

I. OBJECTIVE

A huge centerpiece of the system is its algorithm that aims to steer its users to content that they would most enjoy (Iqbal, 2021). The goal of this project is to examine the effectiveness of this algorithm within Netflix in providing proper matches to its users accurately. This will be achieved by performing self-directed task analyses by the team members

II. TASK ANALYSIS

The goal of the system (Netflix) is to provide a curated video streaming experience based on user preference and available content. Netflix utilizes an algorithm that provides the user with content recommendations aimed at increasing user engagement and therefore the demand for the service. A Netflix recommendation is considered successful if the user selects a movie/show to watch. One major assumption going into these tasks is that the user has not specifically predetermined what they would like to watch before utilizing Netflix. Doing so would bias the search process as it would not be a true test of Netflix's recommendation algorithm. The overarching task for the User is to successfully select content to view on the Netflix platform. The subtasks aim to test how well Netflix is able to guide the user through both general and more targeted content searches.

Human - System Interaction

One of the hallmarks of Netflix's success is its availability on multiple platforms (e.g. desktop apps, streaming devices, internet browsers). To limit the variabilities between platforms, the environmental scope for these tasks are limited to two platforms: the desktop User Interface (UI) and the browser UI. Two specific subtasks will be performed to assess how well Netflix's algorithm is able to make a successful recommendation. As the User goes through the steps of the tasks, they will be asked to perform the think-aloud protocol. This protocol will allow us to track the user's thought process as they interact with the content suggested by Netflix's recommendation algorithm. Based on this information we will be able to assess how efficient Netflix is at helping the user achieve the system's goal, and it will also highlight current problems within the system.

According to surveys done by Reelgood and Learndipity Data Insights, the average views spends approximately 18 minutes browsing before selecting content to watch (Maglio. Tony, 2016). To assess how well Netflix is able to address this limit in the User's attention, the general browsing subtasks will aim to analyze how long it takes the User to successfully complete the subtasks and compare those times with the surveyed times. As Netflix is also viewed in social settings with multiple users, the second subtask will involve a more targeted search. The second subtask will start facilitating the assessment of how well Netflix is able to guide the User to successfully selecting

content based on an initially broad genre search. A time constraint will also be placed on the second subtask to stimulate the added cognitive load of interacting with the Netflix platform with multiple user input.

Data Collection

All team members played a significant role in the data collection procedure for the task analysis. The data collection took place on Zoom while the task was performed on the desktop app of Netflix. The user that performed the task was randomly picked from the team. The other two members were involved in taking notes and collecting data. One member led the think-aloud technique through the tasks by periodically probing the subject with predetermined questions. The other member made diligent notes of the task performance and the responses of the subject with occasional questions based on the trajectory of the task. The task performance was also recorded with a transcript to get accurate time stamps on task completion. Survey questions will be asked to ascertain the user’s experience before and after performing the subtasks.

III. HIERARCHICAL TASK ANALYSIS

Subtask 1 - Home Search Subtask

The home search task will consist of the user searching through the home screen for a show/movie to watch. The user will go into this task without a specific category in mind. The user will navigate through the suggestions provided by Netflix’s suggestion algorithm on the home screen and decide on a show to watch. They will comment on their decision making process using the think-aloud protocol. Before and after watching their chosen show/movie, the participant will be probed with questions from a Survey Questionnaire. Below in Figure 1 is the Hierarchical Task Analysis of the Home Search Subtask steps listed above.

