Assignment M3 (Summer 2020)

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***Abstract*—**In this project I will be working on re-designing the search functionality of the 'HBO Now' (which is now re-branded as HBO Max) mobile app. The search functionality in the app is not very well designed and is difficult for the users to find the shows that they want to watch. The app does not store user's recent searches or categorize the search results. The absence of the 'Continue Watching' section on the homepage makes it difficult to look for the episodes which the user is currently watching. In this paper I will be discussing the problems and also brief the need-finding methods I will be performing to make the search functionality more user-friendly.

1 BRAINSTORMING PLAN

I plan to keep the problem statement in front of me during the brainstorming to stay focused. I would like to spend a good couple of days brainstorming as taking breaks usually clears up the mind and makes way for new ideas. I would like to come up with 20 ideas to make the search operation more user friendly. I will also keep in mind the demographics of the users of the app and accommodate features that will be helpful for both young and older population as well as expert and novice users. I plan on dividing my brainstorming into 2 parts - Search Operation and Organization of Search Results.

2 BRAINSTORMING EXECUTION

1. Voice search - a mic icon on right end of search bar.
2. Scanning picture of the movie or series title via camera.
3. Better organization of search results into movies, series etc. show in different tabs or show no. of matches in each category.
4. Show user's previous searches with an easy option to clear searches.
5. Provide search filters - date of release, rating etc.
6. When no search results are returned, show popular searches and recommend video based on user's watch history.
7. Highlight keywords in search results.

8. Be able to search while watching video - minimize video.
9. Have an information icon next to each search result. Clicking on it will give very brief description of the selection.
10. Entering emoticons in search bar should return appropriate results.
11. Display what to search for in the search bar. Give an example.
12. Be able to search in multiple languages.
13. Placing the search bar on the top of the page instead of on the navigation bar.
14. Display the number of search results.
15. Let the users select how they want the search results to be displayed - list or grid.
16. When user types in a misspelled search query, instead of just showing results, tell the user what was the correct search query for which the results are being displayed.
17. If you perform search while you have minimized the video, the search should suggest results related to the current playing video.
18. If the user watches same show at same time everyday, the search suggestion should include that video when he performs the search at that time.
19. Using Apple pencil to enter the search query in the search field.
20. In the camera scan, the app should also be able to recognize an actor's face and display the list of shows in which he has acted.
21. The search should process natural language queries. For example, film that won Oscar award in a particular year or film that has elephant in it etc.
22. Search based on location - If I am currently in a different country, the search results should be the shows which are popular in that country. The user can choose to have this setting or disable it.
23. When no search results could be returned, the app should display a list of similar search queries for the user to choose from.
24. When user slightly slides finger on the grid thumbnail, it should play the preview inside the grid.

3 SELECTION CRITERIA

1. After going through the product reviews and also the survey answers, I feel the addition of voice search will benefit a lot of users. In the reviews, I found a lot of visually challenged users requesting for the addition of voice search.

2. Again from product reviews and survey results, the users would benefit from better organization of the search results. This is the main step that will reduce the time users spend on the search page. Giving the users a list of categorized search results will make it easy for them to pick a result quickly and start watching it. From the data inventory, searching and analyzing the search results were the user's task and sub tasks so we should definitely be doing something to improve the user's experience in this area.

3. The data inventory question, what do users need, one of the needs was adding search filters to help narrow down search result for the user. This request was made by many users in the product review as well. So this should be included in the design.

4. Since the user demographics of this app include people who are 60+ as well, we need to store the recent searches of the users so that they don't have to type it every time they want to search. An easy option to clear the search history should also be provided.

4 PROTOTYPE 1 - TEXTUAL PROTOTYPE

For the first prototype, I will use the textual prototype.

