A Project Report

on

Recommendation System Using Machine Learning

Submitted in partial fulfilment of the requirement for the award of degree of

BACHELOR OF ENGINEERING
IN
COMPUTER SCIENCE & ENGINEERING

Under The Supervision of
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Lakhanpal

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CANDIDATE'S DECLARATION

I/We hereby certify that the work which is being presented in the the entitled "**Recommendation System** " in partial fulfillment of the requirements for the award of the **BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE AND ENGINEERING** submitted in the School of Computing Science and Engineering of Galgotias University, Greater Noida, is an original work carried out during the period of **JULY-2021 to DECEMBER-2021** under the supervision of **Mr. Anupam Lakhanpal Department of Computer Science and Engineering** of School of Computing Science and Engineering , Galgotias University, Greater Noida

The matter presented in the thesis/project/dissertation has not been submitted by me/us for the award of any other degree of this or any other places.

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This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

Supervisor Name

Designation

(Anupam Lakhanpal)
21/12/2021

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GALGOTIAS UNIVERSITY, GREATER NOIDA

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INDEX

ABSTRACT

In today's world people are a trend to shop there daily needs in e-commerce sites and here the product recommendation takes a major role in every e-commerce sites to overcome their failures. It is one kind of marketing process by which we can advertise for many products and make the customers feel comfort while purchasing into the sites. Product recommendation will analysis the existing things where we can find the frequently purchased products which the customer like most and wish to buy will be recommended for them, it increases the sale percentage. In this paper, we highly focus on effective product recommendation system using Linear Regression method. Recommendation systems are typically used by companies, especially e-commerce companies like Amazon.com, to help users discover items they might not have found by themselves and promote sales to potential customers. A good recommendation system can provide customers with the most relevant products. This is a highly-targeted approach which can generate high conversion rate and make it very effective and smooth to do advertisements. So the problem we are trying to study here is that, how to build effective recommendation systems that can predict products that customers like the most and have the most potential to buy.

In today's environment the idea of establishing business without the use of internet is not possible. More and more users are shifted towards online systems. So companies are also converged toward the online business. Every company in their attempt to establish strong foots required some sort of mechanism which can promote their product. So recommender system comes into existence. The recommender system is the filtering system which will detect the preferences of the users. By looking at the preference of the users companies can decide which product to be launched in the market and which is not.

Keywords-component; Machine Learning, Linear regression, Product recommender.

Introduction-

In order to increase the sale of the product or to increase the efficiency in the market recommender system is needed. This system will require large amount of information in order to make correct decision. The information which is provided to the recommender system must be consistent in nature. For the information some sort of information system is required. The recommender system will take the information and formulate the decision in one of the following two ways- either by the use of collaborative filtering or by the use of content filtering. The collaborative filtering is the mechanism of filtering for information among the multi agents, viewpoints, data sources etc. The content filtering on the other hand is the mechanism of using the program in order to filter the information which is going to be used within the system. People now days are more and more concerned with the environment. They are conscious of the fact that the product used by them may harm the environment. So people are inclined toward the safety of the environment. So we propose a recommender system which will promote Electronic Products only. In the proposed system content filtering will be utilized. While considering recommendation system there are two types of terms which are used within the system: Users and items. The users have preferences for the certain items. The preferences are made because of the data items presented to them. In order to describe the terms related to the users and items sparse matrix will be used. The sparse matrix will be the one in which more 0's are contained rather than 1's. However the user preferences are not consistent.

Literature Reviews/Comparative study-

The brand awareness is a massive issue which must be considered in the task of promotion. The brands which are popular are likely to be sold. So task of promotion is very important. Promotion of Electronic Products (Barreda, Bilgihan, Nusair, & Okumus, 2015) is considered so that environment remains clean. The promotional work although is convoluted but is accomplished and counselled in the existing work. There are legions which can inspire the promotional process. These will include system quality and information quality(Barreda et al., 2015). The recommender system is commonly used in the area of e-learning. It will be used to evaluate the performance of the students. It is considered that the preferences of the user does not change over the period of time and decision can be taken by looking at the historical data(Baltrunas, 2011). This is true to some extent. However preferences of the user may be influenced by legions of other factors also(Baltrunas, 2011). As an example consider a rainy season in which user will not prefer to go to a beach rather user prefer to go to a museum (Baltrunas, 2011). The blended learning model is followed in this case. When this happens personal online learning will be enhanced(Hoic-Bozic et al., 2015). Online community of practices is another application of recommender system. The trust based CoPs is created so that online education can be promoted(Zheng et al., 2015). The stronger social relations are created by the use of CoPs. The hybrid algorithm will provide more accurate suggestions as compare to content based recommender system(Zheng et al., 2015). By analyzing the background of the recommender systems we conclude that legion of work has been realized in the area of e-learning. Finical work has been done in the area of beget of recommender system to promote Electronic products. The work of Electronic products promotion is generally done online or offline without the help of social media.

