

Analysis on 5 different recommendation systems

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1. Douyin

1.1 Recommendation method used

Douyin is the short-form mobile video platform for creative expression through videos that create a genuine, inspiring, and joyful experience. Douyin focuses on video-sharing social networking service in China. The abroad version is known as Tik Tok.



I think Douyin is using a hybrid recommendation system with item-based collaborative filtering and content-based filtering.

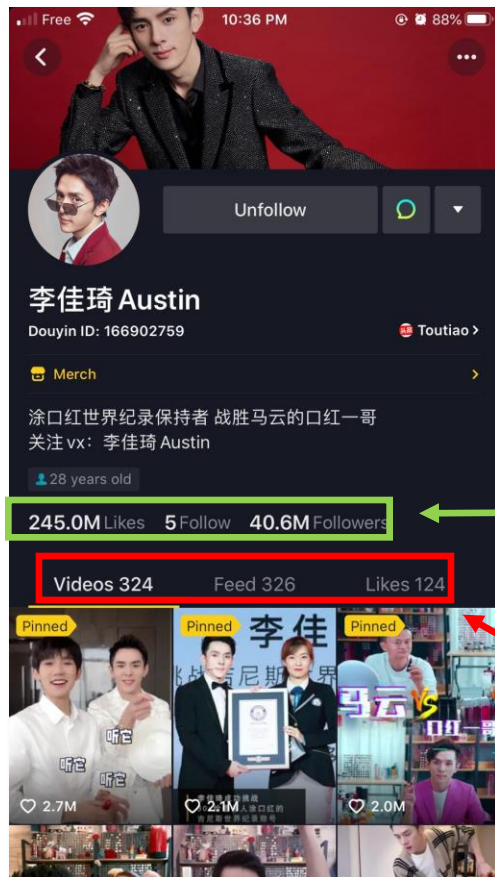
In Douyin there are two main modes that the users can explore videos: "Following" and "For You":

In the "Following" mode, Douyin will only show the videos posted by the users that this user is currently following;

In the "For You" mode, Douyin will show the videos that it recommends to users. Mostly, the higher the video's likes it gets, the more upfront it is going to show to every user.

As a new user, Douyin will recommend video simply based on the likes of videos. User will always got videos with over 100k likes.

For example (see picture below), user Austin has a total number of likes of 245 million over 324 videos that he posted, and has a number of followers of over 40.6 million. His videos are very popular, so his videos will be recommended to more users and the more users it showed, the more likes it gets. But this is not all the cases that the more a video it show, the more likes it will get. This would mostly only happen to good quality or impressive videos which are highly acknowledged by most of the users.



Total likes of all posted videos;

Users he is following;

Number of users following him;

Total number of videos this user posted;

Number of likes this user had given;

When users post their videos, they can put hashtag along with it. Firstly, it would be easier for some users to search for certain items; Secondly, it would help Douyin to do content-based filtering. So, when a user keeps liking videos with hashtag of a topic, or keeps following users that posting a certain topic videos, for example, makeups or skincare, then this user will be recommended with makeups or skincare videos more frequently, at the meantime, popular video with no certain hashtag will keep showing up.

1.2 Pros and cons

By combing item-based filtering and content-based filtering, users would actually spend more time on Douyin and wouldn't get bored easily. Because popular videos are always impressive or creative. And it could be easily adapted to new users.

Content-based is not always recommending good videos because it is just highly related to the content that this user is currently interested in. For example, a user is currently interested in makeup videos and

since this user keeps liking makeup videos, more and more makeup videos are recommended to this user. But as time passes, this user has watch most of the popular makeup videos, then the less popular or 0 like video will show up. And somehow it takes a while for this user to get rid of the content that he or she used to be interested in but not interested in any more.

