

# USER-BASED FASHION RECOMMENDATION SYSTEM

## Team Details

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## What have others done to solve this problem? What other approaches can we explore on this data set?

Others have solved this problem using a technique known as collaborative filtering, wherein products are recommended to the user based on past purchases. Another that can be explored on this dataset is known as community detection. In community detection products will be recommended to the user based on relationships that can be extracted by an algorithm.

## What is the specific problem we are going to solve?

H&M is a fast fashion brand whose online store offers shoppers a wide range of products to browse and select. But with such an extensive collection, customers will have a hard time finding the products that they are looking for as it may be a tedious job. This ultimately decreases the chance of customers making purchases, which in turn will reduce the profits of the company. This is the problem that we are focusing on solving by enhancing the shopping experience with the help of a fashion or product recommendation system.

A content-based product recommendation system learns the likes and dislikes of a user based on item features. The algorithm tries to recommend items that are similar to the user's preferences in the past or are currently evaluated. In particular, various candidate items are compared to user-rated items and are highly recommended. This approach has its roots in information retrieval and data filtering research

## What are the questions we are going to attempt to answer?

- What products can be recommended for a given user
  - Recommending products based on the user's previous purchases.
  - Recommending products based on previous views or searches of the user.
  - Recommending products based on the likes and dislikes of users with similar choices as that of the given user.

- Which potential user community is to be targeted during a new product launch campaign

**What are the challenges with this data set (based on the initial exploratory analysis + coarse solution approach (trying library functions, etc., to build a simple model))**

-Due to the dataset's large size, analysis became tedious and time-consuming. The power required to process the data increased significantly as well.

-There are three tables with correlated attributes which required joining large amounts of data in different tables with their respective unique attributes

**What solution approaches would be reasonable to attempt?**

A technique known as collaborative filtering is split into user-based and item based. User-based collaborative filtering is to recommend items to a user, based on previous purchases that have positive reviews for users with similar likings. Item-based collaborative filtering looks for items similar to previous purchases that have been positive for the user in question.

Another approach to this problem would be by using community detection. This is the approach we will be using in our recommendation system to overrule the drawbacks of collaborative filtering. This technique follows the epigram "Tell me who your friends are, and I will tell you who you are", i.e, user groups with similar tastes will affect the final product recommended to a single user

**How is my solution approach different from what is already out there?**

The most popular method to develop a recommendation system is collaborative filtering as it is one of the simplest approaches.

The recommendation system that we are building will be using the community detection approach.

Unlike collaborative filtering, community detection combines the characteristics of user-based and item-based recommendations. Community detection is developed under the concept of social media networks. It discovers people with common interests, makes similar people into a group, and keeps them tightly connected. We will be using a community detection algorithm to extract friendship relations among users. This approach will improve scalability, coverage, and cold-start issues of collaborative filtering-based recommendation systems.

Thus, recommendations are made based upon:

- items previously purchased
- items that are bought together with previous purchases
- popular items in a user group/cluster

**What is the use of solving this problem?**

Solving this problem will help gain new users as well as maintain the existing customer base as the platform provides a detailed filtering process based on the user's interests. Helping customers make the right choices also have a positive implication for sustainability, as it reduces returns, and thereby minimizes emissions from transportation. It also helps increase profits for the store.

**Link to the dataset used :**

-<https://www.kaggle.com/competitions/h-and-m-personalized-fashion-recommendations/data>

**Resources referred to :**

-International Research Journal of Engineering and Technology (IRJET), Volume: 04

-[H&M Personalized Fashion Recommendations | Kaggle](#)

**GitHub Link :**

- <https://github.com/MoulyyaShetty/user-fashion-recommendation>