Project (Summer 2023): Netflix

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***Abstract*—**Netflix is a streaming service that allows users to watch films and television series on demand. Netflix hosts a plethora of content for its paid members. However, users are generally unaware of the majority of content available. Thus, this project hopes to redesign the Netflix application to allow users to better understand the content available to them.

1 INTRODUCTION

This project aims to redesign the Netflix application in order to allow users a better understanding of the content available to them and better the search functionality. The hope is to allow users better capability to branch out to new content rather than to only be informed of content based on historical content views.

In order to access the application, users can either download the Netflix app via the App Store or go to Netflix.com. Upon entering, users are prompted to log in. If users do not have an account, they can sign up and become a paid user. Upon logging in, users are prompted to select which profile is watching. Netflix allows paid users to create multiple profiles and each profile has a unique experience based on previously watched content.

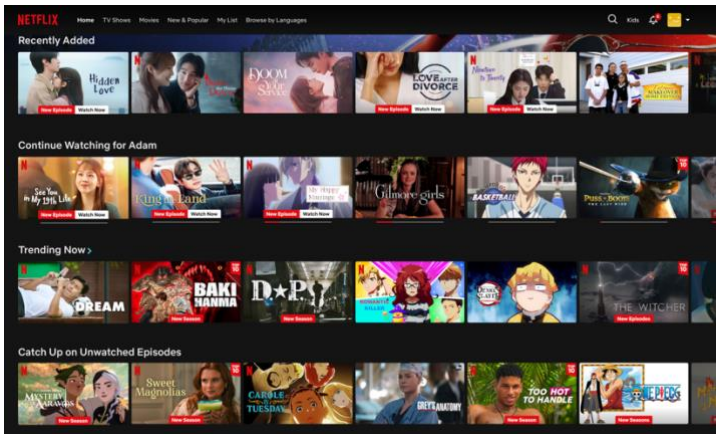

Figure 1— Netflix home page for a selected user

The Netflix home page informs users of content divided into categories. Although these categories seem generic, the content per user under each category is tailored towards what the user has previously watched. For the user in Figure 1, the content provided are generally Asian. The user has further options to switch tabs to TV Shows, Movies, New & Popular, My List and Browse by Languages.

2 INITIAL NEEDFINDING

2.1 Problem Space

Netflix has become one of the main streaming platforms for the modern-day media consumer. Users are able to consume Netflix via both the App and the website. Thus, users can either utilize Netflix while they're in a relaxed setting indoors or in a faster paced setting outside.

The part of Netflix I want to redesign is the home page. The home page is the first thing a user sees when they enter and doubles as a recommender page. Thus, it is the most critical part of Netflix that influences the user experience. But, recommenders create "a situation where we are unaware of the infrastructures that have already caught us, which host our thinking and living" (Seaver, 2018). This project aims to redesign the home page in order to allow users a broader experience than just the content recommended.

2.2 User Types

I want to gather data from a broad, diverse range of users. Netflix is known to be used by users of all demographics. Children to adults use it. Males and females use it. Netflix content is also available in multiple languages so it caters to a variety of races and cultures. Thus, all demographics are welcome in our needfinding exercises. Netflix is also known to be user friendly. Thus, I want to gather data on users with different levels of expertise. I am mainly interested in designing for users who are motivated to use Netflix to stream content. Given the nature of Netflix, this should theoretically be most, if not all, respondents.

2.3 Needfinding: Survey

2.3.1 *Plan*

I will release surveys on peersurvey and have fellow classmates fill them out. I hope to get the maximum amount of 25 respondents. The purpose of the survey is to gather qualitative insight into how users are feeling. It will "be used to initially identify high-level insights that can be followed by in-depth research through more qualitative methods" (Muller, 2014).

2.3.2 *Data Inventory*

The survey will ask the following questions

- Select your age
- Gender
- Rate: It's easy for me to find content I like on Netflix
- Rate: Netflix recommends me content I like watching
- Rate: I know what content is available on Netflix
- How do you usually find the content you want from Netflix?
- What are your goals/needs with using Netflix?
- What improvements would help your user experience?

Through these questions, we hope to get for our data inventory

- Who are the users
- What are their goals
- What do they need
- What are their tasks
- What are their subtasks

2.3.3 *Biases*

I consider acquiescence bias. Acquiescence bias is when "respondents are more likely to concur with the statement independent of its substance" (Muller, 2014). I combat this by asking respondents to provide a rating rather than a binary yes/no response. Furthermore, I phrase the ratings to apply to them personally so that they don't think of how other people think but only of their own opinions.

