NADEEM 2020-12-06

RECOMMENDATION SYSTEM

WHAT ARE THE PROS & CONS OF RECOMMENDATION SYSTEM???

EXISTING DATA APPROACH

CURRENT APPROACH USES CONTENT-BASED FILTERING

CURRENTLY ONLY THE USER DATA IS COLLECTED AND USED FOR MODELLING AND RECOMMENDATION

PROS

- The Model does not need any other users data, as the recommendation is specific to the user. This makes more generic to large amount of users.
- The Model can capture the trend of specific users and it can be recommend the same items that very few other users are interested.
- Easy recommendations make less searches and some times end up in good deals
- Speed up the process of decision and purchase based on the previous statistics

PROS

- It has the ability to recommend new items even if there are no ratings provided by users. So even if the database does not contain user preferences, recommendation accuracy is not affected.
- If the user preferences change, it has the capacity to adjust its recommendations in a short span of time.
- Users can get recommendations without sharing their profile, and this ensures privacy.
- CBF technique can also provide explanations on how recommendations are generated to users.

CONS

- It is Domain-dependent algorithm and it emphasizes more on the analysis of the attributes of items in order to generate predictions.
- Since the feature representation of the items are hand-engineered to some extent, this technique requires a lot of domain knowledge. Therefore, the model can only be as good as the hand-engineered features.
- The model can only make recommendations based on existing interests of the user. In other words, the model has limited ability to expand on the users' existing interests.

