Report

“Collaborative filtering (CF),” which has been widely adopted although recommenders may not explicitly collaborate with recipients, and recommendations may suggest particularly interesting items. CF techniques use a database of preferences for Items by users to predict. The goal of collaborative filtering is to predict how well. a user will like an item that he has not rated given a set of historical preference judgments for a community of users.

Challenges: There are many challenges for collaborative filtering CF algorithms are required to have the ability to deal with highly sparse data, to scale with the increasing numbers of users and items, to make satisfactory recommendations in a short time, and to deal with other problems like synonymy (the tendency of the same or similar items to have different names), shilling attacks, data noise, and privacy protection problems. Data sparsity: many commercial recommender systems are used to evaluate the very large product sets. The user-item matrix used for collaborative filtering will thus be extremely sparse

and the performances of the predictions or recommendations of the CF systems are challenged.
Collaborative Filtering Techniques: 1) Memory-Based CF, 2) Model-Based CF, 3) Hybrid Recommenders.

Applications: Most websites like Amazon, YouTube, and Netflix use collaborative filtering as a part of their sophisticated recommendation systems. You can use this technique to build recommenders that give suggestions to a user based on the likes and dislikes of similar users.

There are two classes of Collaborative Filtering:

- User-based, which measures the similarity between target users and other users.
- Item-based, which measures the similarity between the items that target users rate or interact with and other items.

Conclusion: Collaborative filtering (CF) is one of the most successful recommender techniques. Broadly, there are memory-based CF techniques such as the neighborhood-based CF algorithm; model-based CF techniques such as Bayesian belief nets CF algorithms, clustering CF algorithms, and MDP based CF algorithms; and hybrid CF techniques such as the content-boosted CF algorithm and Personality diagnosis.