There is also voluntary response bias since the surveys are optional for people to take. I mitigate this by not telling respondents anything about the survey other

than that it's about Netflix. Also, I'll pair the results from this needfinding with the other needfinding to see how the results compare to one another.

2.3.4 *Conclusions*

From the survey response, I saw that a cohort uses Netflix for entertainment purposes. They're on Netflix to find something to watch. For the most part, it is easy for them to find content they like. Netflix also does a good job of recommending them something that they like watching.

But, Netflix doesn't do a good job of letting users know what's available. A sizeable part of respondents doesn't know what content is available on Netflix. Respondents claim that they find content to watch by scrolling. But, scrolling is inefficient and respondents feel like they're scrolling aimlessly and forever. The other method to finding the content that they want through googling or other websites for information.

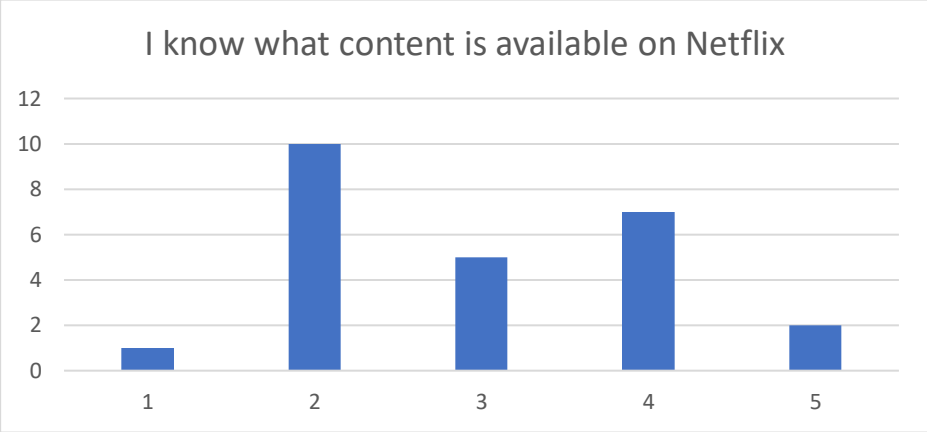

Figure 2 — Chart representing survey needfinding results

Respondents stated that it would be helpful if Netflix redesigned the recommender and search portion of the interface. They wanted an easier way to find what they would be satisfied watching. Interestingly, this would also translate to a better time for them to use Netflix when they're not in an idle environment such as the gym. A good suggestion was that users can filter to more layers when searching such as actor, length of content and content category. A problem I did not know Netflix to have is that their categories change. When the categories change, it throws people off when trying to find their content.

2.4 Needfinding: Existing Product Reviews

2.4.1 *Plan*

I will look through the internet in order to find existing product reviews. Netflix has been around for quite a while. Thus, I will look through multiple review websites and see what users are saying. The Netflix interface has also not changed drastically over the years. Thus, there's less sensitivity on when someone posts a review.

2.4.2 *Data Inventory*

Because of the way product reviews are usually formatted, I hope to learn for the data inventory

- Who are the users
- Where are the users
- What is the context of the task
- What are their goals
- What are their needs

2.4.3 *Biases*

There may be confirmation bias. Confirmation bias may be present if I were to focus on responses that validate what I feel about Netflix. The other bias is voluntary response bias. This would be present since users with strong opinions are more likely to post a product review. Both biases will be mitigated by capturing responses from a large amount of people in order to get more generalized conclusions. Also, the results would be paired with the survey results to see if there are any differences or similarities that may have occurred due to biases.

2.4.4 *Conclusions*

The results from the product reviews are interesting. Because I'm not asking specific questions, users are able to write about multiple facets of Netflix. A portion of the reviews that relates to this project is surprisingly the price. Netflix has increased the price for paid users but users do not feel like the raise in price is justified given the quality of the content has not improved. Thus, if Netflix was

able to be redesigned so users can go through the content easier, it would also make them feel like Netflix is worth it.

2.5 Data Inventory

Who are the users? – Users are people from a span of ages. From our survey, we can conclude that they are at least in the range of 18-49. Realistically, this would also entail children and elders so that range is bigger. Both males and females also use Netflix. Users also entail people from all demographics.

