Assignment M3

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***Abstract*—The objective of the project is to redesign the task of **navigating the search results on the Amazon website**. The product search is one of the most widely performed activities on the Amazon website, however, the efficient navigation of search results is as important as the accuracy of search results for a user. Despite using advanced NLP and AI algorithms for search, Amazon returns hundreds or thousands of results for each search due to the sheer volume of the products. The desired product does not always come on top of search results and needs separate tasks of navigation through the returned results. This project would attempt to redesign the search result interface to improve the search result navigation efficiency. The project would limit its scope only to the search result navigation on the Amazon website and not in the Amazon Mobile Application.**

1 BRAINSTORMING PLAN

The individual brainstorming is planned to be carried out at least for an hour with intermittent breaks. Although the scope of the project is to redesign the search result navigation interface for desktop, the plan is to generate ideas related to multiple interfaces like mobile or voice commands, etc. which might not be entirely possible in the desktop interface but some aspect of it can be used. The goal is to create at least 15 to 20 high-level ideas at the end of the brainstorming session. The brainstorming activity would focus on the "task" of searching and navigating the product in an e-commerce site rather than existing interfaces for the purpose.

2 BRAINSTORMING EXECUTION

I carried out the brainstorming activity as planned for more than an hour with breaks in between. Although Initially, I was constrained by my preconceived ideas about the interface, once I diverged into completely different ideas, the individual brainstorming was very effective. I gathered around 15 ideas for the interface.

The ideas ranged from the simple filter and sort modifications to social-media like search results timelines. Below are the text sheets from the brainstorming activity. The significant ideas are listed below the image.

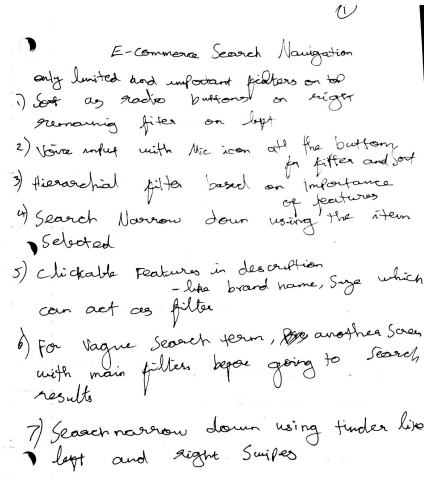


Figure 1—Sheet1.

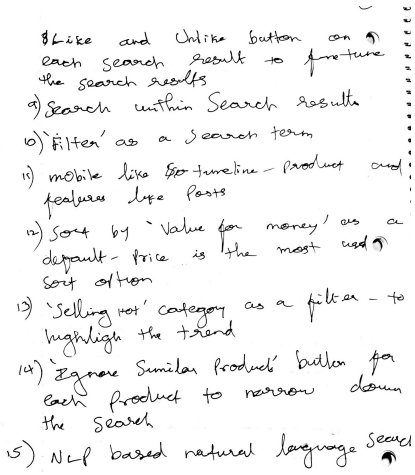


Figure 2—Sheet2.

Some significant ideas from brainstorming activity are,

- Most used(Based on Needfinding) filter on top of the page as buttons and other filters grouped in the left pane. Sort options can be explicitly listed on the right pane.
- Hierarchical search in the search result page. Enabling Search within the search results instead of selecting multiple filters to narrow down the results.
- Search narrow down based on the item clicked or show a similar button on each product in the search result.
- If the search term is vague display a new page with just filters(only important filters) or recommended relevant search terms before proceeding to the search results, just to avoid irrelevant products and endless navigation.
- Apart from usual filters have a hot selling item filter on top of the page which would help users identify the trend, especially for the users who do not have much product knowledge.
- Social media posts like product search results which can be liked/disliked or swiped right/left based on which the search results can be narrowed down.
- Have NLP based voice or test search to narrow down the search results.
- Clickable feature in each of the products in search result which can act as a

filter. i.e. filter from the product description along with the usual filtering pane
- Apart from price filter and price sort, have something like 'Value for Money' which is a logical filter based on multiple underlying features.

Some of the ideas which are not feasible or quite irrelevant or ignored in the above list. Also, some of the ideas are merged into a single idea as they are similar or closely related.

3 SELECTION CRITERIA

From the above listed brainstormed alternatives, the prototype candidates were selected using user modeling approach. The objective of the user is to navigate to the desired product from a search result as quickly as possible. The Interface needs to be intuitive and efficient. Efficiency in this case is measured using how easy is it to find the filters and sort options user is looking for to eventually reach the desired product or desired list of products.

