Assignment M5

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***Abstract*—The objective of the project is to redesign the task of **navigating the search results on the Amazon website**. Although Amazon uses 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 current Amazon desktop website interface to navigate these search results is quite clumsy and this project would attempt to redesign the search result interface to improve the search result navigation efficiency.

1 QUALITATIVE EVALUATION

The Qualitative evaluation for the **Paper prototype was carried out as a Survey**. The survey was hosted in Peer Survey and a total of 16 participants responded to the survey spanned over 2 weeks. The paper prototype was provided to the participants and the questions were designed to get the feedback on multiple aspects of the prototype. The survey was the same for all the participants. The raw survey results and detailed analysis are carried out in the below sections.

1.1 Survey Raw Results

The descriptive summary of the survey is given in this section. The raw results from the survey are available in appendices.

- 15 out of 16 users agree with the idea of separating prominent filters
- 13 out of 16 users feel that this will help novice users to find the filters easily.
- 13 out of 16 users feel that the buttons would be more effective than drop-downs for prominent filters
- 11 out of 16 users feel right and the left scroll is more usable for prominent filters.
- The sort option at the bottom of the page is considered non-intuitive by 6 users
- 7 users considered social-media like feed as an ineffective option in the prototype

- 6 users felt featured products on the right pane did not improve the usability of the interface.
- Overall 14 out of 16 users felt that the prototype is very intuitive for ECommerce post search navigation

1.2 Survey Result Analysis

The feedback from the survey for the paper prototype is mostly very positive. The participants were in approval of the main theme of the prototype, which is to separate the prominent filters and emphasize them at the top of the page providing more visibility.

A few of the expected feedback was related to the prominent filters at the top of the page. The majority of the users provided overwhelmingly positive feedback on all the changes related to prominent filters including position, button, left and right scroll, and the discoverability of prominent filters.

The most surprising feedback was related to the sort options. The sort option at the bottom of the page was seen ineffective by a notable number of users. Some of the users have provided explicit suggestions to move it to the top of the page.

The other surprising feedback is on social-media like product feed and the featured products. Many users provided feedback saying these changes do not improve the usability of the interface.

However overall feedback was overwhelmingly positive and users feel that the interface is very intuitive for the novice users. Based on the above feedback from the survey, few changes would be made to the prototype for the next iteration and the changes are discussed in detail below.

1.3 Prototype Changes

One of the important changes is to move the sort option from the bottom of the page to the top of the page as suggested by many of the respondents of the survey.

The other significant change is to remove the separated "Featured products" in the right pane as it was rejected by many users in the survey feedback. Also, social media like product feed has to reconsidered and redesigned as the effectiveness of the approach is rejected by a significant number of users.

2 PREDICTIVE EVALUATION

The predictive evaluation using the cognitive walkthrough is conducted on the **card prototype for the post search interface**. the cognitive walkthrough is conducted mostly from the perspective of the novice user. The prototype is provided in appendices for reference.

The user will start navigating through the product search result with the **goal of narrowing down the search results**. The user would be initially presented with the results of the search result as per his search query. The query spectrum could be wide resulting in products from different brands, sizes, features, etc. The idea behind this prototype is that the features would be provided as clickable filters besides the product picture and description. Each stage of the cognitive walkthrough process including the user's actions thought process, and decisions is explained in the below sections.

In the first stage, the user would browse through the products in search results. Instead of just focusing on the displayed products, the user would also pay attention to the clickable features in the side as they occupy the significant portion of the display and highlighted as links. The clickable feature would serve two purposes, highlight the feature of that product and also as a clickable filter to filter based on that particular feature. **The design principle of consistency** used here to display the feature in a color blue and underlined, would help the user to identify that it is clickable. One main challenge the user could face is identifying the function of the clickable feature link. Although highlighted in the blue color makes the user understand that the feature link is clickable, the user might not be able to predict that the clickable link would filter the products. This would be considered as a feedback of the evaluation and necessary changes would be made for the next iteration.

In the next stage, the user would click the feature link in the side of the product as per his interests. E.g., the user could find the particular brand interesting and he can click on the brand name on the side of that particular product. The user would perceive the action of filtering just next to the displayed product more like a drill down or deep dive rather than an isolated filtering action. Once the user acts like clicking the brand name, the search results would refresh displaying only the products from that brand. The feature filters on the side of the product itself emphasize **the principle of discoverability**, as the user need not search

for the filters and find it in product display itself. The difficulty user might face in this stage is to revert the filter. Either the user has to go to the left pane to remove the filter or has to search again from the search bar which is not intuitive. Having an 'X' symbol to revert a filter near each of the clickable features could solve this issue and would be considered in the next iteration.

