Recommender Systems

A screenshot of a computer

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A screenshot of a social media post

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Content based recommendation system tries to recommend items to the users based on their profile.

A close up of a map

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A screenshot of a cell phone

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Normalize the user profile:

A screenshot of a cell phone

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A picture containing clock

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The recommendation in a content-based system is based on user’s taste and the content or feature set items. Such a model is very efficient. However, in some cases, it doesnt work.

For example, assume that we have a movie in the drama genre, which the user has never watch. So, this genre would not be in her profile. Therefore, shall only get recommendations related to genres that are already in her profile and the recommender engine may never recommend any movie within other genres. This problem can be solved by other types of recommender systems such as collaborative filtering.

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In user-based approach, the recommendation is based on users of the same neighborhood, with whom he/she shares common preferences.

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These numbers represent similarity weights or proximity of the active user to other users in the dataset.

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A picture containing snow, group

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In the item-based approach, similar items build neighborhoods on the behavior of users. Please not however, that it’s not based on their contents. For example, item 1 and 3 are considered neighbors as they were positively rated by both User 1 and User 2. So Item 1 can be recommended to User 3 as he has already shown interest in Item 3. Therefore, the recommendations here are based on the items in the neighborhood that a user might prefer.

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As the number of users or items increases and the amount of data expands, collaborative filtering algorithms will begin to suffer drops in performance, simply due to growth and the similarity computation. There are some solutions for each of these challenges such as using hybrid based recommender systems.