4.1 Textual Prototype Description

1. When the user logs into the app, he will see the search icon on top right corner of the screen.
2. Clicking on the search icon will expand the search bar and will allow the user to key in a search query. The help text in the search bar will be something like "Search for shows, movies."
3. When the user clicks on the search bar to enter text, a list in the form of drop-down will be provided which will contain the 10 recent searches made by the user. At the right end of each search query in this drop-down, a cancel symbol is provided using which the user can delete that search query from recent searches. There will also be a "Clear All" option at the top right corner of the drop-down using which the user can delete the entire search history.
4. If the user selects one from the drop-down list, the results for the same should be displayed. If user chooses to perform a new search, the drop down should become invisible.
5. The search results should be displayed in grid format with a thumbnail pic-

ture of the video. Clicking on the video will take the user to the page where a description of that video is provided with the cast, director, ratings information. The user can either play the video or click on back button at the to right corner to go back to the search page. When the user comes back, the search will have the same previous results.
6. A small icon for filter will be placed at the top right corner of the search results page. When user clicks on it, he will be provided with a list of filters like : Ratings, Year of Release, Type of the video - movie or series, Duration of the video, Subtitles etc.
7. The search should also return results when the search query is an emoticon. For example, if an elephant emoticon is entered, the returned results should be related to the word elephant.
8. When no search results are returned, the app should be able to display a set of recommended and popular videos.

4.2 Prototype Evaluation

1. This prototype meets the requirement of storing user's recent searches.
2. It also meets the requirement of addition of filters which allows users to further narrow down the search results. If they select movies from the filter, only movies that match the search criteria will be shown. This results is better categorization of the search results.
3. Since nowadays the younger population are very much used to communicating through emoticons, addition of search by emoticons will be helpful to the them.
4. For older population, when they type in wrong keyword and they don't know the correct query, they can make use the recommended and popular searches displayed by the app.

5 PROTOTYPE 2 - PAPER PROTOTYPE

For the second prototype, I will use the paper prototype.

5.1 Paper Prototype

When the user clicks on search icon on the home page at the top right corner, the search bar widens and the user enters into the search screen. The search keyword is typed in and the search results are categorized into movies and shows in 2 separate tabs. The user can click on the tab to view the corresponding results.

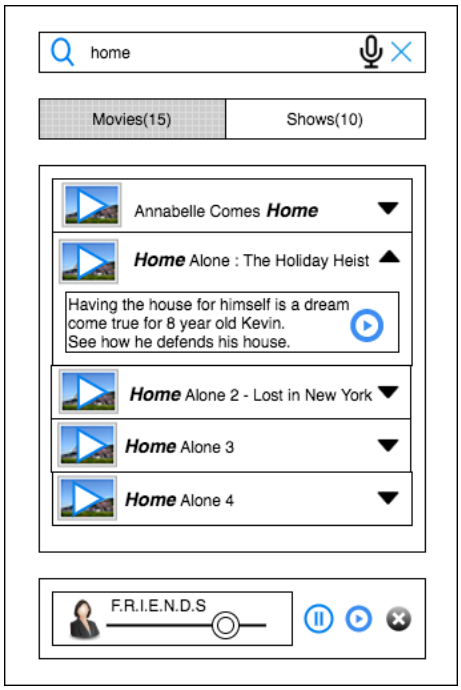

Figure 1—The figure shows the Paper Prototype of HBO Max's Search page.

In the search results, the search keyword is highlighted which will let the users know what matched.

Each search result has a downward arrow icon. Clicking it will expand that selection and show a very short description of the video with a play button. The user can decide to view this short description instead of going to the page dedicated to the video. Otherwise, clicking anywhere on the search result other than the downward arrow will take the user to the page where he can find detailed description of the video. If the user wants to quickly know about the video, this option will be helpful.

The other aspect of this prototype is the ability to minimize the video which the user is currently watching to perform the search. The same is shown at the bottom of the screen with the current state of the video. Pause, play and cancel buttons are also provided to change the state of the video. When the user minimizes the video and performs search, when he enters a letter, the suggestions should be related to the video which the user was currently watching. The user can choose to ignore the suggestion and type on further to search for the exact video he wants. This way we are considering the context.

This prototype also includes the voice search feature. The user has to click on the mic symbol and say the search query. The app will show the corresponding results.

5.2 Prototype Evaluation

1. This prototype meets the requirement of categorizing the search results into movies and shows. It also helps the user by displaying the number of search results under each category.
2. In this prototype we are also taking into consideration the context of the search. When the search is performed while watching a video, the search suggestions will be related to the video the user is currently watching.
3. The search by voice feature also helps the participant view of the user. If the user is in some situation where he cannot manually type in the search query, he can use the voice search.