In the next stage, the user browses the narrowed range of products i.e. only from a particular brand. The user could either find the desired product at the top or still the results could contain a wide range of products based on the brand filtered. If the product range displayed is still wide, the user can choose to apply additional filters based on the other features. Since the filter is already applied to the Brand user would see the differentiating feature within that brand like size, rating, etc in the product display. Users can contemplate the list of displayed features to apply the next filter. Please note that these feature filters are provided in addition to usual filters on the left pane of the page emphasizing **the design principle of flexibility**, where it provides the option for the expert user to apply all the filters at once in the left pane and it provides the option for the novice user to apply the feature filter one by one from the product display. This cognitive walkthrough primarily focuses on the novice users and hence will focus on the feature filters in the product display.

In the final stage, users' search results are narrowed down as per the multiple feature filters applied in the previous steps. At this point, the user's objective is to select one of the products from the final results. The user still has the option of sorting the results by any additional criteria such as price and ratings. The sort options on the right pane of the prototype are easy to find for the user as it is designed emphasizing the principle of simplicity, reducing the clutter in sort options. As a user, one of the shortcomings is that users might still want to apply some non-feature filters such as free shipping or seller name. Although those filters are available in the left pane, it would be challenging for the novice user to find them.

All the feedback and shortcomings from each of the above steps would be further analyzed and be incorporated into the prototype and re-evaluated in the next iteration.

3 EVALUATION SUMMARY

Both the qualitative evaluation and the predictive evaluation have provided ample feedback about the prototypes and also have provided a detailed understanding of the user's perspective about the functionality and usability of the interface. There was some gap identified between the need-finding exercises carried out and the final evaluation, particularly on the expected filtering and sort functionality of post search navigation. Additional need-finding would be conducted to improve the prototypes for the next evaluation.

3.1 Additional Needfinding

The prototypes were designed based on the initial need-finding exercises which mostly focused on the difficulties with the current interface and pain points in the usability. However, based on the evaluation, it feels like the additional need finding is necessary to find out the reason behind the difficulties and understanding different segments of customers, particularly novice users. The next iteration of the need-finding would be designed to focus on the novice user's thought process when they are navigating the search results without explicitly focusing on the existing interface.

3.2 Additional Design Alternatives

Based on the cognitive walkthrough conducted, many of the shortcomings of the card prototype was well handled in one of the prototypes created and planned for empirical evaluation but not evaluated due to low-fidelity(text prototype). The idea behind that prototype was to use the Hierarchical search to search within the search results. Some of the aspects of that can be incorporated into the card prototype when the user searches based on the features. One of the other brainstormed ideas is to include the "Remove similar products" button to have the complementary functionality to the current feature-based filtering in the card prototype. Both of these can be incorporated into the card prototype for the next iteration.

The paper prototype based on prominent filters can also be improved based on some of the minor suggestions from the survey although the feedback was generally positive. One of the notable suggestion was the need to have different prominent filters based on different product type searched. The prototype can be redesigned to make the prominent filters dynamic for each of the categories.

3.3 Prototype Revisions

The feedback for the paper prototype is mostly very positive except for a couple of suggestions. Based on the suggestion below minor changes would be made to the prototype.

- Move the sort option to the top of the page below the prominent filters
- Drop the featured products in the right pane and widen the product display from social-media like the display to detailed display.

The above changes are very trivial and non-functional and hence the prototype can be moved to medium-fidelity with interactive wireframes.

Based on the cognitive walkthrough, some of the functionality itself needs to be changed such as adding the option to revert the filtering, enabling hierarchical filtering for the features. These changes are quite significant and hence would be made to the card prototype at the same level of low-fidelity to further evaluate before increasing the fidelity of the prototype.

3.4 Next Evaluation Plan

The Paper prototype, as mentioned would be moved to medium-fidelity with interactive wireframe and hence will be ready for the empirical evaluation. Multiple quantitative metrics can be collected on the prototype such as navigation type, the number of clicks, etc. to evaluate the prototype empirically.