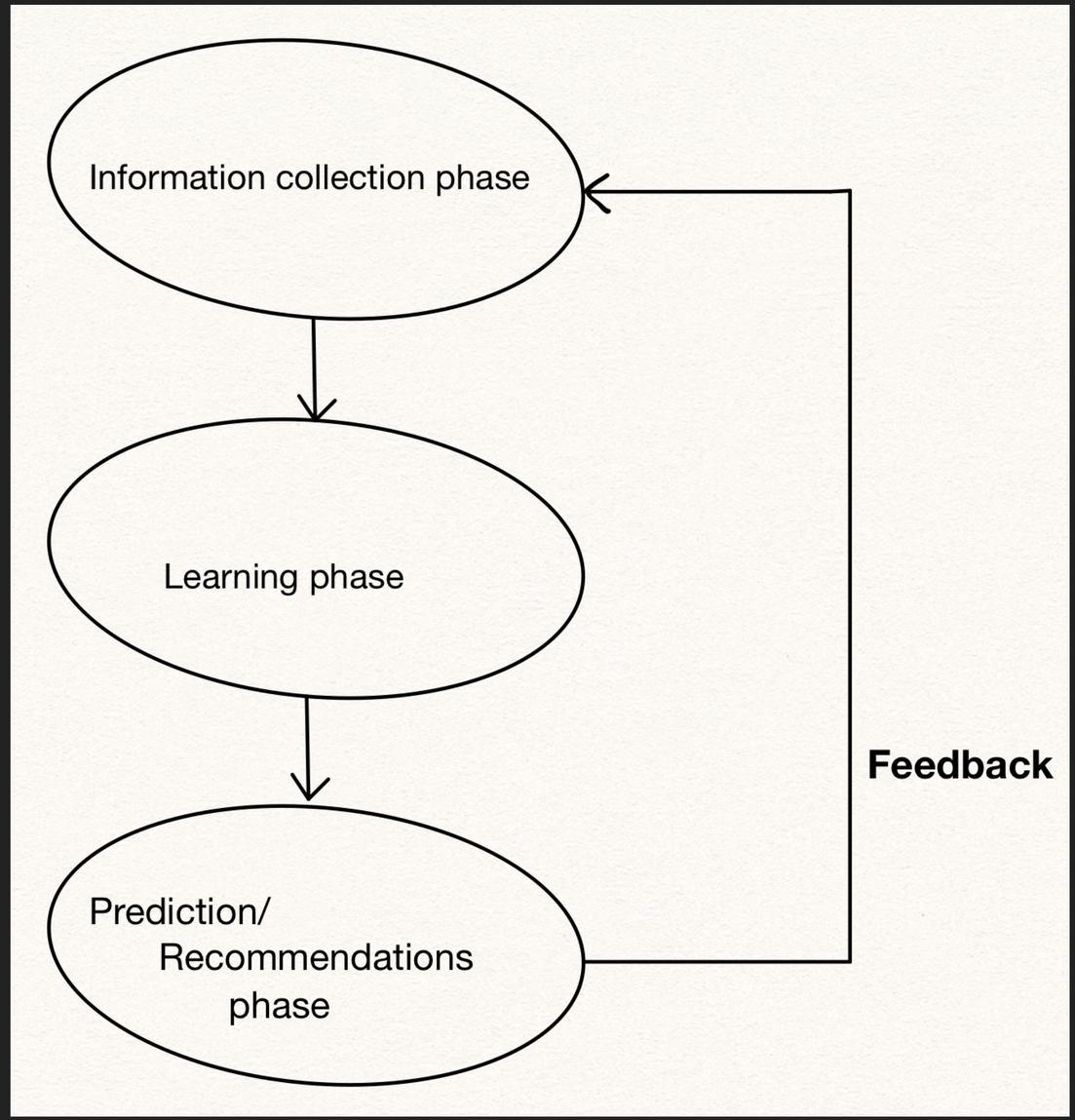
CONS

- If the system recommends products with bias, then customer will be landing into wrong deals.
- The major disadvantage of this technique is the need to have an in-depth knowledge and description of the features of the items in the profile. So, effectiveness of CBF depends on the availability of descriptive data.
