Assignment M4 (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 QUALITATIVE EVALUATION

I would like to perform a survey on the paper prototype I created in the M3 assignment. The prototype can be seen in the Appendix.

1.1 Evaluation Plan

1.1.1 *Participants*

I will send out the survey to my peers at OMSCS and to my friends and family who use the HBO Max app or other streaming services.

1.1.2 *Recruitment*

I will create a survey and post it on Peer Survey and send the survey links to all my classmates and my family and friends and request them to take part in the survey.

1.1.3 *Evaluation and Data Storage*

The survey responses will be saved in Peer Survey in CSV and JSON formats. I will use these to perform evaluations and decide if the prototype needs improvements.

1.2 Survey Questions

Table 1—Survey Questions.

No	Question	Options	Purpose
1	Do you agree that having the search icon on top right corner of the screen instead of the navigation at the bottom is good?	1) Strongly Agree 2) Agree 3) Neutral 4) Disagree 5) Strongly Disagree	To analyze if search icon is easily discoverable
2	Do you agree with the idea of splitting the search results into "Movies" and "Shows" and displaying them as two separate tabs?	1) Strongly Agree 2) Agree 3) Neutral 4) Disagree 5) Strongly Disagree	To analyze if users will benefit from the categorization
3	Are you satisfied with the idea of highlighting the search keyword in the search results?	1) Extremely Satisfied 2) Satisfied 3) Neutral 4) Dissatisfied 5) Extremely Dissatisfied	To analyze if highlighting search keyword in results will benefit the users
4	Are you satisfied with the idea of displaying the search results in list format?	1) Extremely Satisfied 2) Satisfied 3) Neutral 4) Dissatisfied 5) Extremely Dissatisfied	To analyze if users like the results displayed as a list
5	Are you satisfied with the idea of viewing the video description and play button of a video on the search page instead of navigating to the video's dedicated page?	1) Extremely Satisfied 2) Satisfied 3) Neutral 4) Dissatisfied 5) Extremely Dissatisfied	To analyze if users like shortcut to view the video description and play it.

Table 2—Survey Questions.

No	Question	Options	Purpose
6	Do you agree with the idea of letting the users perform a search while watching a video?	1) Strongly Agree 2) Agree 3) Neutral 4) Disagree 5) Strongly Disagree	To analyze if users like shortcut to view the video description and play it.
7	Are you satisfied with the idea of suggesting search keywords related to the minimized video?	1) Extremely Satisfied 2) Satisfied 3) Neutral 4) Dissatisfied 5) Extremely Dissatisfied	To analyze if users like the addition of voice search.
8	Are you satisfied with the addition of voice search?	1) Extremely Satisfied 2) Satisfied 3) Neutral 4) Dissatisfied 5) Extremely Dissatisfied	To analyze if users like the addition of voice search.
9	Do you have any suggestions to improve the above prototype?	Free Text	To gather user's suggestion on the prototype
10	Do you have any thoughts about this survey?	Free text	To gather details on how the survey can be improved.

1.3 Conclusion

The above table shows the set of survey questions I will post as part of the evaluation. The purpose of each question is mentioned in the table. The features of the above prototype are directly connected to the requirements defined in the previous assignment which are:

1. Categorizing the search results.
2. The addition of voice search to make searching easier.
3. Considering the context of the Search.
4. Users need not spend much time trying to analyze the results - This is achieved by highlighting the search query in results and by categorizing the search results.

By viewing the results of the above survey, I will get an idea of how satisfied the user is with the prototype. There is a separate survey question addressing each part of the prototype. Hence it will give me clear indication of whether the user

likes a particular feature in the prototype or not based on which I can redesign the prototype in the next iteration.

The suggestion box in the last question will let the user write how the prototype can be improved. In this answer the user might also include some new requirements which can be analyzed and included in the next iteration.

2 EMPIRICAL EVALUATION

I will perform Empirical Evaluation on the textual prototype I created in the previous assignment. The textual prototype can be seen in the Appendix.

2.1 Control and Experimental conditions

Testing : I will be testing the efficiency of the existing interface of HBO Max and the interface created by the textual prototype.
Point of Comparison : I will collect the time taken by a user to find a video of their choice and play it in the original HBO Max interface and the textual prototype interface.

2.2 Null and Alternative Hypotheses

The **Null Hypothesis** is that the time taken to find a video is same in both the existing interface and the textual prototype.