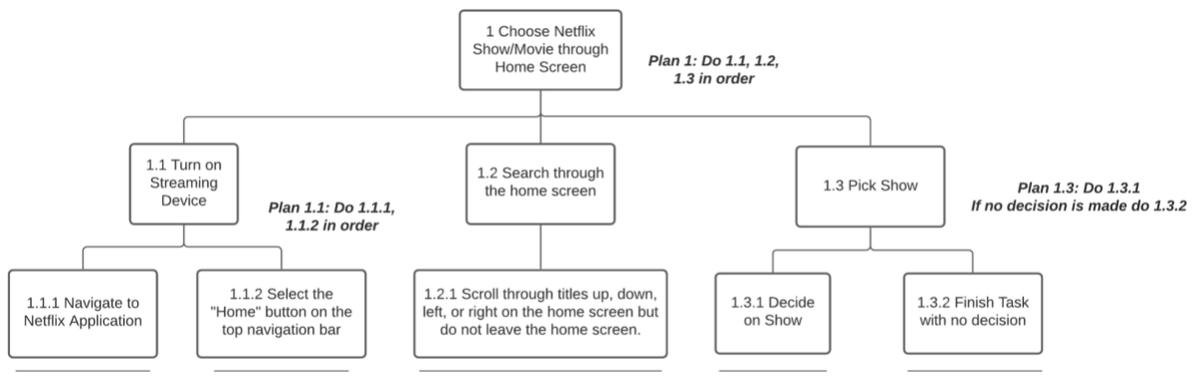


Figure 1: Hierarchical Task Analysis representation of Home Search Subtask

Subtask 2 - Search Term Subtask

The search term task will consist of the user using search terms in conjunction with the Netflix suggestion algorithm to narrow down searches and decide on a show/movie to watch. The user should go into this task with a search term already in mind. The user will have 20 minutes to complete this task and will follow the think-aloud protocol while completing it. If the user takes longer than 20 minutes to complete the task then they have failed the task and the task stops. Before and after watching their chosen show/movie, the participant will be probed with questions from a Survey Questionnaire. Below in Figure 2 is the Hierarchical Task Analysis of the Search Term Subtask.

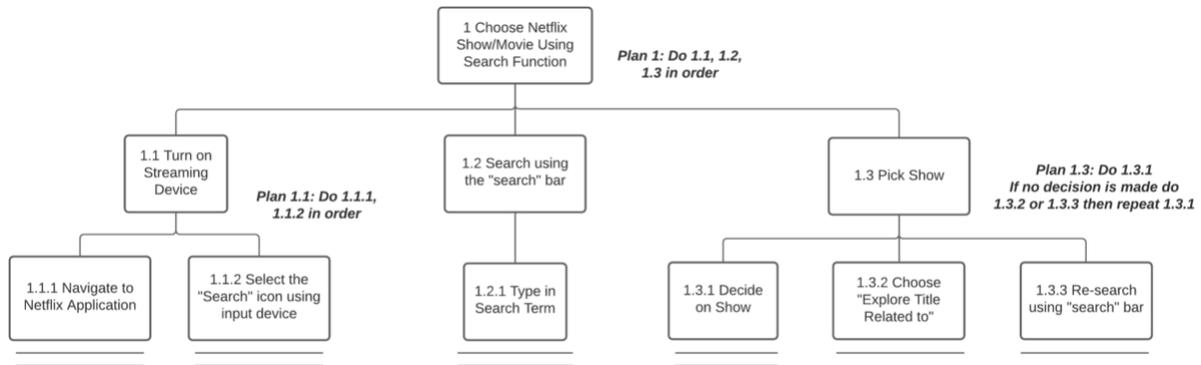


Figure 2: Hierarchical Task Analysis representation of Search Term Subtask

IV. TASK AND SYSTEM PROBLEMS

After identifying the problems of the system in the previous phases, problems that had the highest potential for improvement were selected to be solved.

Main Menu Layout

The first challenge identified is the abundance of options available within the main Netflix menu. According to the Usability Heuristics and more specifically Heuristic 8, minimal design and options are suitable for usability (Kushniruk, et al, 2004). Adding more items to the interface can clog the information processing capabilities of the user and overwhelm them.

Desktop Application

The second problem addresses the amount of ineffective clicking that occurs while using the desktop app. To access additional details about the movie/show, the user has to actively click on the title,

which then opens a pop-up with all the details about the movie/show rather than just providing a brief overview. It can be very time consuming for the user during browsing if they were to open and close every title just to read basic details about the movie/show. This aspect goes against Heuristic 7 (*Flexibility and efficiency of use*) that emphasizes the importance of an efficient UI that is much easier to use and provides access to information in a less cumbersome manner. Inefficient clicking - had to click on the title and then click back to see additional details of the show.

