**RECOMMENDATION SYSTEM FOR E-COMMERCE WEBSITES**

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INTRODUCTION

In our day to day lives we get suggestions in every aspect of our lives. Ideally, suggested items are as relevant to the us as, so that the user can engage with those items: YouTube videos, news articles, online products, and so on. A recommendation system is a computer program that helps a user discover products and content by predicting the user’s rating of each item and showing them the items that they would rate highly. Behind the scenes, these systems are powered by a recommender function. A recommender function takes in information about the user and predicts the rating the user would give the product.That means you can show the user only the things they would like the best and not waste their time with products they won’t care about.

TYPES OF RECOMMENDATIONS

* Collaborative Filtering recommendation systems:

Collaborative filtering systems make recommendations only based on how users rated products in the past, not based on anything about the products themselves. In collaborative filtering, the recommendation system has no knowledge of the actual product it is recommending. It only knows how other users rated the product.

* Content based recommendation systems:

Content-based recommendation systems are recommendation systems that use their knowledge of each product to recommend new products.

Let’s say that you tell a friend that you just watched the movie Iron Man starring Robert Downey, Jr. and that you really liked it. Your friend might recommend that you watch the movie Avengers next. Both movies are Science fiction film and both movies feature the same movie star. It could be a good recommendation because the movies have a lot of attributes in common. This is the idea behind content-based recommendation systems. They try to recommend products that have similar attributes to a product that the user already liked.

* Hybrid recommendation systems

Recent research has demonstrated that a hybrid approach, combining collaborative filtering and content-based filtering could be more effective in some cases. Hybrid approaches can be implemented in several ways, by making content-based and collaborative-based predictions separately and then combining them, by adding content-based capabilities to a collaborative-based approach (and vice versa), or by unifying the approaches into one model.Netflix is a good example of a hybrid system. They make recommendations by comparing the watching and searching habits of similar users (i.e. collaborative filtering) as well as by offering movies that share characteristics with films that a user has rated highly (content-based filtering).

LITERATURE SURVEY

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| Sr No. | Year | Name of Paper | Author | Content |
| 1 | 2019 | Parameter based survey of Recommendation systems | Janani Balasubramanian, Soumya Koppaka, Chinmay Rane, and Nataasha  Raul | Performance of various parameters |
| 2 | 2019 | A Study on E-commerce Recommender System Based on Big Data | Xuesong Zhao | Recommendation Systems in Big Data |
| 3 | 2016 | E-commerce Product Recommendation Method based on Collaborative Filtering  Technology | JunBo Xia | E-commerce product recommendation |
| 4 | 2003 | PCFinder: An Intelligent Product Recommendation Agent for E-commerce | Bin Xiao, Esma Aimeur and Jose Manuel Fernandez | Works on Order Based Similarity Measure |
| 5 | 2017 | Recommendation system in E-commerce websites: A  Graph Based Approached | Ms. Shakila Shaikh and Dr. Sheetal Rathi | Use of Graph based approach to improve semantics in e-commerce website |
| 6 | 2009 | A Neural Networks-based Clustering Collaborative Filtering Algorithm in E-commerce Recommendation System | Jianying Mai, Yongjian Fan and Yanguang Shen | BP Neural Networks based clustering |
| 7 | 2018 | A Content-Based Recommendation System Using  Neuro-Fuzzy Approach | Tomasz Rutkowski, Jakub Romanowski, Piotr Woldan, Pawel Staszewski, Radoslaw Nielek, and Leszek Rutkowski | Neuro fuzzy and deep learning methods. |
| 8 | 2018 | DeepHCF: A Deep Learning Based Hybrid Collaborative Filtering Approach for Recommendation Systems | Meshal Alfarhood and Jianlin Cheng | Matrix trained on Multi layer perceptron and CNN |
| 9 | 2017 | A Recommendation System by Collaborative Filtering Including Information and Characteristics on  Users and Items | M. Kawasaki and T. Hasuike. | Recommendation system that recommends new items based on Matrix |

GAPS IDENTIFIED

* It was observed that lack of importance was given to the selection of variables while making recommendations.
* Lack of semantic factor in recommendation systems.

OBJECTIVES

1. To study the basics of recommendation systems and how they can be used in e-commerce.

2. To make useful insights from customer reviews.

CONCLUSION

A detailed study about the recommendation systems and types of it was conducted. How it can be used by using various linear, clustering an classification algorithms. Finally they were evaluated based on performance metric

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9. M. Kawasaki and T. Hasuike,”A Recommendation System by Collaborative Filtering Including Information and Characteristics on Users and Items,”2017