

E-commerce Recommendation System

Mehmet Can Yalçın - Özge Güney

Abstract

Today, the sharp and fast growth of e-commerce has caused product overload and customers on the Web are no longer able to effectively choose the products which they are exposed to. To overcome the product overload problem in online shopping, a variety of recommendation methods have been developed.

1 Introduction

A product recommendation is a filtering system that tries to make a prediction and show the goods that a user may likely buy. In online stores this role is done by AI algorithms, that create recommendation systems for each client. The recommender systems work in the following way: 'Collection of data', 'Pre-processing the data', 'Analyzing the data', 'Filtering the data'. There are some methods, but most used methods are as following:

1. Collaborative filtering. Collaborative filtering is thought the most successful recommendation method. This method is based on the fact that individuals who liked the past will agree with it in the future. The system generates recommendations using data about rating profiles for different users or goods. For instance, in case an individual "X" likes products a, b, c, and "Y" likes b, c, d at that point they have similar interests and "X" should like 'd' and "Y" should like 'a'. However, the approach has well-known limitations, such as sparsity and scalability. Therefore, it can lead to poor recommendations. According to our investigation, in model based CF, clustering based approach with KNN algorithm and matrix factorization based approach with SVD algorithm can be used in this project.
2. Content-based filtering The main idea of this method is that if you like some product you will also like a 'similar' product.
3. Hybrid recommender systems. To overcome CF's limitations, Hybrid recommender system is recommended. It suggests based on content-based filtering and collaborative-based filtering recommendations which would be quite effective. This subject will be researched in detail.

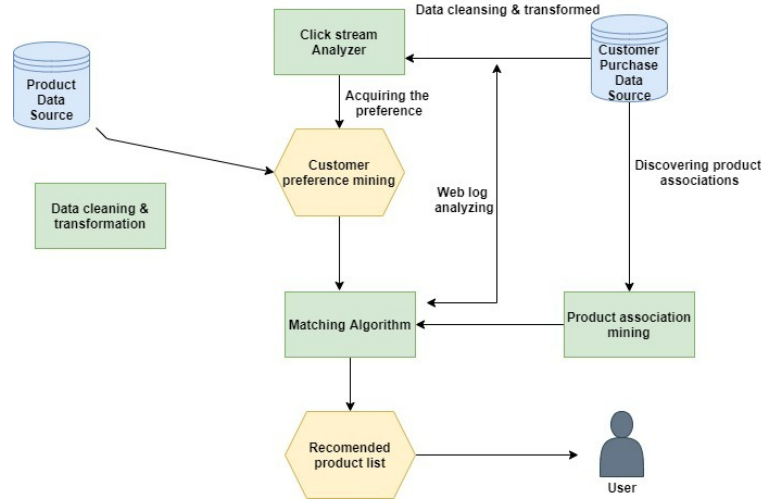


Figure 1: E-Commerce Recommendation System Model

2 References

<https://www.sciencedirect.com/science/article/abs/pii/S0957417403001386>

<https://developers.google.com/machine-learning/recommendation/collaborative/basics>

<https://datrics.ai/use-cases/product-recommendations-engine-for-e-commerce>

<https://medium.com/web-mining-is688-spring-2021/e-commerce-recommendation-engine-with-collaborative-filtering-cb19cd542c18>

<https://developers.google.com/machine-learning/recommendation/collaborative/basics>

https://www.researchgate.net/publication/227268858_Recommender_Systems_Handbook

https://www.itm-conferences.org/articles/itmconf/abs/2017/04/itmconf_ita2017_04008/itmconf_ita2017_04008.pdf

<https://www.cs.umd.edu/~samir/498/Amazon-Recommendations.pdf>

https://www.researchgate.net/publication/227268858_Recommender_Systems_Handbook