reusable UI components

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Most definitions of cars say that they run primarily on roads, seat one to

eight people, have four wheels, and mainly transport people rather than goods.

Cars came into global use during the 20th century, and developed economies depend on them

The purpose of a gasoline car engine is to convert gasoline into motion so that your car can move.

Currently the easiest way to create motion from gasoline is to burn the gasoline inside an engine.

Therefore, a car engine is an internal combustion engine - combustion takes place internally

Airplanes are transportation devices which are designed to move people and cargo from one place to another.

Airplanes come in many different shapes and sizes depending on the mission of the aircraft

The cycle function cycles through an array of values. It is useful for alternating values within a loop.

It must be used within a for loop

The number one language to be utilized (to keep being utilized), JavaScript is a high-level,

multi-paradigm dynamic programming language that will remain the most popular in the world for many more years.

With React, we write HTML using JavaScript. We rely on the power of JavaScript to generate HTML that depends on some data,

rather than enhancing HTML to make it work with that data

[110]:

Query vector : [[0.70710678 0.70710678]]

[91]:

```
docs_Array :
[[0.53802897 0.      0.84292635]
 [0.78722298 0.61666846 0.      ]
 [0.          0.          0.          ]
 [1.          0.          0.          ]]
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