1.3 Suggestions for improvement

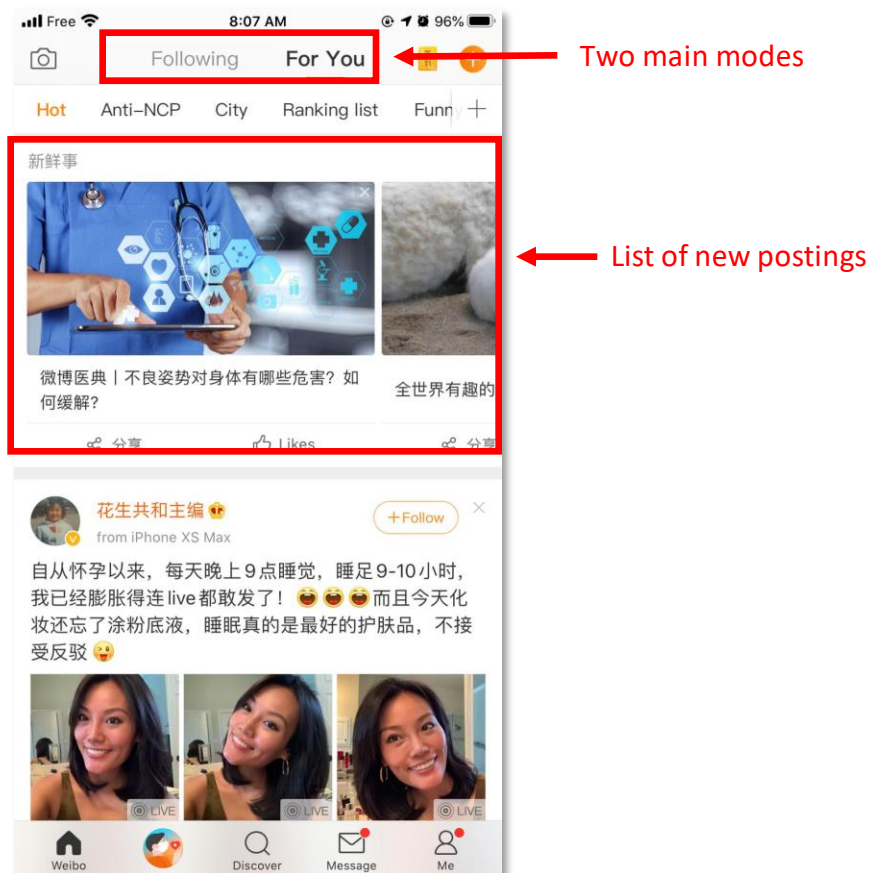
As the main purpose of Douyin, sharing personal thoughts and discovering thoughts and ideas of other people in the same society, Douyin has done a pretty good job at recommending videos to users. I believe Douyin is using some more complex recommendation system, maybe a complex technique to combine different algorithm or a complex algorithm that we haven't seen yet.

2. Sina Weibo

2.1 Recommendation method used

Weibo is one of the biggest social media platforms in China. People can share thoughts, images, videos and links.

I think Weibo is using cluster-based collaborative filtering.

