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Movie Recommendation System

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Abstract
At the present time, the recommendation system plays a very important role in any person's day-to- day life. The internet-based market is developing quickly thus the assumptions for individuals are as well. Recommendation systems can help most of the market and make it very easy to get what we want and it makes life simple for everyone. This paper centres around how might we give the best client experience with a better proposal framework that can help you in getting things that you would like quickly and get the best of all things. In this present period of time, there are many movies made irrespective of language and genres and so it has become a need to have a system that can recommendthe movie. The recommendation is done by using

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I. Introduction:

A Recommendation system is mainly dealing with Machine Learning. So as from our birth, data is present in different ways. These data are organized in different ways. we are inundated with data All entertainment websites or online stores have millions/billions of items. It becomes trying for the client to choose the right one. At this spot, recommender frameworks come into the image and assist the client with tracking down the right thing by limiting the choices. Recommendation system is a tool that helps the users to find the content according to the user input. Generally, Recommendations may be of many kinds like any product, food items, movies, articles, blogs any kind of items, etc. As of now there are many products in the world they all are categorized according to users, as now in the growing world, many people are choosing the shortest distance for that to recommend such type of products we need a recommendation system. For instance, there are applications like amazon, flip kart, myntra, amazon prime, Netflix, aha, and so forth. It helps the user to select the right item by suggesting a presumable list of items and so it has turned into an essential piece of internet some of the keywords like tags .in those tags consist of all sets of columns like genres, cast, crew, the title of the movie. The technology is growing fast and now they want the best movie to be watched according to the interest of the user. We need technology that can help us to find good movies based on the content, genres, cast, and crew. The recommendation system can encourage the learning cycle and make decision-making in this era much simpler and easy. There are various methods, which are used to recommend items such as content-based filtering, collaborative filtering, association rule mining, and Hybrid recommendation. In this paper, we talk about creating a Movie recommendation system using KNN (K Nearest neighbour) approach. business, film, and music delivering locales and the rundown continues. They are becoming one of the most well-known utilization of AI which has acquired significance in later years and also given a large number of movies are available for users all over the world so it is challenging for users to find the movies which suites their taste also many people have different taste. So it is important to find a filtering system that helps the users.

II. Methodology:

Algorithm: In this movie recommendation system, we need to find the similar movies nearby. So to find the movies which are nearby we need a algorithm for it to be satisfy the conditions. So for that we are using KNN Algorithm (k Nearest neighbour algorithm).In single sentence, nearest neighbour classifiers are defined by their characteristic of classifying unlabelled examples by assigning them the class of similar labelled examples. Despite the simplicity of the idea, nearestneighbour methods are extremely powerful.

In this algorithm we will get the examples k -nearestneighbors to classify unlabelled examples.
(x1 1, y1 1) and (x2 2, y2 2) is $d = \sqrt{[(x2 - x1)^2 + (y2 - y1)^2]}$.

Some of the strengths and weaknesses of KNNalgorithm are strengths:

1) simple and effective
2) Makes no assumptions about the underlying datadistribution.
3) Fast training phaseWeakness:
1) Requires selection of an appropriate K

2) Slow classification phase
3) Limiting the ability to understand how thefeatures are related to class.

when it comes to movie recommendation system it will give the nearby movies using similarity method n the KNN calculation fundamentally we have two kinds of approach

1) Euclidian distance
2) Cosine Similarity technique

Euclidian distance:

Mainly these two methods are used to find thedistance between the items(movies)

Euclidian distance states that square root of x and y Like, The Euclidean distance formula is used to find the distance between two points on a plane. This formula says the distance between two points Euclidean distance is specified by following formula, where p and q are the examples to be compared, each having n features. The term p refersfirst value to the first feature of example and the qrefers to the first feature of example q.

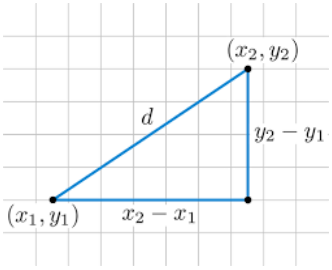

Figure 1: Euclidean Distance

Cosine similarity method:

The KNN calculation utilizes Euclidean distance, which is the distance one would quantify in the event that it was feasible to utilize a ruler to associate two places. – Euclidean distance is estimated "as crow flies", inferring the briefest distance course. Another common distance measure is Manhattan Distance, which is based on the paths as a pedestrian would take by walking city blocks.