6 PROTOTYPE 3 - CARD PROTOTYPE

6.1 Card Prototype Description

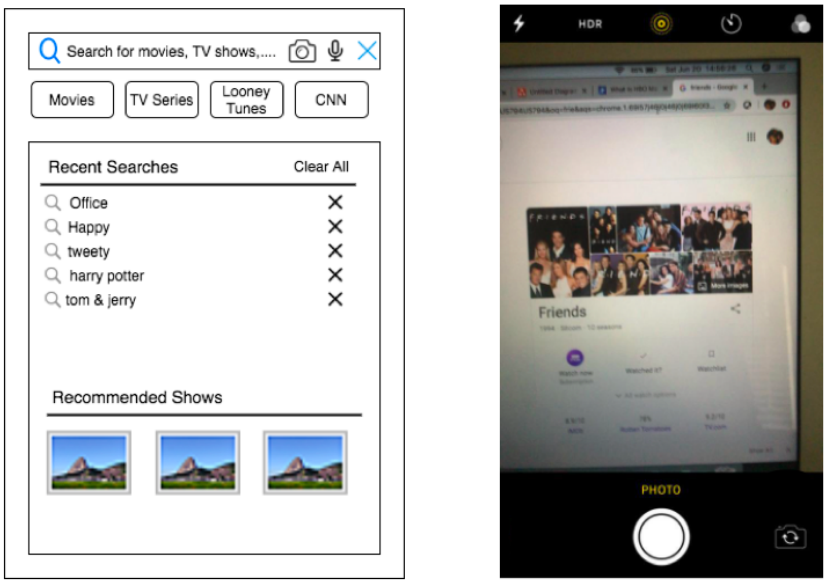

Figure 2—The figure shows Card 1 and Card 2.

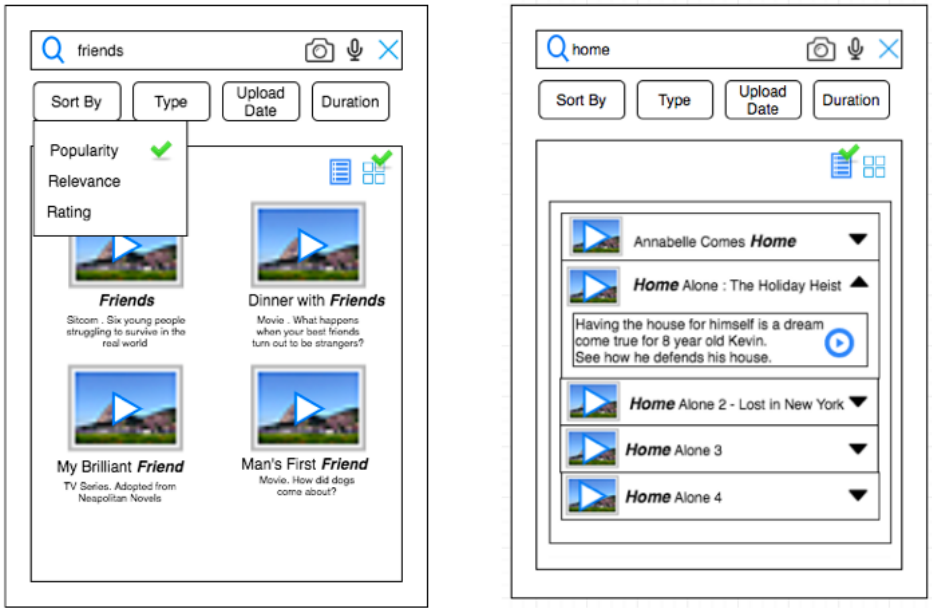

Figure 3—The figure shows the Cards 3 and 4.

Card1 is the landing search page which contains the list of recent searches of the user. A clear button is provided for each recently searched item for the user to clear a particular entry. The user can also make use of the Clear All function to clear all recently searched items at once.

The search bar has a support text which will guide the user about what to type in. This prototype provides voice search and search using a photo. When the user clicks on the camera icon, the camera app in the phone will be activated and user can click a photo. The app will scan the picture and search for a keyword and perform the search. In our example, we are searching for FRIENDS with this feature. This can be seen in card 2.