My List Layout

The third challenge identified was when the user was browsing shows/movies, in the situation that the user likes more than one title, the user often has to use their memory to store the names to come back to after finishing browsing and not finding anything better. The “My List” option on Netflix helps save titles to watch later but it just ends up turning into a long list of titles stored within Netflix like a mixed bag of random shows and movies that are thrown together with no logic other than the chronology in terms of when the titles were added. Heuristic 6 (*Minimize memory load—support recognition rather than recall*) (Kushniruk, 2004) talks about minimizing extra load on the user's memory by making options more visible and salient. By making the user memorize the title that they may or may not watch later or even providing only one option (i.e. to add to “My List”) that is not well-organized can impede the user from effectively completing the task from choosing something to watch. Furthermore, if this becomes a repetitive occurrence, they may end up moving to another streaming service.

V. SOLUTIONS

Main Menu Layout (Sky-is-the-limit Solution)

A solution could be to “layer” information which means that instead of providing all the options on a single screen, they can be provided in a series of simple screens. In a perfect world, Netflix will be the one-stop shop for all streaming. In other words, Netflix will have all the shows and movies on the current popular streaming services. Netflix can achieve this by acquiring licenses for shows and movies that are on popular streaming services.

Another way to address this problem would be for Netflix to have a multi-streaming subscription model where Netflix partners with other popular competitors to provide content all on the same platform. HBO Max currently has a similar feature. In its main menu, it has “subchannels” (Refer to Figure 3) like DC, Cartoon Network, Looney Tunes, Studio Ghibli, etc. and provides access to these

services through its platform. Therefore, the user is only required to subscribe to HBO Max to be able to access all the other channels. This feature can simplify the user's management of multiple subscriptions and also for the user to have access to more content in a streamlined, channelized way.

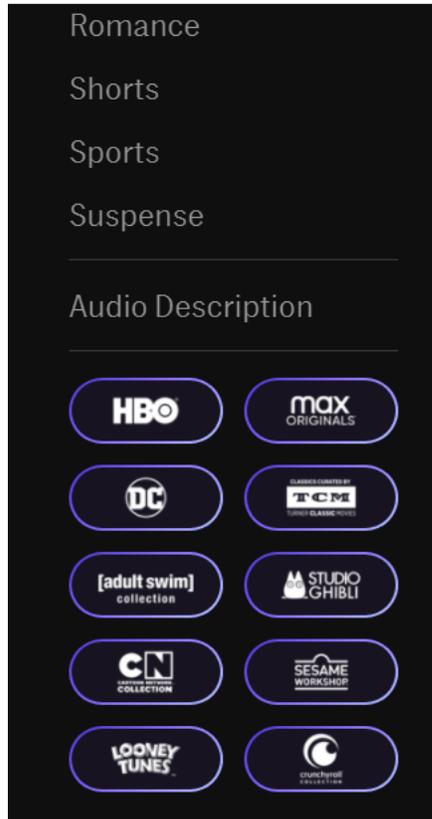


Figure 3: Snapshot of HBO Max Menu Interface

Netflix can also hire multiple developers to refine the search and suggestions algorithm. As the quality of the algorithm increases, Netflix is able to effectively recommend titles that are both within the user's tastes and those that are not but can be liked by the user. These "taste-breakers", or choices that are outside the user's typical tastes, will be then recommended with a higher probability that the user will enjoy them. This effective recommendation strategy can decrease the overall browsing time and will increase the usage time of netflix applications. Based on the concept of "strong rules", the user will begin to increasingly trust Netflix's algorithm with each correct recommendation, consequently, reinforcing the principles of strong rules and making them even stronger. As a result, they will be less inclined to spend prolonged periods of time browsing and will take Netflix's recommendations as they are made.

Desktop Application(Practical Solution)

A solution to this could be to add a “hover” option in which the user will hover their cursor over a title and a small display (approximately 1.5x the size to all other title displays) will pop up over the selected title. This pop-up display would provide a descriptive image from the selected title along with the match rate, rating, duration, and streaming and viewing quality options. This would allow the user to quickly acquire information on a title without having to physically waste time in navigating back and forth between multiple pages. Adding this additional functionality would directly address **Heuristic 7 (Flexibility and efficiency of use)** which emphasizes the importance of an efficient UI that is simple to use and provides access to information in a less cumbersome manner (Kushniruk, 2004). The need to click on the title to see additional information/start the show increases interaction time for users and the accrued time saved from navigating back and forth between multiple pages could be substantial and go a long way in improving the average browsing time of 18 minutes. Figure 4 below shows an example of how this “hover” function would work when the user is viewing the recommendations for the “feel-good” search.