Where are the users? – Users are geographically located around the world. Netflix provides service in multiple languages, caters to a lot of cultures and is available in multiple countries.

What is the context of the task? - Users are able to utilize Netflix in idle settings such as their homes or in more fact paced settings such as the gym. Thus, other things can compete for their attention. Netflix for these users is most likely preferably the piece of their day that utilizes the least attention.

What is their goal? – Users main goal is entertainment. They want to be able to find content that they like and watch it.

What do they need? – Users need to find the content that they like quickly. They need the information to know how to quickly look for content, know what content is out there and to figure out the quality of the content.

What are their tasks? – Users utilize Netflix for content streaming. Thus, their task for Netflix is to log in and find a content that they like. Upon finding the content, they would view it.

What are their subtasks? – Users would need to scroll through Netflix, look through the trailers, look at similar content to the ones they've watched before and utilize the search features Netflix provides. Also, users would need to do outside research through websites like Google in order to figure out what content is available that scrolling doesn't showcase.

2.6 Defining Requirements

Netflix needs to be able to provide better searchability features. Users should be able to customize how their content is recommended to them and not rely solely on the algorithm. Thus, the Netflix redesign would provide a way for users to

tweak the recommender algorithm manually in a simple manner so it accommodates the users that aren't technical experts.

3 HEURISTIC EVALUATION

3.1 What works well

The Netflix platform allows users to have a good mental model of utilizing the platform in their heads. Mental models are formed "through experience, training, and instruction" (Norman, 2016). Users are able to predict what's going to happen when they utilize the interface and their expectations tend to match their reality.

Netflix also allows users to have a steep learning curve. User's expertise of the platform increases quickly compared to their experience. Thus, users are able to become proficient with the interface in a relatively short amount of time. Due to this model, Netflix is able to welcome a plethora of users to become paid members and offer a variety of content.

Netflix also helps users with memory. Short term memory can be helped with chunking, "a process whereby humans group a series of low-level items into a single high-level item" (MacKenzie, 2013). Netflix does this by dividing content into categories. Thus, users can remember categories of content rather than the content itself. Another route users can take is to remember only the content of a category.

3.2 What makes it work well

Netflix utilizes simplicity. It's interface "make simple, common tasks easy, communicating clearly and simply in the user's own language" (Constantine, 2006). The user can log into Netflix and easily find content to watch. Upon clicking on the content, it's simple for the user to look at trailers, find more content like it or simple play the content.

Netflix also utilizes ease and comfort. According to Ronald Mace, an interface should provide appropriate size and space for approach, reach, manipulation and use regardless of user's body weight, posture or mobility. This concept is done especially well by Netflix since users are able to utilize the platform easily in most contexts. At a high level, if a user wants to view content, they simply

have to click play on it. Clicking play is simple enough to do whether you're in a static position or mobile.

Netflix is generally an invisible interface. Users can focus on their task of watching their content with ease. It feels like there isn't an interface. To a user, Netflix is like a library. They simply have to scroll through the catalog of content present, pick the one that they like best and watch it. When they watch it, they can switch to full screen mode, move to whichever part of the content they want and other tasks with ease. It doesn't feel like there's a platform there.

3.3 What doesn't work well

Netflix doesn't allow users to easily discover new content. A recommender system is an algorithm that learns user preferences based on historical performance. However, when almost the entire platform is powered by the recommender system, this does not allow users to change their preferences. In a way, the algorithm influences how the user uses the system based on who they were when they're first using the system.

This problem ties to an expert blind spot. If an expert engineer were designing the system, they would know how the system chooses what to display. Thus, they can utilize the platform better than the average person in order to find new content or change the way the algorithm runs. For the average person, they would most likely think liking content, rating it high and so forth would change the way things are recommended to them. But, an engineer would most likely understand better which variables are the most influential. So, they would focus on those variables and better manipulate the algorithm. Furthermore, the engineer would most likely know how to use Netflix's search functions better than the average person. Thus, an expert engineer would know better how to change their Netflix experience whereas the average person may be stuck in the experience tailored by the algorithm.

