



Article Recommendation System with Machine Learning



AMAN KHARWAL / ⌚ NOVEMBER 10, 2021 / 📁 MACHINE LEARNING

A recommendation system is one of the applications of data science that is used by almost any application or website today. Many websites today use a recommendation system to recommend articles to their readers. For example, [Medium.com](https://medium.com) and even the website you're currently reading this article on is also using a recommendation system to recommend articles to its readers. So, if you want to learn how to create an article recommendation system with machine learning, this article is for you. In this article, I will walk you through how to build an Article Recommendation System with Machine Learning using Python.

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Article Recommendation System

There are many ways to create recommendation systems. To create an articles recommendation system, we need to focus on content rather than user interest. For example, if a user reads an article based on clustering, all recommended articles should also be based on clustering. So to recommend articles based on the content:


1. we need to understand the content of the article
2. match the content with all the other articles
3. and recommend the most suitable articles for the article that the reader is already reading

For this task, we can use the concept of **cosine similarity** in machine learning. Cosine similarity is a method of building recommendation systems based on the content. It is used to find similarities between two different pieces of text documents. So we can use cosine similarity to build an article recommendation system. In the section below, I will take you through how to build an article recommendation system with machine learning using Python.

Article Recommendation System using Python

To create an article recommendation system, I collected data about some of the articles on this website itself. So let's import the necessary Python libraries and the dataset we need to create an articles recommendation system:

```
1 import pandas as pd
2 import numpy as np
3 from sklearn.feature_extraction import text
4 from sklearn.metrics.pairwise import cosine_similarity
5 data = pd.read_csv("https://raw.githubusercontent.com/aman-kharwal/aman-kharwal.github.io/master/articles.csv")
6 data.head()
```



	Article	Title
0	Data analysis is the process of inspecting and...	Best Books to Learn Data Analysis
1	The performance of a machine learning algorithm...	Assumptions of Machine Learning Algorithms
2	You must have seen the news divided into categ...	News Classification with Machine Learning
3	When there are only two classes in a classific...	Multiclass Classification Algorithms in Machin...
4	The Multinomial Naive Bayes is one of the vari...	Multinomial Naive Bayes in Machine Learning

This dataset is completely ready to use to create a recommender system, so let's use the cosine similarity algorithm and write a Python function to recommend articles:

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```

1  articles = data["Article"].tolist()
2  uni_tfidf = text.TfidfVectorizer(input=articles, stop_words="english")
3  uni_matrix = uni_tfidf.fit_transform(articles)
4  uni_sim = cosine_similarity(uni_matrix)
5  def recommend_articles(x):
6      return ", ".join(data["Title"].loc[x.argsort()[-5:-1]])
7  data["Recommended Articles"] = [recommend_articles(x) for x in uni_sim]
8  data.head()

```

article recommendation.py hosted with ❤ by GitHub

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	Article	Title	Recommended Articles
0	Data analysis is the process of inspecting and...	Best Books to Learn Data Analysis	Introduction to Recommendation Systems, Best B...
1	The performance of a machine learning algorith...	Assumptions of Machine Learning Algorithms	Applications of Deep Learning, Best Books to L...
2	You must have seen the news divided into categ...	News Classification with Machine Learning	Language Detection with Machine Learning, Appl...
3	When there are only two classes in a classific...	Multiclass Classification Algorithms in Machin...	Assumptions of Machine Learning Algorithms, Be...
4	The Multinomial Naive Bayes is one of the vari...	Multinomial Naive Bayes in Machine Learning	Assumptions of Machine Learning Algorithms, Me...

As you can see from the output above, a new column has been added to the dataset that contains the titles of all the recommended articles. Now let's see all the recommendations for an article:

```
1 print(data["Recommended Articles"][22])
```

BIRCH Clustering in Machine Learning, Clustering Algorithms in Machine Learning, DBSCAN Clustering in Machine Learning, K-Means Clustering in Machine Learning

Index 22 contains an article on “agglomerated clustering”, and all the recommended articles are also based on the concepts of clustering, so we can say that this recommender system can also give great results in real-time.

Summary

So this is how you can build an articles recommendation system. A lot of websites today uses a recommendation system to

recommend articles to their readers. I hope you liked this article on how to build an articles recommendation system with machine learning using Python. Feel free to ask your valuable questions in the comments section below.



Aman Kharwal

I'm a writer and data scientist on a mission to educate others about the incredible power of data📊.

ARTICLES: 1376



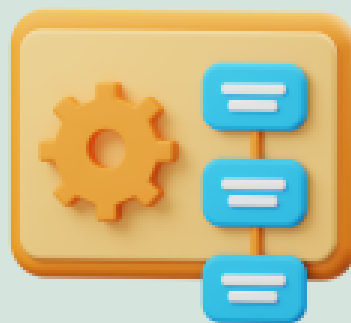
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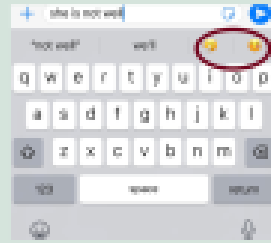
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