From the requirements listed in M2, below key requirements were considered in evaluating the alternatives.

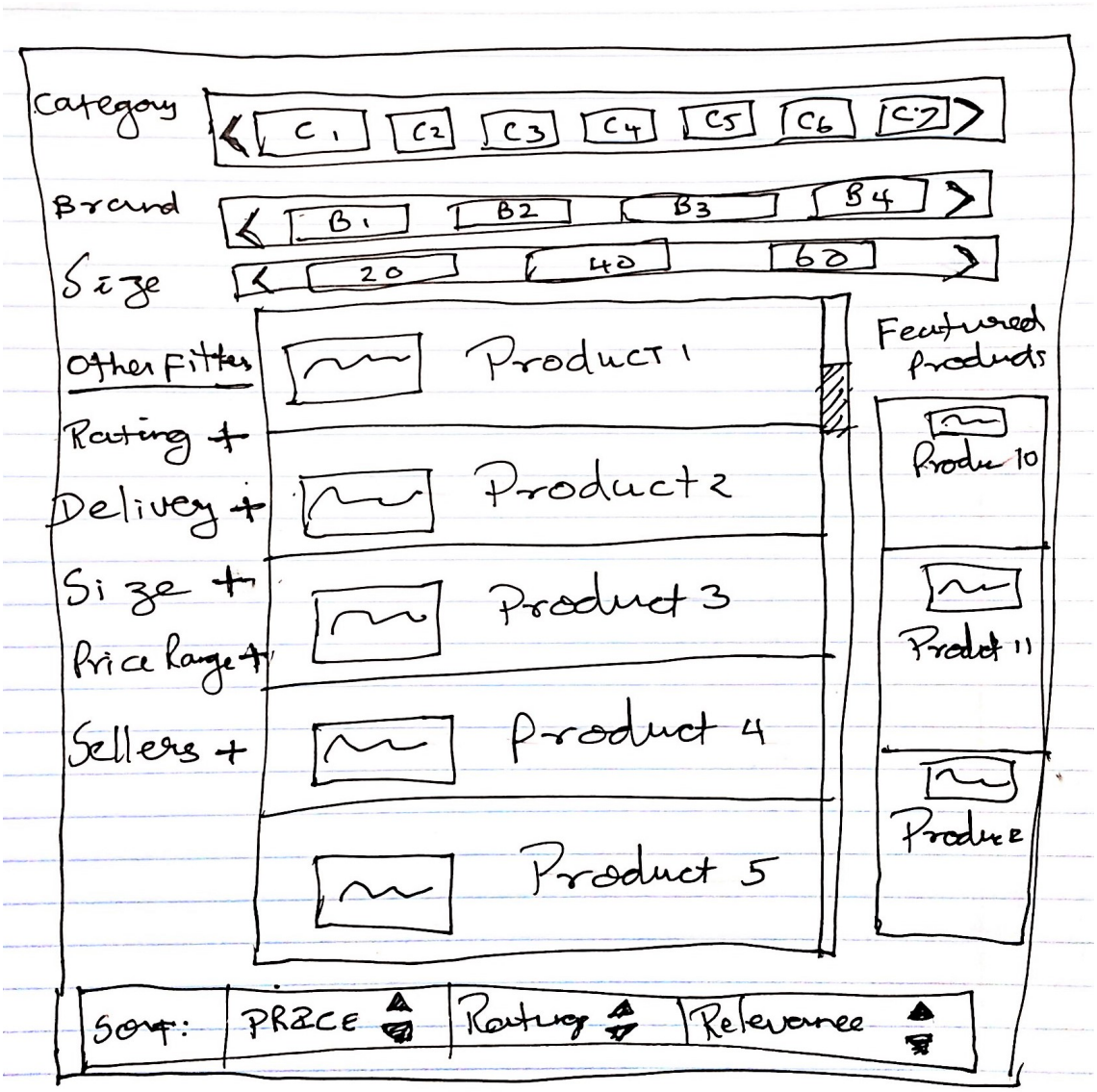
- The most widely used filters like Brand, Price, and Size must be easily available for the user.
- The filters and sort need to be intuitive and with less number of options(without clutter).

Below three design alternatives that satisfy the above requirements and selection criteria are selected for prototyping.