In this cosine similarity method, we are using Vectorization process to fulfil the cosine similarity method. in the movie recommendation system all the tags which we are using are converted to vectors and they are in the form of arrays. First, we need to know about mainly vectorization and arrays concept.

Method is used to measure the similarity of two vectors. In particular, it estimates the likeness toward the path or direction of the vectors overlooking contrasts in their extent or scale. The two vectors should be essential for a similar inward item space, meaning they should create a scalar through internal item duplication. The likeness of two vectors is estimated by the cosine of the point between them.

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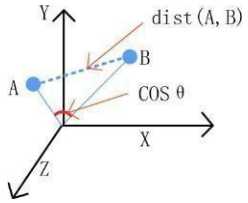

Figure 2: Angle between vectors

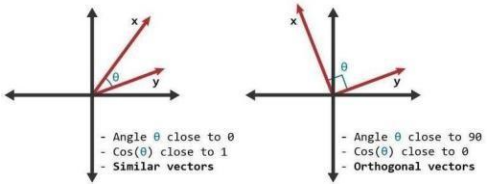

Figure 3: Cosine Similarity: Vectors

Mathematical formula for Cosine similarity is

$$\text{similarity} = \cos(\theta) = \frac{\mathbf{A} \cdot \mathbf{B}}{\|\mathbf{A}\|\|\mathbf{B}\|} = \frac{\sum_{i=1}^{n} A_i B_i}{\sqrt{\sum_{i=1}^{n} A_i^2}\sqrt{\sum_{i=1}^{n} B_i^2}},$$

Figure 4: Cosine Similarity: Vectors

The above formula represents the similarity rule; it basically finds the angle the angle vectors. Here to find the angle between the vectors, dataset should be converted into vectors. Each movie will be converted into each vector. It will be easy to find 18the similarity between the movies. After the column is converted to vectors, then the similarity method can be applied to vectors. Then we fetch the movie according to the user input.

```
In [64]: cosine_similarity(vectors)

Out[64]: array([[1.        , 0.08964215, 0.05976143, ..., 0.02519763, 0.02817181,
                 0.        ],
                [0.08964215, 1.        , 0.0625    , ..., 0.02635231, 0.        ,
                 0.        ],
                [0.05976143, 0.0625    , 1.        , ..., 0.02635231, 0.        ,
                 0.        ],
                ...,
                [0.02519763, 0.02635231, 0.02635231, ..., 1.        , 0.0745356 ,
                 0.04836508],
                [0.02817181, 0.        , 0.        , ..., 0.0745356 , 1.        ,
                 0.05407381],
                [0.        , 0.        , 0.        , ..., 0.04836508, 0.05407381,
                 1.        ]])
```

Figure 7: Matrix Array using Cosine

By using Cosine Similarity Method withhelp of matrix of arrays a recommendation engine is implemented.

```
In [68]: recommend('John Carter')

         Mission to Mars
         The Marine 4: Moving Target
         Ghosts of Mars
         Get Carter
         Escape from Planet Earth
```

Figure 5: Recommendation Sample

By applying cosine-similarity method it is beneficial for applications that utilize huge data, such as word documents, transactions in market data, and recommendation systems because cosine similarity it matches.

III. Conclusion:

We illustrated how to build a scalable neighbourhood-based Content based filtering recommender system on Python in Jupyter notebook. Recommender system plays a major role for human in day to day life. So, it opens a new opportunity of retrieving personalized information on the Internet. We come up with a strategy that focuses on dealing with user's personal interests and based on the user interests and inputs, movies are recommended to users. This strategy helps in improving accuracy of the recommendations. It mainly helps in collecting accurate data with improved accuracy and makes the system more responsive. In this content-based recommendation system users can get exactly other similar movies byrecommendation.

References:

[1]. qracorp.com/functional and non-functionalrequirements
[2]. medium.com/cosine-similarity
[3]. machinelearning.com/cosine-similarity
[4]. towardsdatascience.com
[5]. geeks-for-geeks/python
[6]. askpython.com/vectorization
[7]. tutorialspoint.com/vectorization
[8]. searchenterpriseai.techtarget.com
[9]. www.ibm.com/machine-learning
[10]. towardsdatascience.com/content-based
[11]. medium.com/datascience 40
[12]. diva-portal.org/recommendersystem 13.
[13]. analyticsvidhya.com/movierecommendersystem
[14]. learndatasci.com/glossary/cosine-similarity
[15]. tmdb/moviesdataset
[16]. cuemath.com/euclidean-distance-formula/
[17]. sklearn.com/vectorization.