Assignment M5

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Abstract— Through the assignment M4, I will be looking into the search functionality for Apple Music. Apple Music is the second most popular music streaming App globally after Spotify and contains the largest music library of all music streaming applications. Apple Music is well integrated into the Apple ecosystem however the search functionality for Apple Music leaves a lot to be desired.

1 INTRODUCTION

The purpose of these sets of assignments has been to improve the search functionality of Apple Music across devices both within and outside of the Apple Ecosystem. Assignment M3 establishes three types of prototypes and this assignment reports of the execution of two of those prototypes and their executions. A qualitative evaluation is conducted in the form of a survey which is administered through peerfeedback and the Predictive evaluation through a GOMS model.

2 QUALITATIVE EVALUATION

From the needfinding exercises conducted as part of Assignment M2, I found that a large number of users responded positively to a redesign of the search functionality of Apple Music. In this evaluation the verbal prototype created in Assignment M3 was evaluated by users through the survey on PeerSurvey. The Verbal Prototype was that of creating various modes like (Drive Mode) for the UI to adapt to various contexts. The survey generated 20 responses through the Peer Survey platform. The current study only included students from the Student body of Georgia Tech, but hopefully will include more of the general public in the next iteration including more users from the Android Platform.

With regards to the original survey, the second survey generated 5 less responses at 20 responses. However, the results from the second survey follow similar trends as the first one. The second reiterates the use case of Apple Music as a

secondary tool while performing a primary task (Driving, Chores etc) which was the basis for this prototype.

To summarize the results from the survey 85% of users reported that they only use Apple Music while performing a primary task. 60% while driving, 70% while exercising, compared to 15% users who responded to using the application for a dedicated Music listening time. For the question of if the users would find the new proposed feature useful for creating separate context specific modes, 95% of the users responded positively. Only one user responded skeptically as the user didn't believe that they would take the time to switch modes.

70% of the users reported using Voice Assistants as part of their interaction with the interface which was unexpected as the needfinding exercises provided a much smaller percentage of users using Voice Assistants to interact with Apple Music. Of the users who used Voice Assistants for Apple Music, only 50% of users rated the performance of the Voice Assistant as satisfactory stating issues like poor accuracy, lack of support for foriegn languages for dissatisfaction.

Only 35% of users surveyed responded that they create playlists for performing particular tasks, while 65% responded that they do not create explicit playlists for different contexts of tasks they perform but instead use their own music library or an existing playlist. 65% of the users responded that the search functionality in Apple Music was inadequate and 70% of users preferred Spotify over Apple Music in terms of functionality.

While 65% of the users responded that they are not content with the search functionality of Apple Music 35% of the users surveyed were content with the existing search functionality present in Apple Music. This does bring in the question if the redesign is worthwhile. Some free text answers include users wanting better Voice Assistant Integration to include local language support and to choose App defaults that could be used as an evaluation of the Voice Assistant in the future.

The redesigned prototype interested 95% of the individuals who took the survey, but the sample for the survey was not large enough to form any conclusive opinions. The usage of voice assistants were a surprise and they were not included in the prototype, the next iteration of the prototype would include a button to input voice commands along with a slider for choosing individual playlists instead of songs to make filtering easier and to prevent errors while

choosing the songs. The buttons would also be made bigger to make them more accessible for the users to perform the search and filtering with minimal slips.

3 PREDICTIVE EVALUATION

In Assignment M3, all interface prototypes were designed to be consistent across interfaces and platforms. All the prototypes introduced were to create a consistent interface . I will create a GOMS Model for the task analysis phase of this evaluation. The Predictive evaluation will be conducted on the Textual Prototype as described in Assignment M2. To simulate the situation, the task addressed will be to utilise the search functionality in Apple Music on iOS and Android. For this prototype the textual interface described in M3 will be evaluated. The textual prototype would have the search icon located below with the other menu options, and the search functionality would be on performing a fuzzy search instead of an index based search for a song in English or in a non English language the results provided are more varied and better tolerant of errors also a genre filter for a more consistent use across platforms.

Cognitive Walkthrough

The user upon entering the application would find the search functionality at the bottom grouping of functionality in addition to the top. To perform search the user selects 'Search'.