- **Focused Prominent filters** - Most used(Based on Needfinding) filter on top of the page as buttons and other filters grouped in the left pane. Sort options can be explicitly listed on the right pane.
- **Embedded filter in product Features** - Clickable feature in each of the products in search result which can act as a filter. i.e. filter from the product description along with the usual filtering pane
- **Hierarchical Search** - Hierarchical search in the search result page. Enabling Search within the search results instead of selecting multiple filters to narrow down the results.

4 FOCUSED PROMINENT FILTERS - PAPER PROTOTYPE

The core idea of this prototype is to differentiate the prominent or most used filters and sort options from the endless list of filters and sort in the search navigation pane. The current desktop version of the Amazon search result interface has very cluttered left pane full of filters in no particular order. This makes it difficult for the user to go through all the available filters and chose the needed filter. Hence this prototype would contain a button like options on top of the page for the most widely used filters. The sample paper prototype is shown in the below image.



In the above paper wireframe, the category filter, Brand Filter, and Size filter which are most used(for illustration) are given at top of the search page with right and left arrow for navigation. The main challenge with this design is that the filters on the top cannot contain an endless list of values. Hence the filters themselves can be hierarchical. For example, the Category Filter can contain high-level categories, but once a category is selected, the filter can be refreshed to show the subcategory under that category. It would be good to limit to 5 or 6 values in the filters shown at the top. However, those filters can be available in the left pane as well which might help the expert user to go through all categories and select the desired subcategory directly. Similarly, the Sort options are given explicitly with buttons on the side indicating ascending or descending.

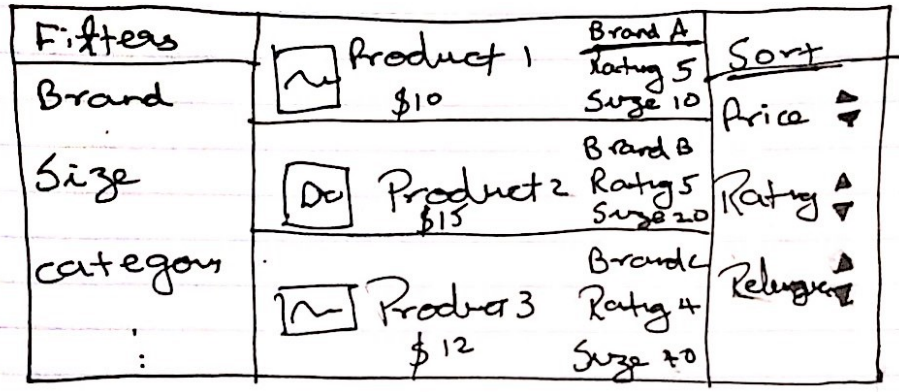
The prototype satisfies one of the main requirements of clearing the clutter. The user need not search through the huge list of filters to find out the important filters. The prototype increases the discoverability of the interface. Sometimes, this approach could increase the time taken for some users, as they need to apply the filters hierarchically. For e.g. applying the category filter then subcategory filter instead of subcategory filter directly. However, this might be compensated by the time taken for skimming through a big list of categories and subcategories.

5 EMBEDDED FILTER IN PRODUCT FEATURE - CARD PROTOTYPE

The core idea of this prototype is to use the product feature itself as a filter along with the filter pane. This would be very helpful for the users who don't have a prior idea on the feature of the product they are looking for but they can learn it based on the similar products shown in the results. For example, the user might be looking for 'over-the-ear' headphones, but he might have to search with the term or he might have to go through all the list of available filters to find if 'over-the-ear' is available as a filter, however, if 'over-the-ear'/'in-ear' is displayed as a feature in the search result of all the products, he could just click on that feature, which would restrict the result only to those earphones.

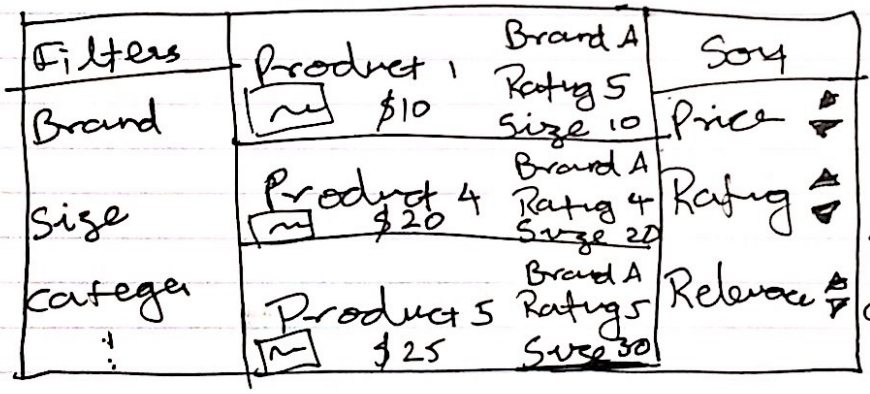
In the below image three cards are shown for the card prototype which displays Brand, Rating, and Size(It can be any most widely used features) are displayed in the search result page itself instead of the product page. Each of these features is clickable which would narrow down the search result based on the clicked value of features.