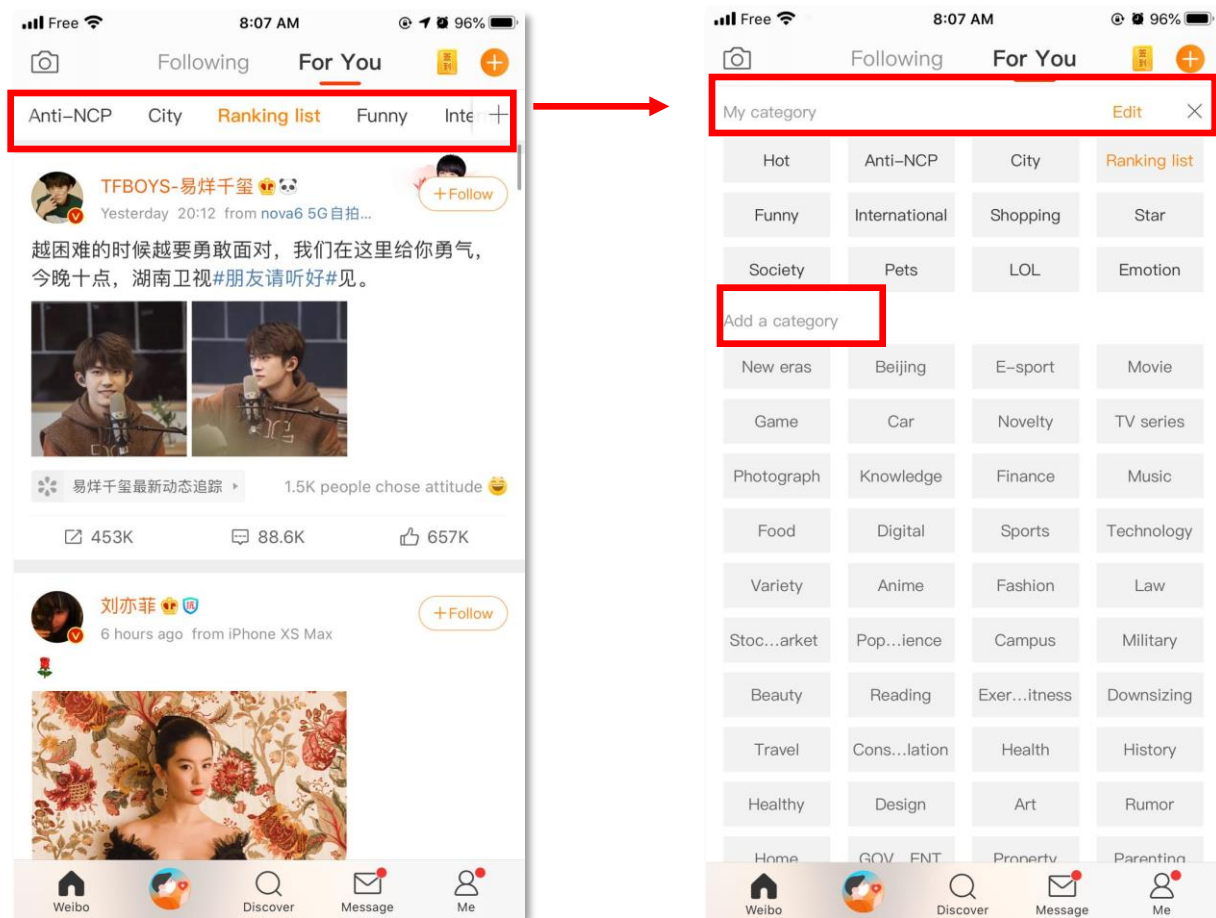


In Weibo, there are two main modes “Following” and “For You”:

In the “Following” mode, Weibo will only show postings posted by the users that this user is currently following;

In the “For You” mode, Weibo will show the postings that it recommends to users. Mostly, the higher the views it gets, the more upfront it is going to show to every user. I found that sometime for the postings posted by user have high followers number will be more frequently recommended.

Under the “For you” section, there is a list of interests that users can select what category of postings they want to view. In the “Hot” list, firstly system will recommend latest posting based on postings liked/shared/commented by users in the same cluster or postings in the same cluster that this user liked/shared/commented.



Then users can customized their list of interest category. By doing so, system will match user into different cluster, which is the category here. Users who select same or similar categories will from the same cluster.

2.2 Pros and cons

By using the cluster-based collaborative filtering, Weibo could help users to discover new things within the field that each user would be interested in.

But when the system try to keep all the information of users, postings and user behavior, it might lead to clusters that with a lot of points far from the centroid. Which means that the postings recommended by the system might be something users would not like but it thus in the same cluster. So it could be not so accurate on recommending to some users are looking for some specific informations.