The search bar contains the text for what can be searched, Lyrics, Albums, Users etc. The user can choose any one of the genres displayed like Pop, Rock, etc to go to the genres pages. On choosing a genre the user will face a list of top artists of that genre, playlists and filter playlist option. The user can choose the artist and listen to their tracks or playlists to start listening. Upon selecting the search bar, the genre filter disappears and the user inputs the name or keyword that they want to search and hit return. The results are in the Songs with the closest hit above, the albums after that followed by the other results. While searching there will also be an autocomplete option

GOMS Model

The GOMS Model for the Predictive Evaluation is given below. *The tasks* will be to search for a particular song, filter a playlist using Voice Assistant and to search for a song in a non-English language. *The operators* available to the user will be to prompt a search bar, respond to a change in music, perform filtering,

pause, play, scroll, enter text, speak, tap. *The goal* for the user is to find the song they are looking for or to effectively filter their playlist. *The selection* rules would be based on the context of the task they are in, the user would be more likely to use handsfree modes like voice assistants if other cognitive resources are being utilized by other tasks like driving. However if the user is lifting weights, there is more leeway in selecting the method to perform a particular task. A drawback from this GOMS model is that there are more ways to perform search by adding those tasks to the GOMS model but this would result in an increase in cognitive load.
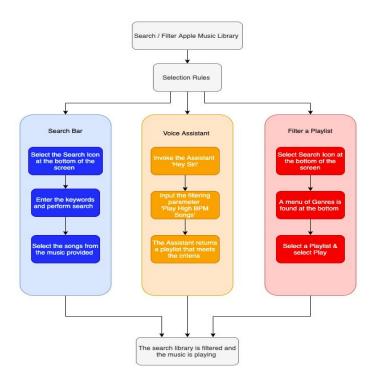

Figure 1 - GOMS Model of search functionality in Apple Music

4 EVALUATION SUMMARY

From the resulting evaluations, the next iteration of the design life cycle is unique to each consideration. From the analysis that was performed, the qualitative

analysis of adding different modes depending on the context of the task and the Predictive evaluation of the textual prototype conducted by creating a GOMS Model.

Starting with the qualitative evaluation, additional needfinding needs to be performed to assess how useful this feature would be if implemented. While 19/20 survey users responded positively to the feature, the fact remains that most users are 7/20 users who were content with the search functionality as it performs right now. Users wanted the improvements of voice assistants and better voice recognition but were ambivalent to the redesign as it stands. Additional needfinding is required to find new alternatives and new user desires.

The desires of the users can be compiled into a new set of needfinding experiments that can be used to assess the feasibility of a mode changing interface that places a greater importance on the integration of virtual assistants, and performing the filtering through a selectable wheel of playlists to play rather than searching through the individual library. This would help reduce the cognitive load of the user and allow the user choice between the two interfaces.

With these considerations, a future evaluation for the different modes for the context would require a different mode of evaluation to get a more representative view of the actual user population. The evaluation could be empirical measuring how quickly a song is found out and the accuracy with which the songs are retrieved.

For the Predictive Evaluation the major questions asked is how accurate the GOMS model created would model the actions taken by an actual user. Further needfinding can improve the accuracy of the results with a more robust GOMS model and more data to work off of.

The Predictive Evaluation by itself did not provide any design alternatives, the data from this evaluation can be used to design a better search functionality with a higher fidelity prototype being created using embedded Google search to implement the fuzzy search functionality of the interface.

The next iteration of this interface would ask questions like how important this feature is and if the performance boost provided by the a fuzzy search would be worth the cluttered search interface as provided by platforms such as YouTube

on its implementation. The next iteration of needfinding for the interface evaluated in the predictive evaluation would focus on the findings to identify if they should be implemented when evaluated with the trade offs.

REFERENCES

1. Varghese, Sachin (2020). Assignment M2, M3: Redesigning the Search Functionality of Apple Music. *OMSCS CS6750 Human-Computer Interaction.*
2. The survey results can be found in the below document

    https://docs.google.com/document/d/1egSy-xeDQVuLL261AJ6dSk4Lu2pKcOVx 1HETCBLA3iE/edit?usp=sharing