The **Alternative Hypotheses** is that the time taken to perform the search and find a video is different in the existing interface and the textual prototype.

2.3 Experimental Method

2.3.1 *Within-subjects*

I will use within-subjects to perform the evaluation. By doing so I will be able to gather more data and having each user try out both the interfaces will give clear difference.

2.3.2 *Assignment of subjects to groups*

I will try to gather 10-15 participants to take part in the evaluation. Some of the participants will be novices and some will be experts. To avoid having biased results, I will make sure that each group has a combination of both novice and expert users.

Now that the 2 groups is created, I will assign the first group to first try out the existing interface and then the interface created by the textual prototype.

The second group participants will first try the textual prototype interface and then the existing HBO Max interface.

2.3.3 *Execution and Data Collection*

Each participant will be given a name of a video that they have to search using the search functionality provided in each of the interfaces. During the experiment, the time taken by the participants to find the video in both interfaces will be noted. Then this nominal data will be analyzed to see if the null hypothesis can be proved false.

2.4 Analysis

Since the data collected is nominal data, I will be using the Chi-Squared test to perform the analysis.

Here my Independent variables are the 2 interfaces - The existing HBO Max interface and the interface generated by the textual prototype.

Dependant variable will be the time taken to find the video in both the interfaces. This time taken can be split into various parts.

1. Locating the search icon on the Home Page and clicking it
2. Entering search query - User can do this in anyway the prototype supports - Text, Voice or Camera
3. Time taken for the app to return results
4. Time taken by user to find the video he wants from the search results.
5. Playing the video

When the user is performing the search, we make note of all these timings and add it to calculate the total time taken to perform the search and play the video.

2.5 Lurking variables

The lurking variable in this experiment would be the order in which each subject sees the 2 interfaces. If the user gets a hang of the interface while working on the first interface, he is likely to perform the same task quickly on the second interface using the experience gained. This will result in inaccurate results.

3 PREDICTIVE EVALUATION

For the predictive evaluation, I will perform a Cognitive Walk-through of my Card Prototype. The card prototype can be seen in the appendix. I selected this mainly because the whole purpose of redesigning the HBO Max search interface was to help all kinds of users, especially novice users perform the search easily.

3.1 Task

The task is searching for a video using the search feature in the app. The user enters a search query and clicks enter and the app returns a set of search results.

3.2 User Goal

The user's goal is to watch a video of his choice in the app. He can do so by clicking on the desired video from the search results.

3.3 Operators

The operators available to the user in the Card prototype are:

1. Search Button
2. Search text entry bar
3. Camera icon
4. Voice Search icon
5. Cancel button
6. The category selection buttons : Movies, TV Series etc.
7. The list of recent searches with a button to delete it
8. A set of recommended videos - clicking on a video will play it.
9. A set of popular searches - clicking on a video will play it.
10. A set of filters to refine search : Sort By, Type etc.
11. A button for grid view and a button for list view
12. In grid view, the videos - clicking on it will play the video
13. In list view, the down arrow to view description and the play button
14. Cancel button for camera search and voice search.

3.4 Evaluation

I will be evaluating a user's navigation around the interface to figure out how to accomplish their goal. I will predict what actions the user will take and make a note of the response the system will give.

I will perform the walk-through to check if the prototype follows all the heuristics. I will take the role of a user who is new to the interface and is just playing around to see how things work. I will evaluate if such a user is able to easily find all the operators easily and if each action he performs gives a good feedback. In other words, I will evaluate the gulf of execution and gulf of evaluation of the prototype.

4 PREPARING TO EXECUTE

The two evaluations I will be performing are:

1. Qualitative Evaluation for the Paper Prototype
2. Predictive Evaluation - Cognitive walk-through of the Card prototype

I selected the **Qualitative evaluation** as it is easy to send out survey requests to peers, friends and family. And as this could be done asynchronously by just attaching the paper prototype to the survey, it is easy and feasible to perform. The questions directly connect to every aspect of the prototype hence evaluation becomes easy to perform.

I selected **Predictive Evaluation - Cognitive walk-through** of the Card prototype as our prototype mainly targets to novice users. The card prototype by its very nature is very intuitive and we can gauge how user friendly it is by playing the role of a user. It does not require recruitment of participants as well.