The card prototype would still be at low-fidelity due to the multiple important changes planned. Hence it will not be ready for the empirical evaluation and needs to be evaluated qualitatively or using another iteration of predictive evaluation. I will prefer to conduct both Predictive and Qualitative evaluation on the prototype before increasing the fidelity of the prototype.

4 APPENDICES

4.1 Raw Survey Results

- What is your age?
  25-35,35-45,<25,>45
  8,2,4,1
- How often do you use the E-commerce search functionality in a week?
  0-2,3-5,6-10,>10
  9,4,1,1
- Do you agree with the idea of separating prominent or most used filters from other filters?
  No, Yes
  1,15
- The given prototype would make it easier for the novice user to find the needed filters? (5-Strongly Agree....1-Strongly Disagree)
  2,3,4,5
  1,2,11,2
- The buttons for the prominent or most used filters as shown in the prototype would be more efficient than the usual dropdowns? (5-Strongly Agree....1-Strongly Disagree)
  2,3,4,5
  1,2,12,1
- What are the prominent filters you would expect at the top of the page?
  Brand, Size, Brand, rating, the seller (Amazon), Category, Cost, brand, and maybe color or size. It kind of depends on what the overall search is for. , Deals, Hot items, I would expect the system to learn my habits and the filters would be created by the system.,None, Price, Rating., Shipping filter, size, brands, sellers, These suffice, no idea, price, price, delivery, payment, user rating
  1,1,2,1,1,1,1,1,1,1,1,1,1,1
- Do you agree that the Sort option at the bottom of the page would be intuitive to use? (5-Strongly Agree....1-Strongly Disagree)
  1,2,3,4,5
  1,2,3,7,3
- Would separating featured products to the right pane to improve the usability of the interface?
  No, Yes

6,10

- The Right and Left scroll on the prominent filter(at top of the page in prototype) is more usable than the usual drill-down approach? (5-Strongly Agree....1-Strongly Disagree)

  3,4,5

  5,10,1

- The list of products in the middle of the page like social media posts would be effective for navigation? (5-Strongly Agree....1-Strongly Disagree)

  2,3,4

  3,4,9

- Do you find the given prototype intuitive overall?
  No, Yes

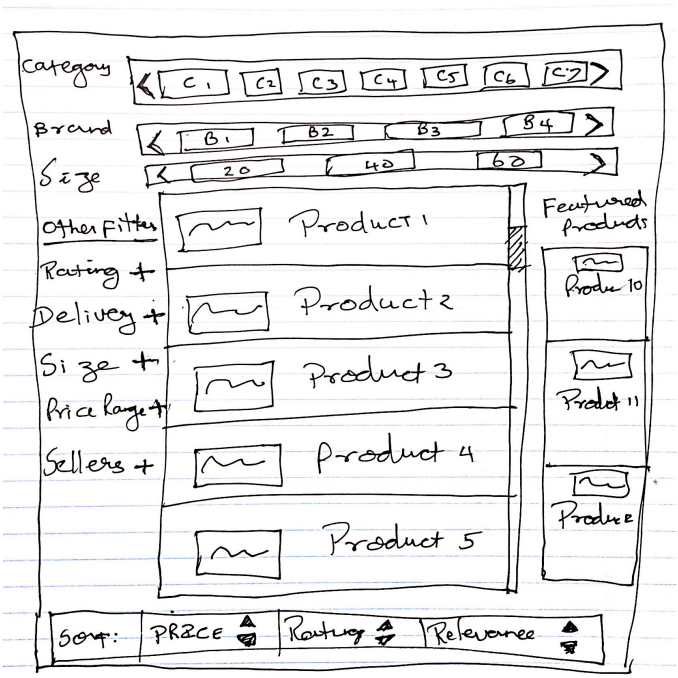
  2,14

- Please provide any additional comments on the given prototype, if you have any?

  A bit messy with three bars on top - category, brand, size. Can make it nicer? I feel the existing method is ok., I strongly think the sort should be at the top. And I am indifferent about the featured products being pulled to the side. , I think this prototype would be very intuitive for e-commerce shopping, It'll be nice if I could view more products at the same time, Looks good and relatively simple to use., N/A, NA, No, None,na, none, overall I like it, only note is that my top filters would be different for each product type

  1,1,1,1,1,1,3,1,1,1,1,1,1

4.2 Paper prototype for Qualitative Evaluation



4.3 Card prototype for Predictive Evaluation