2.3 Suggestion for improvement

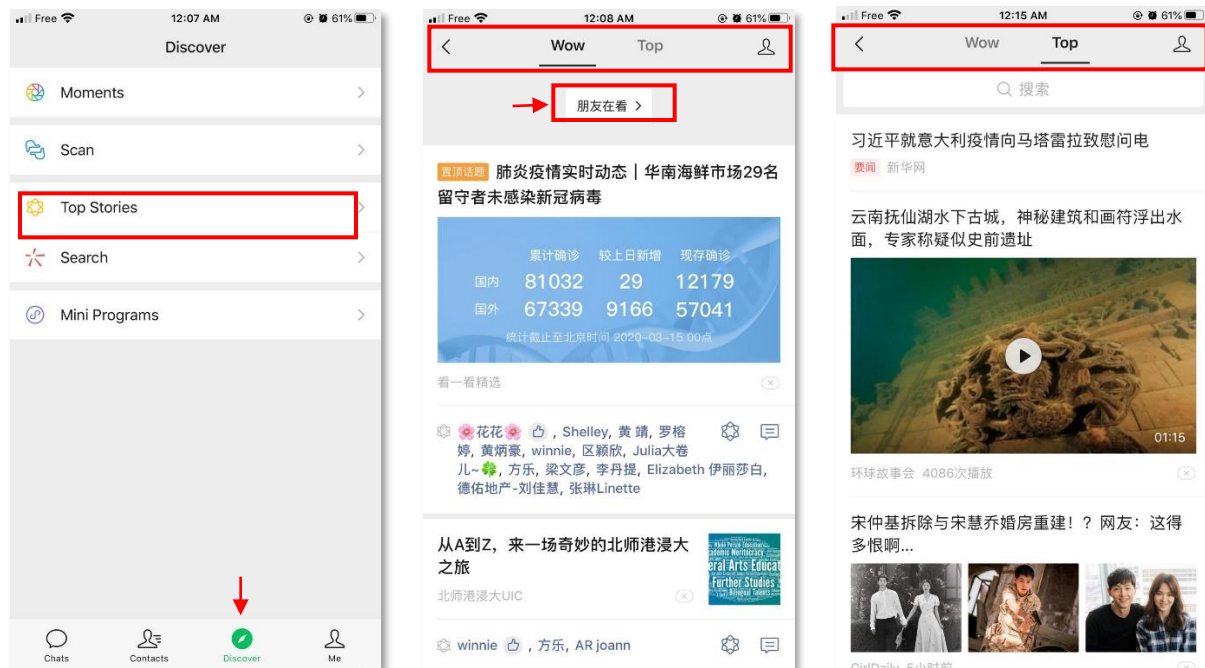
As a Weibo user, I found that there are actually a lot of “fake” users that only post advertisements. Sometimes the postings that Weibo recommended are advertisements that I did not wish to see.

If Weibo is using content-based, then it could be possible to filter out some repeatedly tedious advertisements. Because the advertisements on Weibo have some sort of patterns. If Weibo can fix the advertisements problem, it could help increase users’ satisfactory of Weibo.

3. WeChat

3.1 Recommendation method used

WeChat is the most popular app in China, with multi-purpose messaging, social media and mobile payment. As known as the "app for everything", WeChat is using by over 1.8 billion active users and keeps developing its new function and exploring every field.



I think WeChat is using user-based collaborative filtering recommendation system.

In the main dashboard, there is a section called “Discover” which serves as a social media that allows users discover information around their friend and around the world. “Moments” are the postings from users’ contacts. We are going to see the recommendation WeChat uses in “Top Stories”.

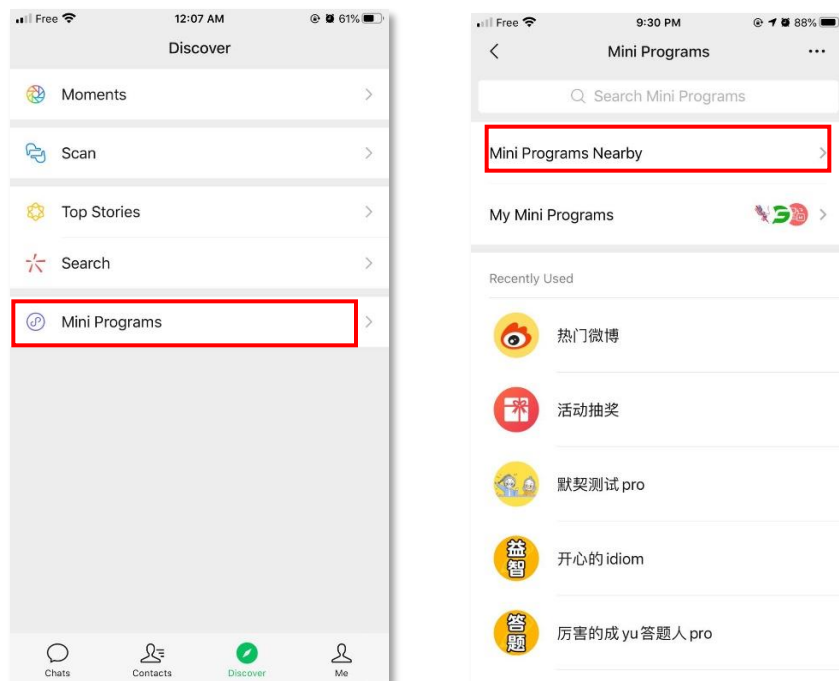
In the “Top Stories” section, there are two main section: “Wow” and “Top”. Under the “Wow” section, there are articles recommended by WeChat. Or you can click “Your friends are reading”, there will be some other recommended articles based on what your friends have read.