Right below the search bar, a few categories are provided. There are many categories but in the current screen only 4 can be seen. The user can swipe left to see the other categories (List in Appendix 7.1.1). The user can first click on one of these categories and then perform the search to get more accurate results. The user can safely choose to ignore this feature and go ahead with just typing in the search keyword.

At the bottom of the landing page, we have a few recommended shows for the user. This will be helpful when the user is not sure what to search or does not know what show to watch.

Once the user enters the page which contains the search results, a new set of filters will be provided. The user can sort by Popularity, Relevance and PG rating. The type filter will have a list of different types of content provided by HBO Max. By using the upload date filter user can refine the search to see recent releases or old releases. With the duration filter, user can filter out the search result based on how long the video is. The drop-down values are mentioned in Appendix 7.1.2. The search results can be viewed in gird or list format. Grid is selected as default. When the user slightly slides finger on the grid thumbnail, it plays the preview inside the grid. Rest of the cards can be seen in Appendix 7.1.3.

6.2 Prototype Evaluation

1. The search includes the feature to use a picture as input. This will be handy when user is in some place where typing is difficult. The voice search also helps the user in this context.
2. The filters provided will help the user refine their search results based on their need.
3. The option to view the search results in grid or list will let the user organize the results in their preferred way.
4. These additional features can be used by expert users but they can also be ignored by novice users.
5. Since the grid display is selected as default, the result is visible in big display which will be easy for users who are 60+ and whose eye sigth is deteriorating.

7 APPENDICES

7.1 Card Prototype

7.1.1 *Other Categories for Card 1*

The other categories in Card 1 will include : DC, CNN, TNT, TBS, truTV, Cartoon Network, Adult Swim, Rooster Teeth, Looney Tunes, and Warner Bros.

7.1.2 *Drop down options for each filter in Card 3*

1. **Sort By** : Popularity, Relevance, Rating.
2. **Type** : All, Movie, TV show, Cartoon, Comedy.
3. **Upload Date** : Anytime, Last hour, Today, This Week, This Month, This Year.
4. **Duration** : Any, Short (Less than 5 minutes), Long (Greater than 15 mins)

7.1.3 *Card 5 and Card 6*

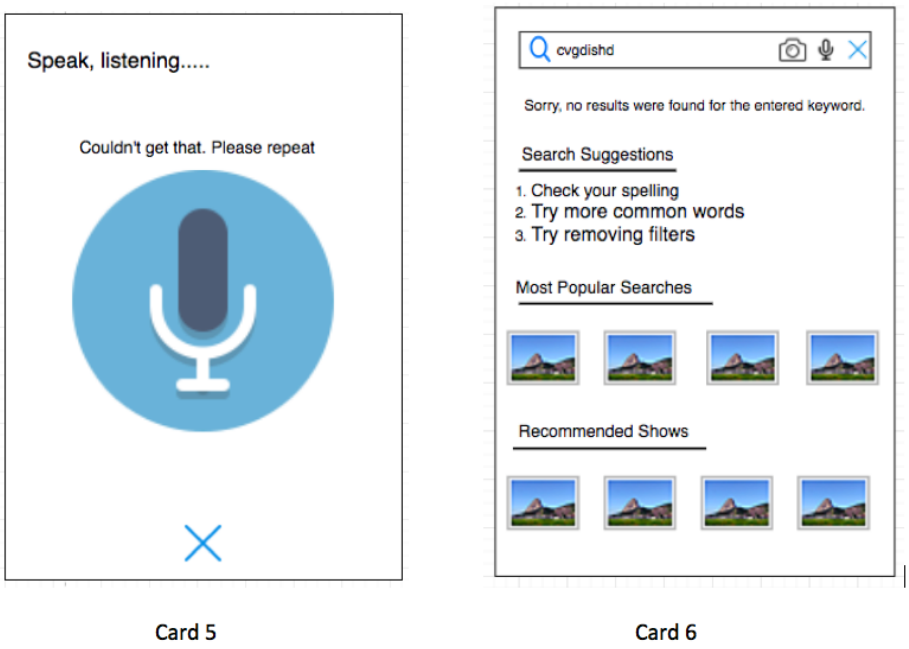

Figure 4—The figure shows the Cards 5 and 6.