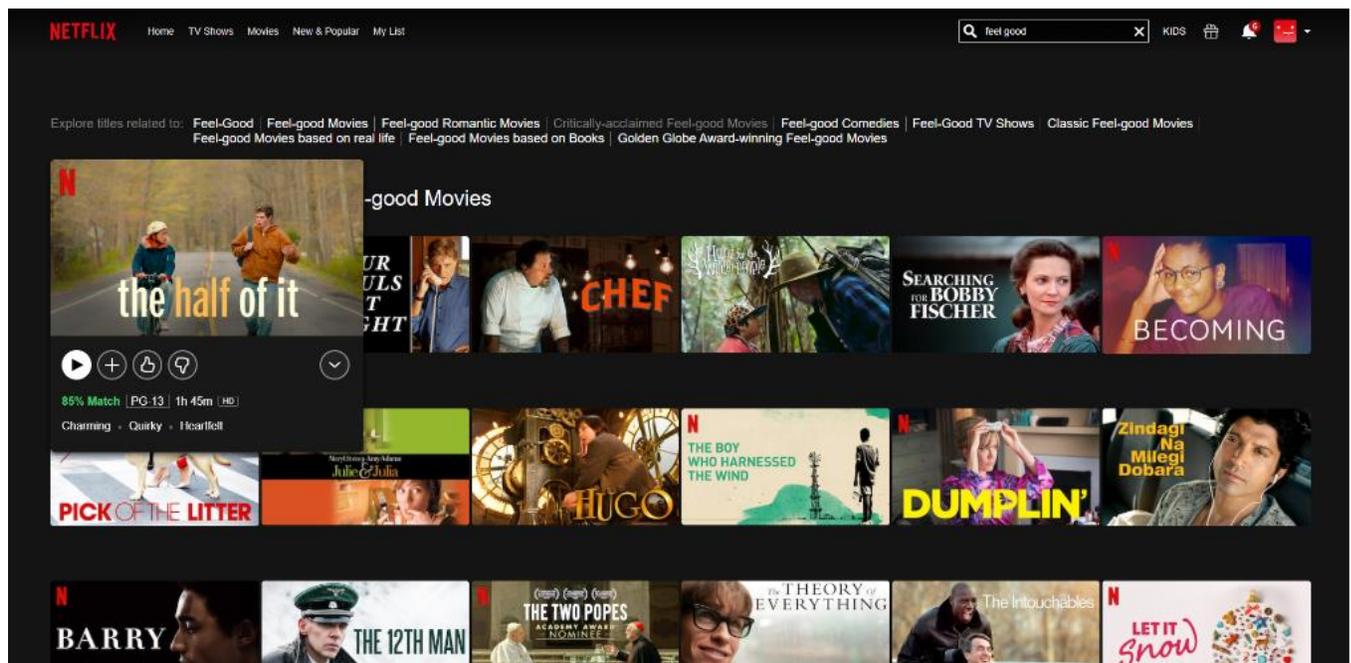


Figure 4: Potential Menu Layout with “Hover” function

My List Layout (Practical Solution)

A solution to this could be to add additional sorting and filtering in the My List layout menu, not only by title but also by genre type, actor, etc. In addition to that, the user could be able to create watch

playlists such as “Marvel Marathon”, “Watch Later”, “Feel Good” so they are able to categorize and filter their My List menu with the reason why they wanted to watch the title and not just by the name of the title, **this would solve the problem of Usability Heuristic 6: Minimize memory load—support recognition rather than recall (Kushniruk, 2004) by adding familiarity to a title that could be unfamiliar.** Adding collaborative features such as collaborative playlists shown in “5/6/21 Watch Party” shown in Figure 5 below, for social watch events also promotes minimizing memory load because the information load is now spread across multiple Netflix users.