3.4 Why doesn't it work well

Netflix doesn't make content easily discoverable. The visibility principle states that "the design should make all needed options and materials for a given task visible without distracting the user with extraneous or redundant information" (Constantine, 2006). Considering Netflix is so valuable because it allows users to browse a library of content and watch them on demand, giving visibility to

content for the task of watching should be a top priority. As of now, Netflix is able to get away with not putting emphasis on discoverability by having a good enough recommender system that satisfies the average user. Furthermore, content is the main real estate on the home page so the recommender is able to suggest a large amount of content. Probabilistically, there's enough recommended content that users have a large cushion of satisfaction before they're dissatisfied with the lack of ability to search for content on their own.

4 INTERFACE REDESIGN

A new way to think about technology is to scale up by scaling down. Scaling down means "a participatory mindset, which means creating with people rather than for them" (Norman, 2023). At first, technology can scale up and make something work for the general population. Algorithms do this very well. They learn from variables and historical data what the general population would want. Within an algorithm, variables can hold different weights. This redesign will give users the ability to work with the algorithm itself. The hope here is that users can influence their own Netflix experiences. This will also hopefully give them more of the content they would want to be exposed to. I don't propose showcasing all of the content Netflix has to offer to the user as that has the implication of overwhelming the user. However, this would let the user tell the algorithm what content to expose them to.

The redesign would be an extra tab on the home page that allows users to modify content. This would let the user change how the algorithm generates what is shown.

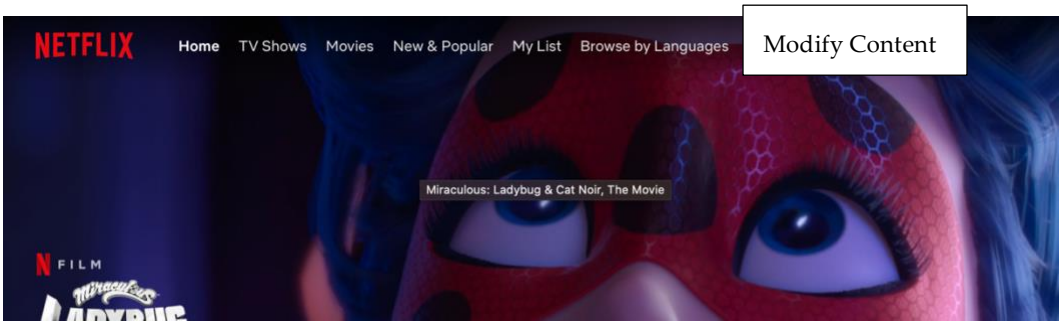

Figure 3— Wireframe Prototype of the redesign: Home Page

Upon clicking on the "Modify Content" button, a pop up would appear. This pop up would showcase the ways the user can modify the way the algorithm operates. The design of the pop up is consistent with other platforms that let users personalize such as platforms for creating charts.

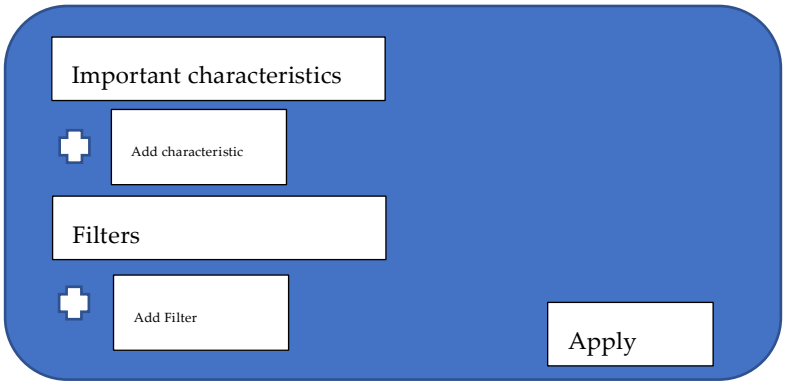

Figure 4 — Wireframe Prototype of Modify Content pop up

The user can modify what important characteristics they want the algorithm to consider more than other variables. These include content rating, recency of release and accolades. The filter option would allow users to filter the content. These include category, language and content length duration. The user can add as many important characteristics and filters as they want or choose to not select any for either category. The apply button can then be pushed in order to refresh the Netflix platform.

5 INTERFACE JUSTIFICATION

The criticisms found in our needfinding included a lack of content worth the price of Netflix, lack of ability to find interesting content to view and the ability to filter content. Netflix does an amazing job of tailoring an experience to the user that is satisfactory based on what the user has done in the past. However, preferences can change over time. An algorithm cannot take into account changes on its own. Furthermore, an algorithm that tailors a user experience based on historical data can trap a user with past preferences and the user would lose opportunities to discover content out of their usual patterns.