Filtering Mechanism-

Recommendation system is a facility used in web applications to guess the user response or taste regarding particular product or thing. Sometimes as we all know we get some advertisements during web surfing in our computer or some mails in our inbox or spam. These all comes from the net surfing that we had done last time from that our recommendation system guesses our taste or response for particular product. Recommendation system uses number of technologies to check the response of users which are as follows;-

Content Based System: - These system check the response of user according to the content he/she search for, from that recommend system easily know the user response. For example if user is searching for sports based news then the system guesses that the user is interested about sports.

Collaborative Filtering System: - These system guesses the response not for a single person but for a group of persons or community. For example if we talk about the taste of boys then he always want to check in news about sports, latest market trends etc.

Model for Recommendation System: - In this model the concept of —Long-Tail‖ with the help of utility matrix. In this model we consider the concept of sparse matrix to implement recommendation system and then by using this matrix we get the response of users for particular things. Online vendors also use this system to check the user response about particular product.
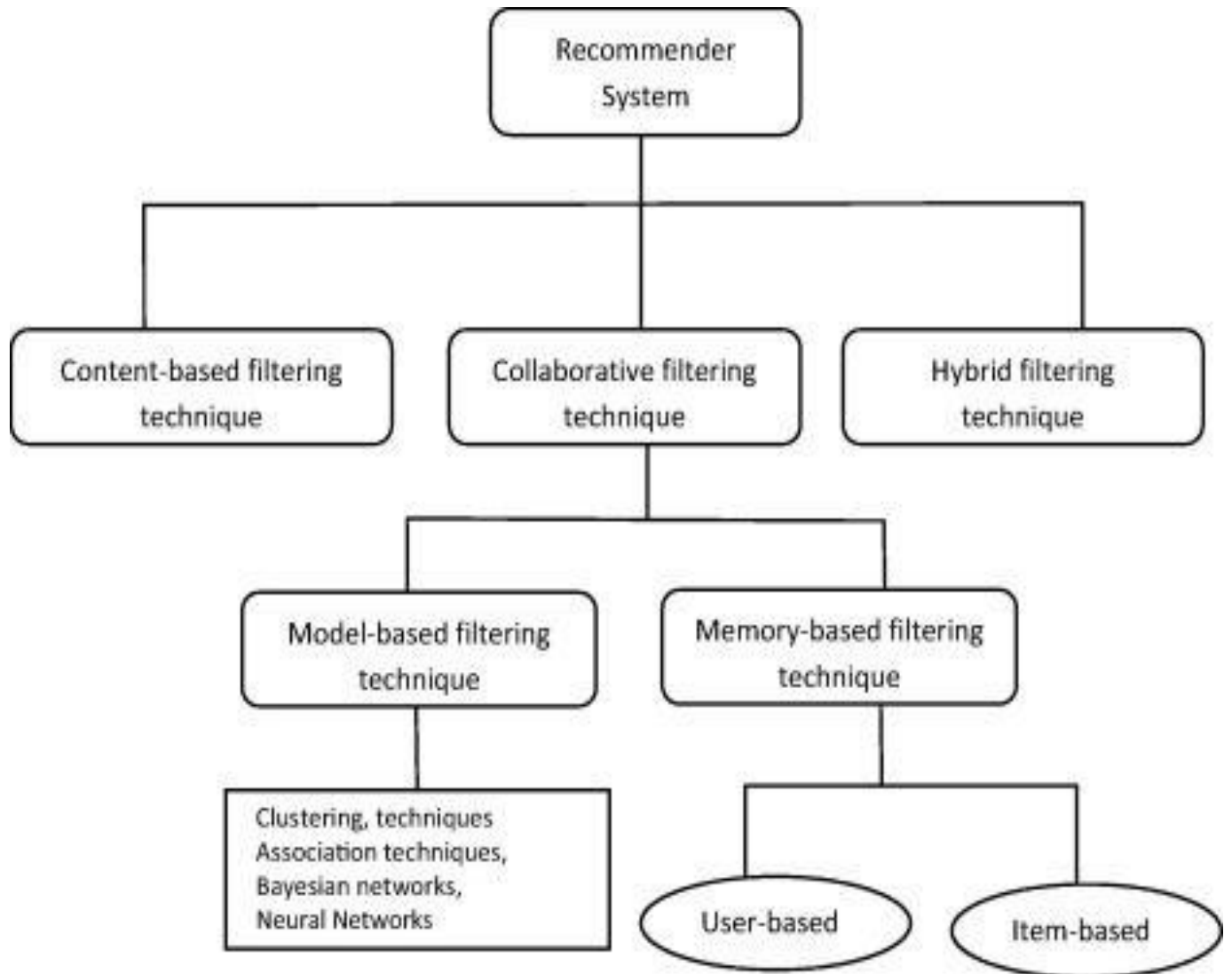
Flow Chart:-