For the “Wow” section, I believe that WeChat recommend articles based on users similarity. This is based on what this users’ friends have read could be something this user will be interested in too. Especially in WeChat, users will have people from where they live nearby, where they work with or even where they purchase goods from. It means that people in this user’s contact will have a certain degree of similarity in maybe different field. So recommending articles read or liked by users with similar traits would always hit the point.

3.2 Pros and cons

As a WeChat user, it would be good to know also know what articles my friends are reading or liked. This is a social media where user would like to connect with friend and outside world. So reading articles that would connect users to the similar users could increase the density of the social network, which would help increase the loyalty of users.

But sometimes users would be recommended to several articles talking about the same topic, or even the same article (in WeChat you can create your article by referring other’s article, but the article would be consider a new one instead of a forwarded article).



3.3 Suggestion for improvement

There is another section that WeChat is also doing recommendation is the “Mini programs” section. WeChat provides open source for users to develop their own application that can run in WeChat, including voting, survey, game, testing, sometimes gambling. It only recommends mini program based on location. I actually have seen some very interesting mini program shared by my friends, but I could

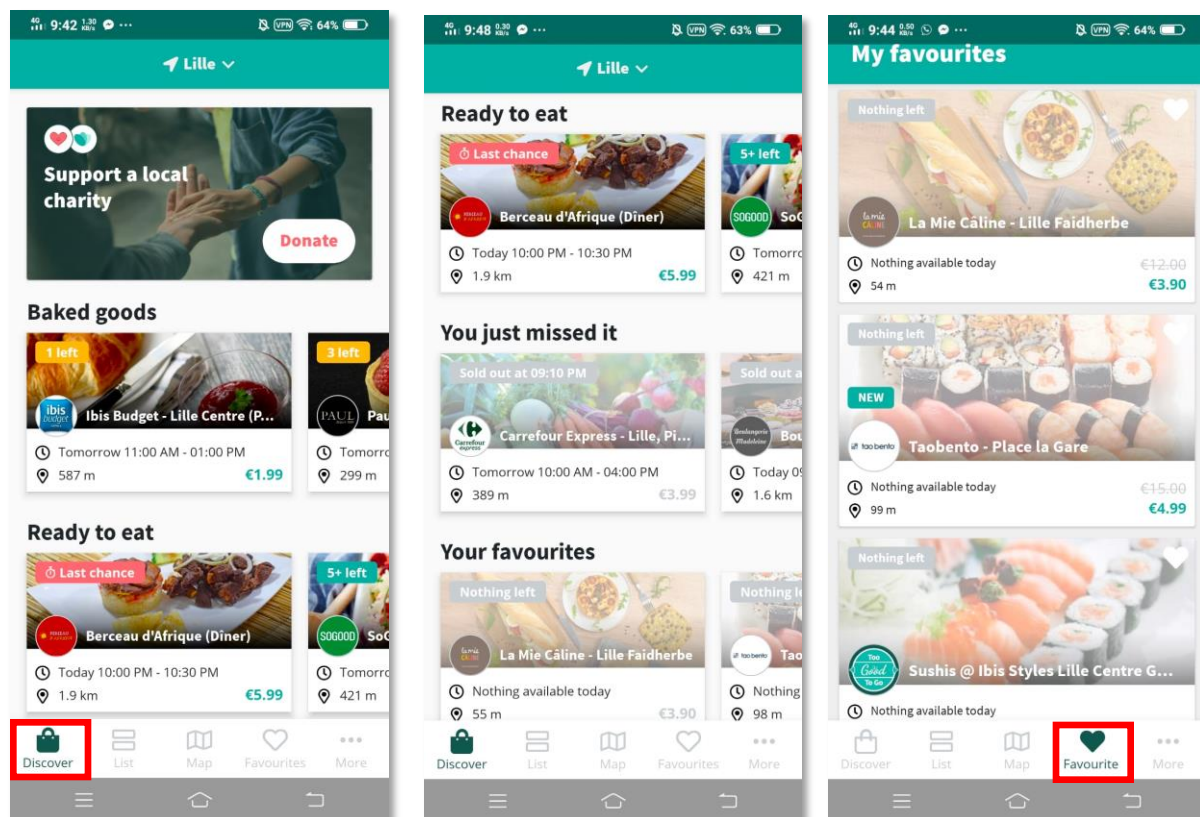
not actually explore or discover some new mini program or in the field, I am interesting in. I think for the mini program section, WeChat can use a hybrid recommendation system combining content-based and user-based collaborative filtering. So that WeChat can recommend mini program to me based on users who have high similarity to me and based on what I liked and didn't like.