- Content overspecialisation is another serious problem of CBF technique. Users are restricted to getting recommendations similar to items already defined in their profiles.

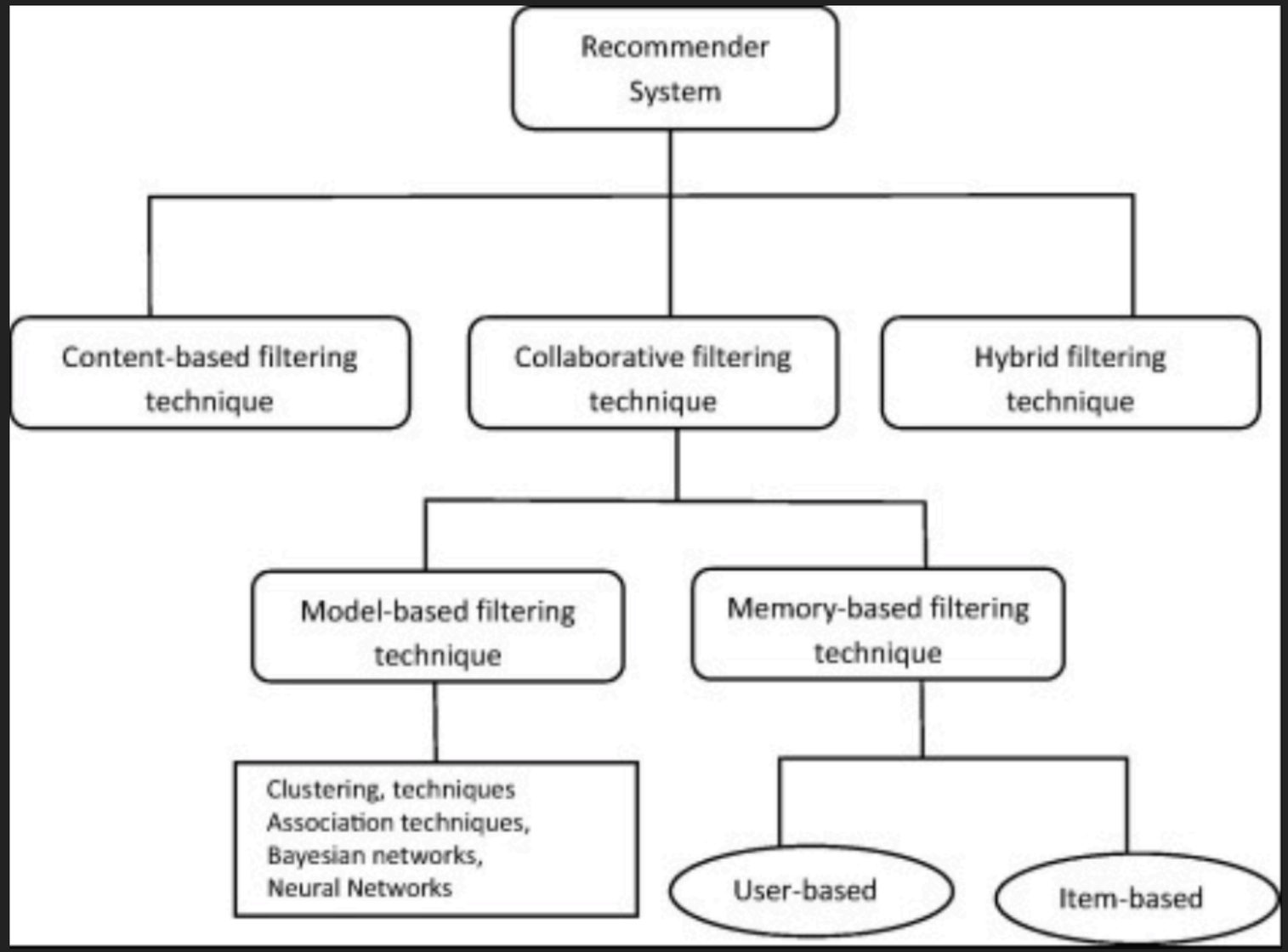
PROPOSE AN ARCHITECTURE THAT WILL WORK MORE EFFICIENTLY WHEN BUILDING A RECOMMENDATION ENGINE FOR AN E- COMMERCE PLATFORM