I will not be performing Empirical Evaluation as it is difficult to recruit 10-15 participants and ask each of them to spare time to work on 2 different interfaces.

5 APPENDIX

5.1 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 picture 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.

5.2 Paper Prototype

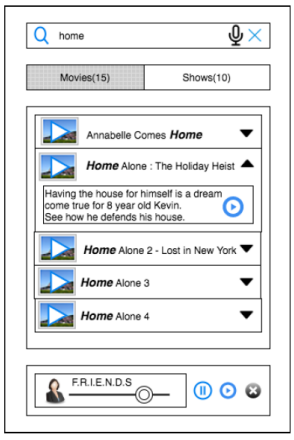

Figure 1—The figure shows the Paper Prototype.

5.3 Card Prototype

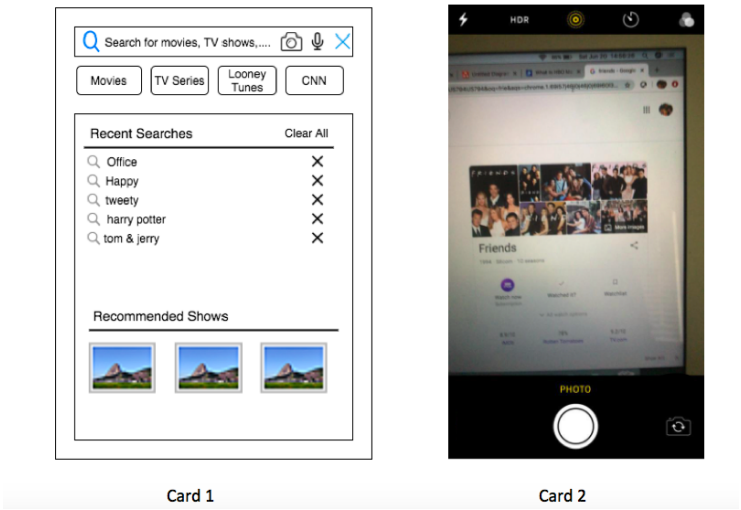

Figure 2—The figure shows the Paper Prototype.

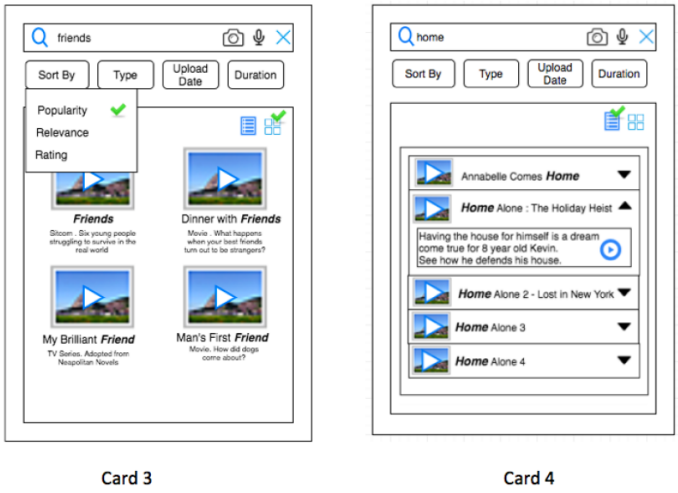

Figure 3—The figure shows the Paper Prototype.

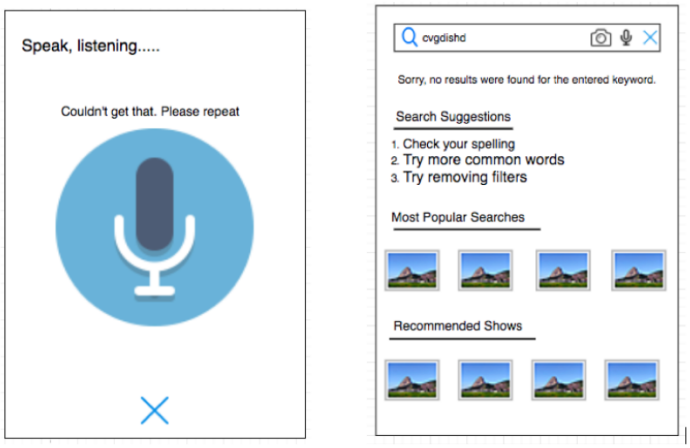

Figure 4—The figure shows the Paper Prototype.