4. Too Good To Go

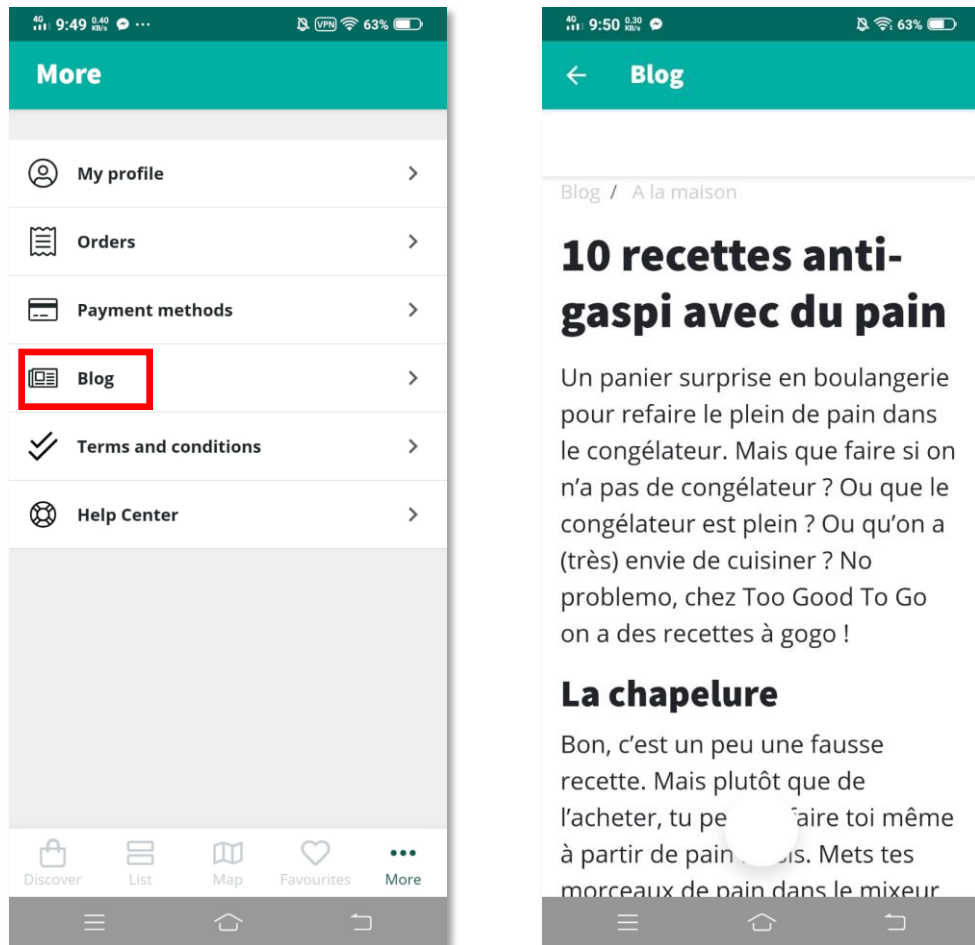
4.1 Recommendation method used

“Too Good To Go” is a popular application providing food pre-ordering service with special price. It targets on the users who are not able to spend time waiting, ordering and eating at the place or users who are looking for a better deal based on the price or food diversity. User can view the items on the app then order the item online and pay online a day before, then go pick up the food at the designate restaurant and time with the order proof. This would really help users to save time and make life more effective, but it might have some limitation at not being very flexible. But it would work very well for people who have a very stable schedule and need to save time and money.

After user log in the app, the main menu will show the new items on top of the “Discovery”. Under the new items, there are items recommended for users and the items users’ clicked “favorite” are listed at the bottom. Users can also find the items that they have favorited listed on the dashboard “Favorite”.



Based on the way “Too Good To Go” organize their items display, I believe it is using content-based collaborative filtering recommendation system. It recommends items to users based on the items that users have liked or purchased.