RECOMMENDATION SYSTEM

- Recommendation starts with Information collection phase.
- Based on the information collected different types of recommendation system’s can be created
- Learning phase: Modelling and training the data
- Prediction/Recommendation phase: Recommend based on the use case.



TYPES OF RECOMMENDATION SYSTEM



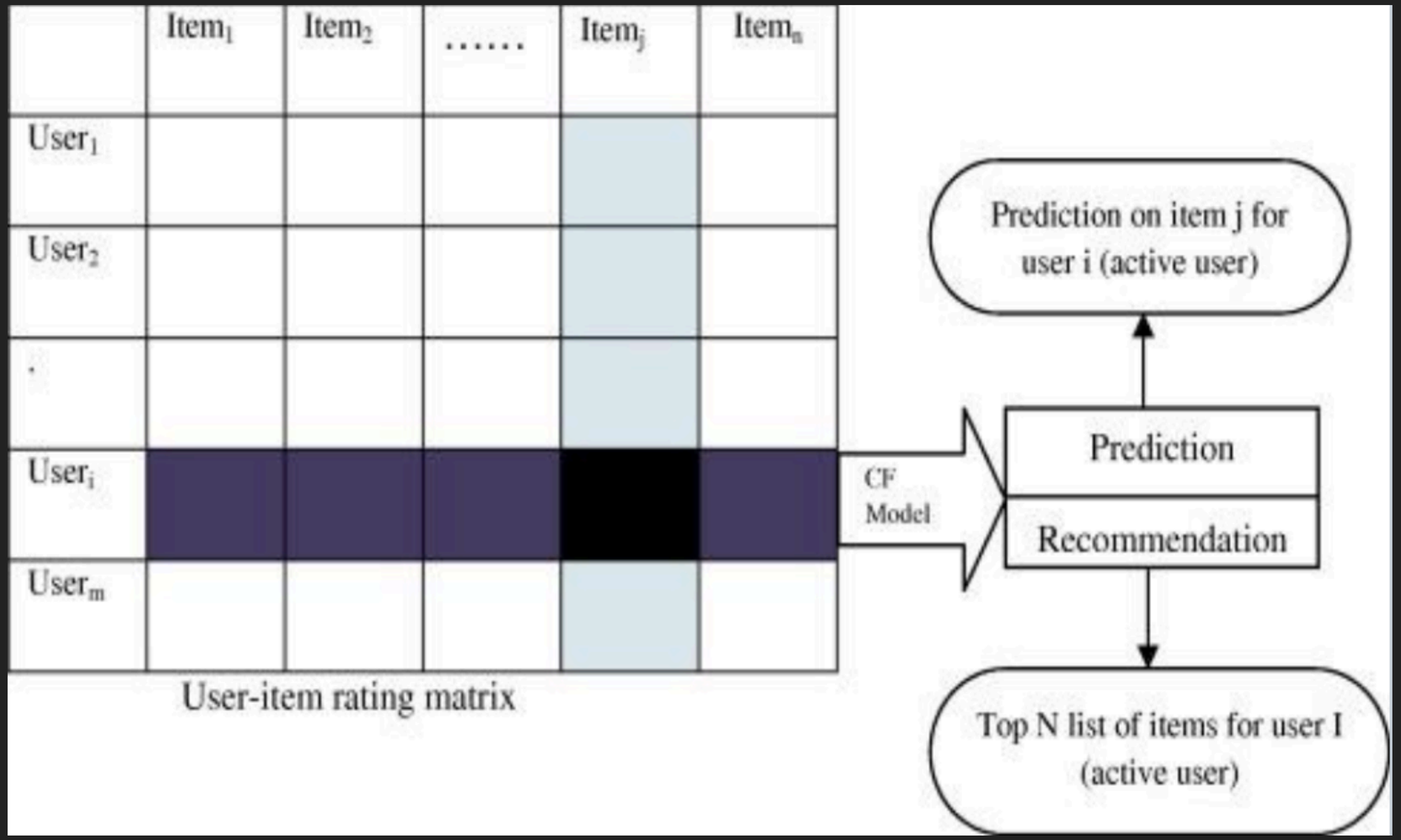
CONTENT BASED FILTERING

- Content-based filtering uses item features to recommend other items similar to what the user likes, based on their previous actions or explicit feedback

COLLABORATIVE FILTERING

- To address some of the limitations of content-based filtering, collaborative filtering uses *similarities between users and items simultaneously* to provide recommendations.
- Collaborative filtering models can recommend an item to user A based on the interests of a similar user B. Furthermore, the embeddings can be learned automatically, without relying on hand-engineering of features.

COLLABORATIVE FILTERING PROCESS



FEATURES CAN BE INCLUDED TO THE MODEL

Feature	Description
product_id	*Id of the product*
product_visit_score	*How reguarly the product is being viewed by all customers*
product_stay_score	*a score based on how much time on avg customer spent on this product page*
product_frequency_score	*a score based on how frequently this product is being viewed by customers*
product_order_score	*a score based on number of orders that has been successfully delivered*
product_affinity_score	*a score to signify the interests of customers towards this product*
product_segement	*product segment*
product_category	*product category*
product value range	*product is in higher value range like laptop or lower value range like headphones*

HYBRID FILTERING

- Hybrid filtering technique combines different recommendation techniques in order to gain better system optimization to avoid some limitations and problems of pure recommendation systems.
- The idea behind hybrid techniques is that a combination of algorithms will provide more accurate and effective recommendations than a single algorithm as the disadvantages of one algorithm can be overcome by another algorithm.

PROPOSAL FOR CLASSIFICATION WITH RECOMMENDATION APPROACH

- We Build classification model with the results we can combine the results of clustering to recommendation engines for better prediction
- Currently, we have user based data, we could henceforth use product data with user data.
- Hybrid filtering with combination of Content based filtering results and collaborative filtering results. There are many techniques we could use to collaborate with hybrid filtering.
- For more precise we could give some weights using weighted Hybrid Filtering Technique methods

CONCLUSION

- Recommender systems open new opportunities of retrieving personalised information on the Internet. It also helps to alleviate the problem of information overload which is a very common phenomenon with information retrieval systems and enables users to have access to products and services which are not readily available to users on the system.
- Hence by using classification Cluster to encode the recommendation is more effective and enables the better recommendations.