When the user clicks on the mic symbol in the search bar, they will be directed to the screen as shown above. When the system cannot understand what the user spoke, a message will be displayed asking the user to speak again. When the app is able to recognize the search query, the user will be taken to search results page as card 3.

When there are no results for the entered query, the user is guided with few tips to correct his query and also a list of most popular and recommended videos are provided.

7.2 Survey Results

I received 24 responses for the survey and below are the survey results.

1.*Age:*
Since the Survey was mainly distributed amongst the OMSCS Students, the most common age group was 18-29 and 30-39 years. There were also survey responses for ages 40-49 and 50-64. From this we can conclude that the user can be anyone of any age.

2.*Location:*
Most of the survey responders were from USA and a few from India. This was as expected as I had distributed the survey among OMSCS students and my family. But the person using the app can be located anywhere.

3.*Occupation:*
Most of the survey responders are Software Engineers. The occupations of other responders was : Businessman, Data Analyst, Mechanical Engineer, Field Applications Engineer, Management, Consultant.

4.*Frequency of Usage:*
Most of the responses suggested that the users used the app 1-5 times a week. There were 2 responses that used the app 6-10 times a week and 4 with 0.

5.*Familiarity with HBO Max app:*
Some people who responded were not very familiar with the app but others who used the app 1-5 times a week were familiar with the app.

6.*Context of the task:*
There was a nice even distribution of contexts such as : None (Just using the app), Watching TV, Cooking, Running, Exercising, Speaking to someone, Listening to Music.

7.*Search Efficiency:*
50% of users answered neutral to this question and 21% felt it is efficient and 13% said it was inefficient. The fact that 54% of users could not definitively say that they are satisfied means that the user satisfaction level is low.

8.*Frequency of users searching for same show every time they login:*
This question was asked to gauge whether the addition of Recent Searches fea-

ture would benefit the user. From the results, 33% of the users do this occasionally, 29 29% frequently and 13% very frequently. From the results we can conclude that addition of Recent Searches tab will help quite a lot of users.

9.*Will users benefit from better organization of search results:*
For this question, 63% of the users said yes. Since this is more than half of the participants, I feel organizing the search results will benefit the users.

10.*Will users benefit from addition of Voice Search:*
50% of the users agreed and 23% said no and the remaining people were unsure. Also considering the product reviews, I think this percentage and reviews justify the addition of the Voice Search feature.

11.*App Satisfaction Stats*
27% of the participants were satisfied with the app and 73% of them responded Neutral. This makes it clear that users are not quite satisfied with the app and addition of few features will increase the satisfaction factor.

12. *Other streaming apps users like*
Most of them responded Netflix and Amazon Prime. The reason for satisfaction was:
a) Neflex, has good movies, good recommendation systems, user friendly interface
b) Netflix, it is very easy to use and has the suggested picks on the front interface
c) Netflix, they have optimized their service
d) Netflix, better ui
e) I like Netflix mainly because of the UX. Easy to search and get to the content I want to.
f) Netflix, I like how it keeps my recently watched shows right at the top when I load the app, so it's easy to start the next episode of the show I'm currently watching
g) Netflix and Amazon prime are better. They are more user friendly and have profile views. Makes it easier.
h) Netflix, better organization of the content I want to see.

12. *Problems with current Search Functionality*
Some of the results were:
a) Having to click into search in order to use voice to search instead of just using

voice within the app
b) The search functionality doesn't return the appropriate result. Some titles suggested do not have the search query. I'd love to be able to search through voice. c) it's sometimes hard to search for a show if you don't know the exact title of the movie, or the spelling.

13. *Suggestions for improving the app*
Some the suggestions were:
a) sort the search result based on my previous movie preferences
b) filters for search
c) Voice interaction
d) Better search functionality. Addition of voice search. Easy to navigate and find content.
e) I also don't like the large title bar that scrolls through various shows at the top of the app screen. It takes up way too much space for advertising and its stressful with how quickly it scrolls between shows.
f) The information seems to be too de-centralized.
g) Quick access to known shows

From all the above responses, it is clear that the search functionality requires some changes to improve the user satisfaction.