The redesign preserves the elements of the original interface because the tasks and functions of the platform are still the same. The interface is still simple for the average user to use. There is also still ease and comfort when using the app. Users can still operate Netflix as they had done before. They do not need to user the "Modify Content" button if they do not want to. Netflix still has the invisible interface principle where the user focuses more on the task of viewing content rather than on the platform.

The new redesign implements discoverability. A critique of Netflix is that users are not able to find content easily and some even argue that the content on Netflix isn't worth the price. We cannot just open the entire content library to users since Netflix has so much content that it could overload users. Instead, we let the users state which content they want. We "minimize the user's memory load by making objects, actions and options available" (Nielsen, 1995). The user is able to tell the algorithm what variables are important to them and also to filter the content. This way, the recommender algorithm can be more personable. The user is able to modify which content they discover on the home page without overloading them with the entire catalog of content.

We create the platform by utilizing design from other tools. We do this because "consistency in design is virtuous. It means that lessons learned with one system transfer readily to others" (Norman, 2016). Tools such as Databricks that allows users to create charts let users add variables as needed. The pop-up window for modifying content lets users add important characteristics and filters as needed. They can add no characteristics or filters or as many as they want.

The new redesign allows for flexibility. Ronald Mace states that a design that is flexible accommodates a wide range of individual preferences and abilities. We emphasize the preferences portion with our pop-up window. The pop-up window is designed to tailor the user's Netflix experience to their preferences. The pop-up window is also simple and only requires the user to think about two things: important characteristic and filter. Thus, the user does not get overloaded and is flexible to user for all levels of expertise. Another advantage to this pop up is that a novice would have an idea of how their choices apply to their content while expert technical people that are familiar with algorithms would understand what they're doing to the algorithm.

Upon applying the changes done by the algorithm, the user can operate Netflix as they usually have in the past. The new change in the interface only adds an area of personalization that the user may or may not apply. Upon application, the content seen changes. But, the way that they accomplish the task of playing a content remains the same. The user can backtrack to undo changes by deleting all of the added important characteristics and filters that were added. The new pop-up is the only thing the user has to learn how to do but it is consistent with other platforms already existing. The pop-up also has a simplistic design that is similar to how the overarching Netflix feels.

When a user implements the "Modify Content" changes, it is unlikely that the home page content will change drastically. The Netflix algorithm is intelligent enough to detect what the user would want to see and recommends content well. Thus, it is unlikely that a user will modify the content so much that the majority will change. Also, a user's preferences do not change significantly over night.

6 EVALUATION PLAN

The "Modify Content" is a new feature on Netflix and, thus, would be evaluated qualitatively. I would use both a qualitative evaluation as well as a predictive evaluation.

6.1 Qualitative Evaluation: Post Event Protocol

The qualitative evaluation will consist of a post event protocol. I will recruit participants from the Human Computer Interactions Summer 2023 cohort. The participants will be given a script to go to the Netflix website and view the content on the home page. They will then be asked to use the "Modify Content" tool and asses the new content being shown to them. The questions asked after these steps are complete are

- What do you think the tool does?
- Was the tool intuitive to use?
- How do you feel about the content on the Netflix home page pre and post use of the tool?
- How does the new feature change your experience of using Netflix?
- What improvements can be made?

By asking questions that don't insinuate a positive or negative connotation, we hope to mitigate social desirability bias. The questions are also phrased towards what the participant thinks. The hope is to get honest answers. Furthermore, we'll send the survey to as many participants as possible in order to get generalized responses and mitigate for biased responses. The purpose of the qualitative evaluation is to get a sense of user goals and needs. We hope to evaluate whether the new feature addresses any gaps in user goals and needs when using Netflix.

6.2 Predictive Evaluation: Cognitive Walkthrough

We'll perform a cognitive walkthrough with the goal of choosing content to watch. We'll evaluate the user's navigation around the interface to figure out how to accomplish selecting a content. The user will have access to the main Netflix interface as it is plus the new "Modify Content" feature. The user will be tasked with using Netflix as per usual and utilizing the "Modify Content" feature at least once. We'll evaluate the results from this walk through with the post event protocol survey in order to compare similarities and differences. The comparison of more than one evaluation will also help spot biases.