In the dashboard, there you can find more information about the application or user orders. There is a section named “Blog” which connects users as individual consumer to the people who love to share thoughts and recommendation on food (fits the users’ need). In the Blog, users can see the blog posting recommended and the posting should be useful for the users who is looking for more information or suggestions.

4.2 Pros and cons

For a food pre-ordering application, the recommendation could help users to explore new items in the category that the users preferred.

I have tried to favorite most of the Japanese food but the recommendation system is not actually showing me a lot of Japanese food. I think there would be a problem when there is not a large number of items that similar to the items you have likes. It might be some users have very limited preference which happen to be the items the users liked are quite special and there is not much items to choose.

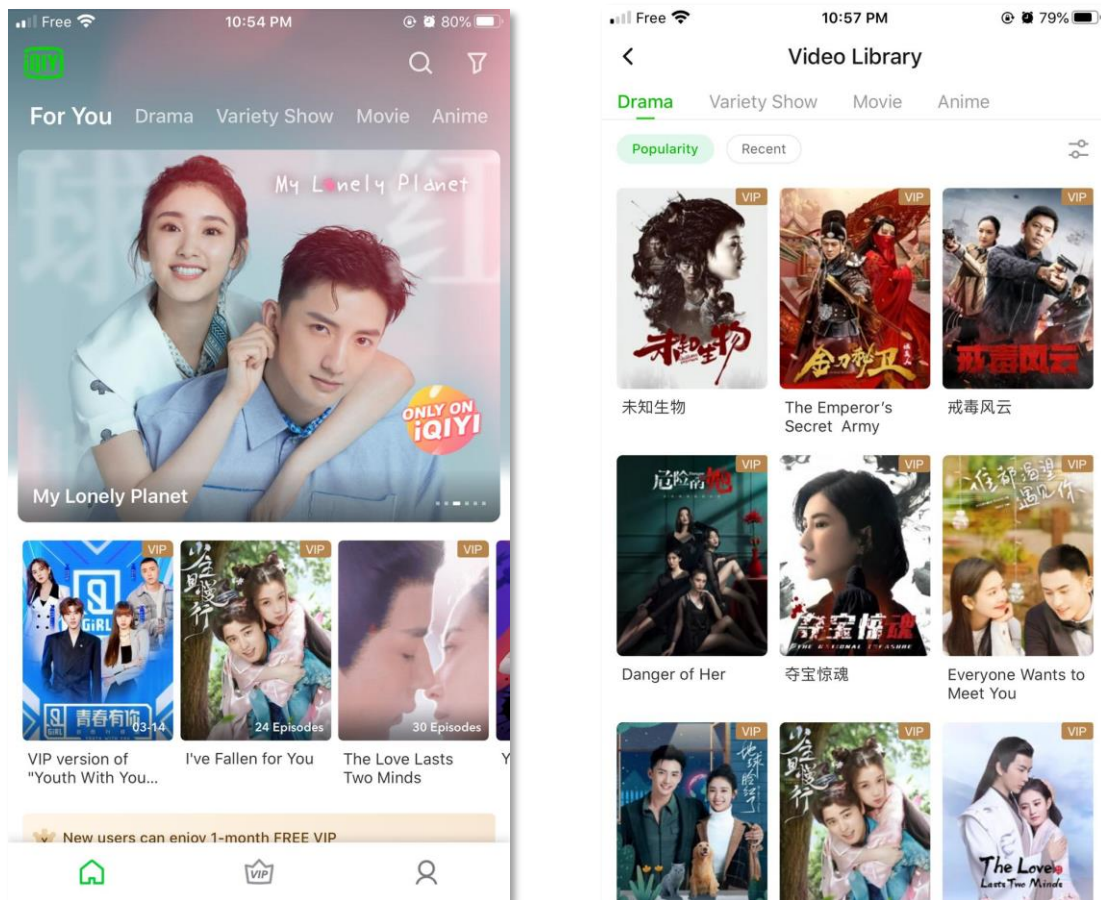
4.3 Suggestion for improvement

According to the pros and cons I have discussed above, the items numbers and diversity would be an issue for recommendation. To improve the recommendation system, maybe it should use a hybrid recommendation system to use other algorithm to help fix this problem.