CARD 1



Brand A is in Product 1 is clicked

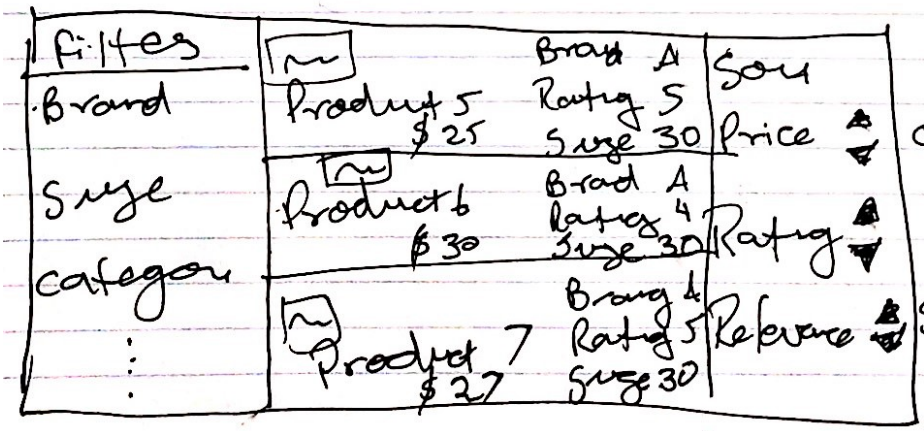
CARD 2



only Brand A Products displayed

Size 30 is clicked in Prod 5

CARD 3



only Brand A and Size 30 is displayed

Below is the list of actions taken and the result of these three cards.

- From card 1, "Brand A" against the "Product1" is clicked, which takes the user to Card2 which contains only "Brand A" products
- From card 2, "Size 30" against the "Product5" is clicked, which takes the user to Card5 which contains only "Brand A" and "Size 30" products

This prototype helps the user to navigate to the desired product faster which is one of the key requirements defined. However, this does not eliminate the existing filters in the left pane as those were provided as options for the expert user. However, those can be hidden/minimized which shows up only when expanded catering to the needs of the expert user.

6 HIERARCHICAL SEARCH - TEXTUAL PROTOTYPE

The core idea of this prototype is to have hierarchical search options for the search results. In other words, this approach treats the filters also as another search within the search results. This would be helpful in two ways.

- This would avoid browsing through the whole list of filter options to find the filter we want to apply. For example, within the headphones listed in search results, if I want to further narrow down to "noise-canceling" headphones, then the user needs to check if that option is available in filters and find where it is.
- Alternate option of mentioning it in search phrase would increase the length of the search term for every feature we want to filter thereby making the search inefficient.

The details of the prototype are summarized below as the text.

6.1 Text Prototype

- Search Result interface would contain two search bars, one usual overall search bar, another "Refine Search" search bar meant for hierarchical searching.
- "Refine Search" would take the current search results as the input and apply the search results on top of it.
- "Refine Search" can be used multiple times and each time it narrows down the results further.
- All the previous refine search terms(Since the actual search) would be dis-

played with 'X' marks on the side. This is to roll back a refined search. This is similar to the functionality that currently exists for filters.

- The filters on the left pane get refreshed as per the refined search,i.e. only the filters applicable for refined search results would be available in the left pane.
- Sort options would be available in the right pane with intuitive icons for ascending and descending. The sort would be carried over to the refined result if the refined search was done after sorting.

This prototype satisfies both the key requirements, eliminating the clutter as well as makes the navigation efficient. Also "Refine Search" provides wider possibilities than a fixed list of values in the filters. However, some expert users might consider applying the filter is easier/faster than typing the term in the "Refine Search" box. But this would not be a showstopper as the "Refine Search" is provided as the complement to the filter, mostly catering to the need of novice users.