7 REFERENCES

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8 APPENDICES

8.1 Appendix: Survey Results

Select your age:	Gender	It's easy for me to find content I like on Netflix	Netflix recommends me content I like watching	I know what content is available on Netflix
40 - 49	Female	2	3	2
18 - 29	Male	2	4	2
18 - 29	Male	4	3	2
30 - 39	Male	4	4	4
18 - 29	Male	4	4	4
18 - 29	Female	4	4	4
18 - 29	Male	5	5	5
30 - 39	Male	2	3	3
18 - 29	Female	4	4	2
18 - 29	Female	4	4	4
18 - 29	Male	1	1	1
18 - 29	Male	4	3	3
30 - 39	Male	3	3	2
30 - 39	Female	4	3	2
40 - 49	Female	4	3	2
18 - 29	Male	4	4	2
18 - 29	Male	5	5	5
30 - 39	Male	4	4	3
30 - 39	Male	5	4	4
18 - 29	Male	2	3	4
30 - 39	Female	2	4	2
40 - 49	Male	2	4	2
18 - 29	Male	3	3	3
40 - 49	Female	3	4	3
18 - 29	Male	3	3	4

How do you usually find the content you want from Netflix?	What are your goals/needs with using Netflix?	What improvements would help your user experience?
Targeted search.	Watch a good movie or show.	Have the ability to perform search based on prior movies or shows that were deemed good.
Usually through blogs that review television shows	Find something me and everyone I'm with can enjoy watching	More consistent categories, it can be strange how often the algorithmic category change.
Using search	Watch fictional and non-fictional content	Showing IMBD scores of the content being displayed or any such rating.
From alerts or content feed	Entertainment	Better recommendations
Home	Entertainment	NA
Scrolling homepage	Find something to watch	More movies and tv shows
By Scrolling	Watching movies	Everything looks good
Scrolling .. forever	Find interesting content	Better personalization
I search by title name to see if the content is available	Find entertainment, explore new content	Stop the autoplay of content when you hover over an item
By scrolling endlessly until I find something somewhat interesting and then watching the trailer before choosing	Finding a show or movie to watch that I like (if watching alone) or that those around me will also like (when watching with others)	I think it would help to choose aspects of what I'm looking for (for instance, I'm looking for a comedy, a movie, starring a certain actor, that's less than 2 hours) and then Netflix can give me different options
google	Find a show or movie to watch. Sometimes we like to watch trailers in order to add to our watchlist	stop autoplaying the shows. Make trailers easier to access. bring back star ratings
from either social media or what is presented on Netflix itself	to be entertained	less spent time trying to find what to watch
By searching	Have something to watch while doing exercise	Hope it allows user to find the show easier when doing exercise
Just scroll down the list	Watch old shows	Give me a list of what movies or shows are leaving and when
search, suggestions, trending, related content	Find more variety of related content to what I have watched already	Not display shows I may not watch
the search bar or the categories/show types nav bar	entertainment	I hate it when I google a name of a show, the first result will usually be from netflix, but then when I visit the page netflix says that they don't actually have the show. Not sure if it has anything to do with the interface, but I find it really annoying.
Dashboard, Search	Entertainment, infotainment	N/A
Aimlessly scrolling.	Provide entertainment by watching content that interests me.	Netflix does a good job at what its designed for.
Scrolling through the available options, or via the home page recommendations	Usually to find a show or movie to watch with my family	The kung fu movies have newer dubs that are terrible - it would help for them to use the old ones
Search on Google whether it's on Netflix, then search on Netflix for the name	Find movies I haven't seen that I would like	Better recommendations, easier way to search
Sometimes. The specific tv series that I like. Netflix does not have them	Watch favorite show	Have more shows hosting on the website
Extensive search coupled with looking up show and movie ratings in an external website like Rotten Tomatoes.	I want to find shows and movies to watch that are award-winning, mind blowing, or perspective changing.	I would like more control over what content Netflix displays to me when I log in and look for shows and movies.
None	None	None
Its usually in the 10 ten list or on the opening banners	to better understand my preferences and stop offering me junk.	better algorithms for movies I have thumbs up that are similar.
i would use the search feature to find whatever I'm looking for.	To find a quality show that suits my preferences with ease.	Perhaps a way to search for content that is similar to a selected show?