Fig. Flow chart
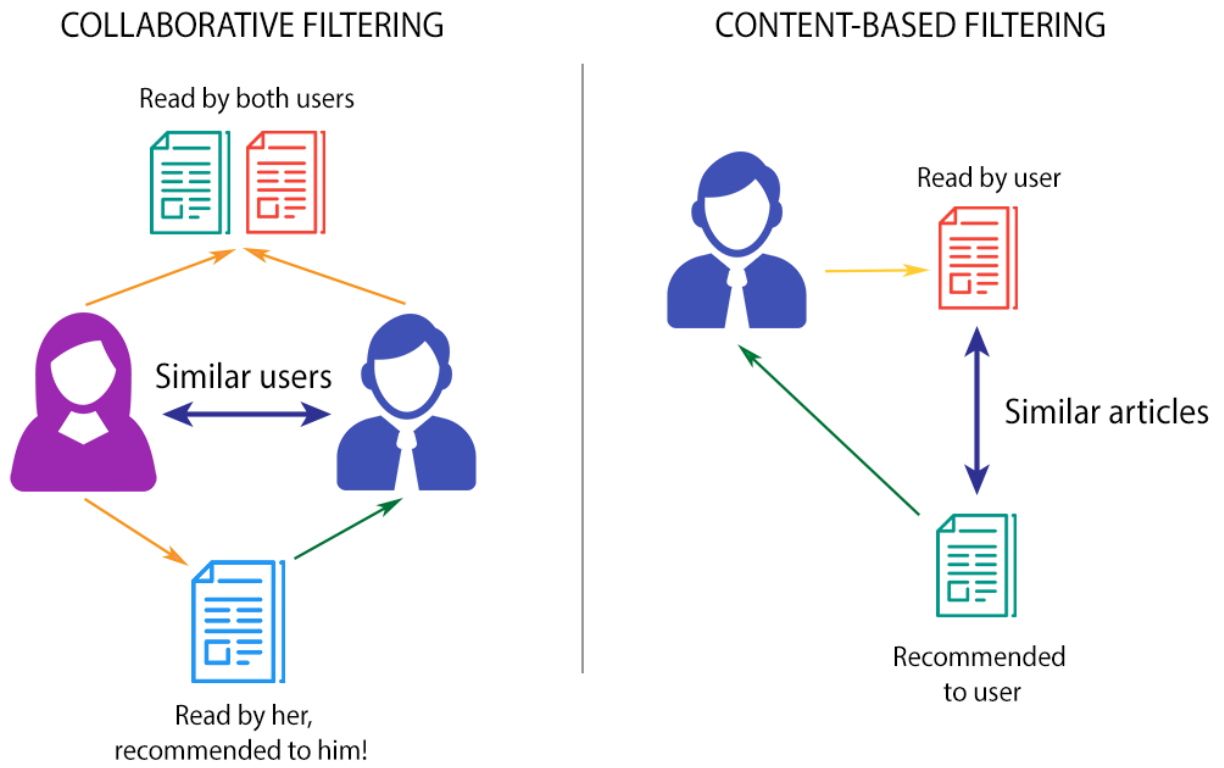
Use Case Diagram: -

Fig. Use Case Diagram

Conclusion-

In this project, we review various recommender systems which will going to promote Electronic products. Various parameters are considered in this case for input. The parameters which we have considered are Eco, Organic, Stars, Power and Recycled. Although the performance of the recommender system is good and it will detect the Electronic Products which can be promoted using Recommender system but still there could be more accuracy which can be used in order to detect the Electronic products.