5. iQiyi

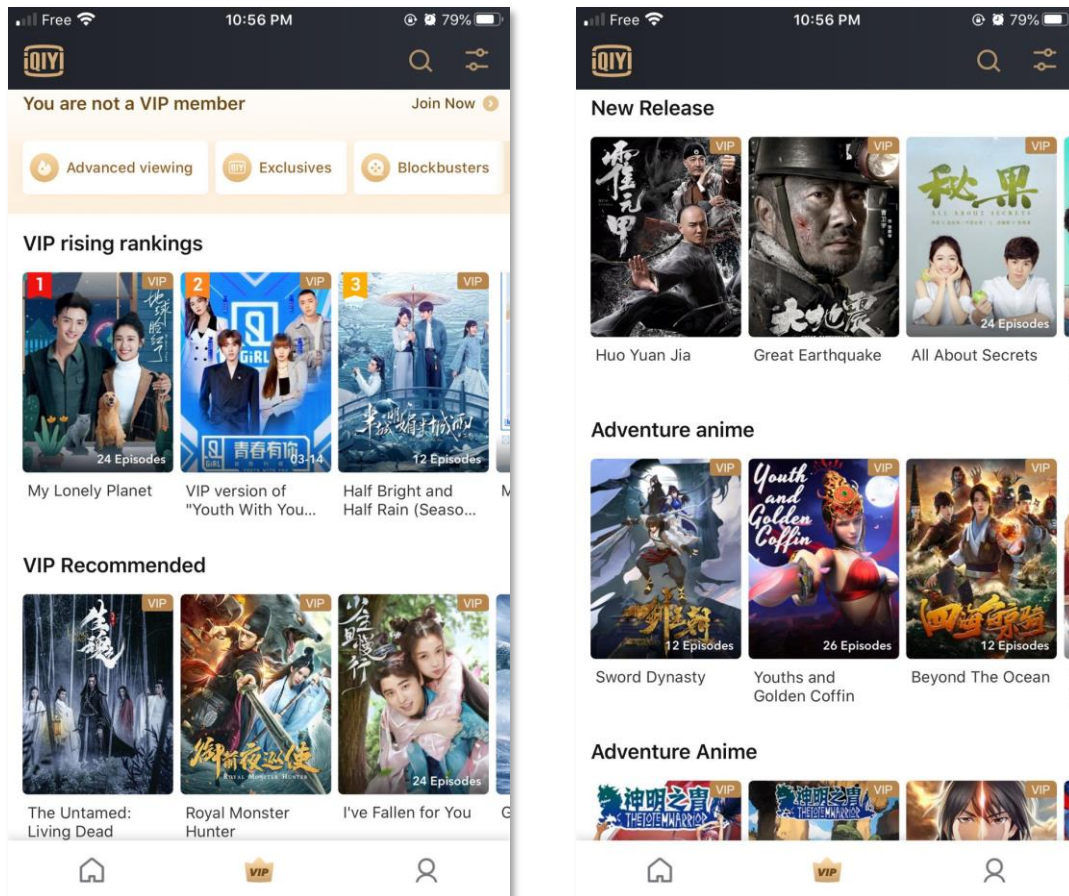
5.1 Recommendation method used

iQiyi is one of the most popular online streaming TV application in China. It is famous for its original produced TV show. It also focusing on the VIP service for the VIP users.



I think iQiyi is using a hybrid recommendation system combining content-based and user-based collaborative filtering. After user log in iQiyi, the default menu is "For You", which is showing the recommended TV or movies for this user. And inside the video library, iQiyi recommend item by popularity or latest released, and I think this is just a non-personalized recommendation generally based on number of views or rating.

iQiyi is actually focusing on getting users to purchase VIP service, they put much more effort on recommendation system for VIP users. If a user is a VIP user, he/she can see other recommended items with different recommend types.



5.2 Pros and cons

iQiyi is pretty success in having customer purchase their VIP services. Firstly, iQiyi owns a large number of videos in a very wild range and put them into different categories very clearly. With large number of items and users, iQiyi can make predictions much more accurate and adaptive.

But when a user recently keeps watching a certain tag of videos, iQiyi could keep recommending videos with similar content and that user will fall in kind of a loop of all the similar videos which might decrease his/her satisfactory.

5.3 Suggestion for improvement

As a video service platform, being able to recommend the video that the users might like is not the key to success. People keep changing their preference all the time, so being able to catch up on users' changes would be the key to improve users' experiences. So I would suggest iQiyi to be more focus on collaborative filtering than content-based which would consume more compute power and have a limitation of being overspecialized.