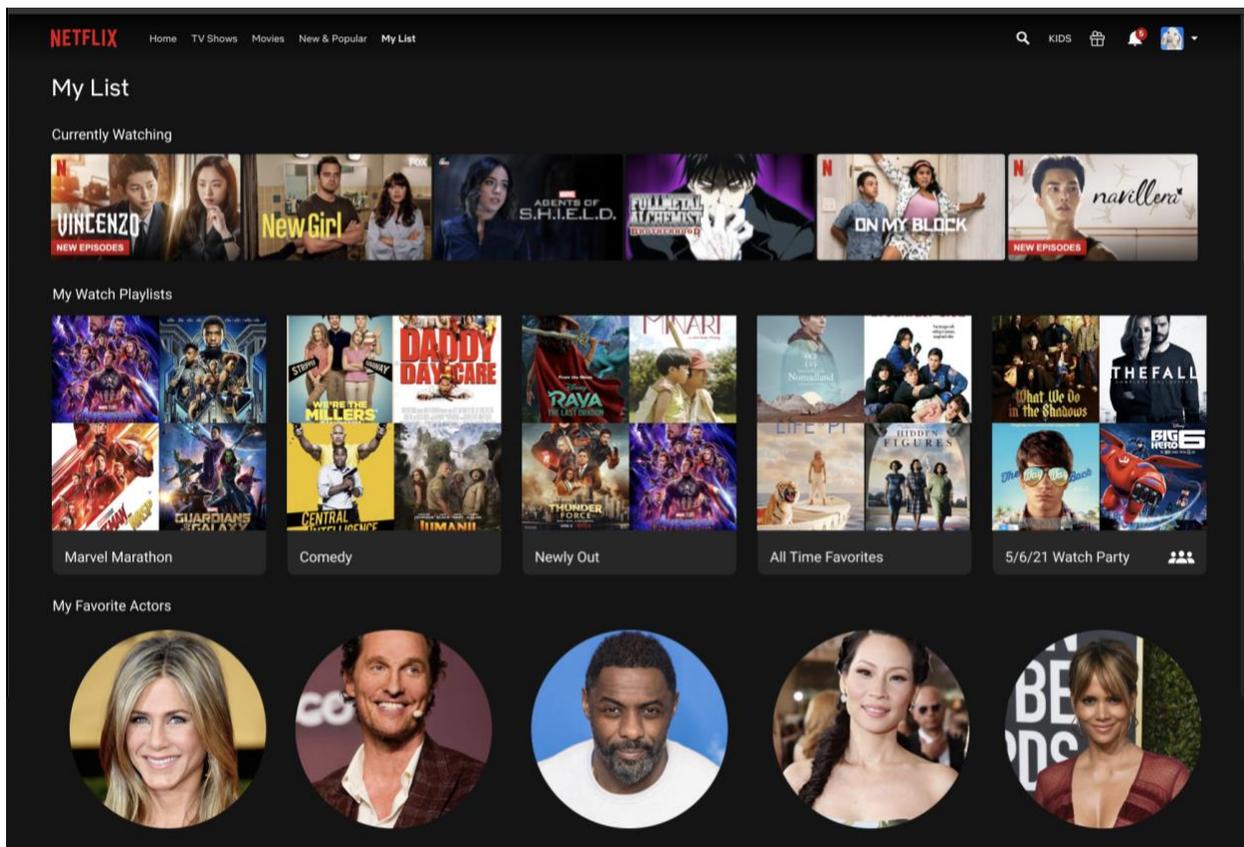


Figure 5: My List Redesign with Playlist and Collaborative Features

VI. REFERENCES

Iqbal, M. (2021, March 9). *Netflix Revenue and Usage Statistics (2021) - Business of Apps*.
<https://www.businessofapps.com/data/netflix-statistics/#1>

Kushniruk, A. W., & Patel, V. L. (2004). Cognitive and usability engineering methods for the evaluation of clinical information systems. *Journal of Biomedical Informatics* (Vol. 37, Issue 1, pp. 56–76). Academic Press. <https://doi.org/10.1016/j.jbi.2004.01.003>