Reverse Recipe

Prototype

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ABSTRACT

Reverse Recipe is an application that is designed to empower users to be able to shop, cook, and organize their kitchen in a revolutionary way. It aims to provide users with an accessible tool to help streamline and simplify their time spent on several aspects involved in the cooking process. The design of the interface has undergone revisions based on the research and analysis performed throughout development, which provided insight on optimizing the design in order to deliver an interactive, high-fidelity prototype.

KEYWORDS

high fidelity prototype; interactive prototype; heuristic analytical evaluation; empirical evaluation; user interface (UI); usability; user-friendly, discoverability;

I. Introduction

Both heuristic and empirical evaluations have been critical in improvement and optimization of the application's development. Heuristic evaluation helped identify any problems with the interface functionality that users had to overcome to be able to use the tool in its current state. The empirical user test focused on only one of the app's features to get a user's real-time perspective and assess if the interface is both easy and learnable, or if users experience difficulties when interacting with the app. The outcome of these evaluations were incorporated into the updates of the app's workflow and transition to high-fidelity prototyping deployment.

II. Materials

For this step of our project, we have created a high-fidelity prototype via Figma (Appendix B) [2,3,4,5,6]. Figma is a cloud-based design tool which allowed us to bring our project to life by designing and creating an interactive prototype without coding. Work flow of this prototype is presented in Appendix A.

III. Design Discussion

Feedback from user testing and evaluations were reviewed to determine what aspects needed improvement, and to see what design choices should remain in future versions. Reviewing the last iteration was done with the project's design goals in mind, including efficiency, learnability, user-friendliness, and long-term usage. In order to reach these objectives, a positive user-experience is essential, with users enabled to comfortably utilize the tools available with minimal obstruction from the user interface design.

Heuristic evaluations found, for example, an issue related to the Jakob Nielsen heuristic of the match between system and the real world: while ‘match’ can imply a similar meaning to ‘search’ or ‘find’, the two latter terms are much more commonly used, both verbally and in other software. This led to the ‘Match Recipe’ button labels on the User Inventory and Recipe Search screens being changed to ‘Find Recipes’. While a minor change on the surface, keeping terminology consistent with common standards provides familiarity, which then aligns with application’s goal of being learnable. This was further corroborated by empirical evaluations, where users found “Match Recipe” to be an understandable but unusual choice of words.

Another mechanism designed to match users’ real-world expectations was implemented on the Recipe Book screen. While many users in present-day find their recipes online, some may prefer to use traditional paper cookbooks that have been written and compiled by sources such as celebrity chefs or popular websites recipes contributed by the community. Accordingly, this screen will display several collections from these types of sources by default, providing an introductory method for users to begin recipe searches. Collections from household names, such as Gordon Ramsey, can provide users with a sense of familiarity, particularly new users who are not yet familiar with the search process.

The prototype previously used colored letters to indicate login using social media, such as ‘F’ for Facebook, which may not be immediately obvious to a user. This was deemed a usability problem related to consistency and standards, as many interfaces that allow social media login portray those options using official logos or symbols. To match these standards, the new iteration uses official logos to make their function more clear for users, which helps encourage recognition over recall.

In addition, review of the heuristic analysis found that the presentation of the social media icons may not provide enough context for users to determine their function. Though users in the target demographic, such as those in the empirical evaluations, are likely to be familiar with the process of using social media accounts to login to other applications, it is important to consider users who may not be. Accordingly, clarifying text was added to help users understand the options available to them when creating an account and logging in.

An additional concern relating to the heuristic of user control and freedom was found on the Start screen. Currently, users cannot access the application without an account. Logically, it should not be strictly required to have a user account to access some of the application’s core functionalities, such as browsing recipes. Thus, an important option to consider would be to let users try the application as a ‘guest’. Though this option has not been implemented in this iteration of the prototype, it will be given considerable thought and review, as it would give uncertain users an opportunity to determine the apps usefulness. This would improve the accessibility of the application, but needs planning on what features a guest user can and cannot use, which in turn may require new screens tailored specifically for a limited guest experience.

The previous prototype included repetitive screen layouts of just four buttons for some screens such as the Menu and Settings. This iteration revamps those layouts: the Menu screen uses tabs and a list format instead, while Settings and its options are displayed in a more familiar vertical format. Though design consistency can be important for learnability, the original layouts also felt tedious and inefficient: attributes that were noted by users to contribute to dropping their usage of other software. The new changes helps condense the previous layout to reduce unnecessary screens and navigation without sacrificing accessibility.

Heuristic and empirical evaluations found a preference for simple, minimalistic design, which aligns with modern trends. One way to help achieve this is to limit the number of elements on screen and reduce clutter. In doing so, there is less potential for user confusion or frustration. Previously, filters were located on the same screen for entering search terms, but required the user to scroll down to see. The new screen now utilizes colored buttons to represent filter types for users to refine their search - selecting one generates a pull-up menu on the same screen that shows the related option. This keeps all essential elements on one screen without needing to scroll, reducing the amount of user effort needed to operate. Colored buttons can help users recognize filters they frequently use, and improving discoverability for newer users.

Clarity is another important aspect in usability, as users must be able to discern important information and available features. To that end, the Recipe Information screen now displays only ingredients at first, with a new button to a screen that shows the cooking instructions. The ingredients list and cooking steps are easily the two most important parts of a recipe, so it was important that users are able to distinguish them. With this change, they can now easily navigate between information as needed rather than sifting through a clump of text on one screen. Other clarity changes were made to the screens for Items and Recipes, where it was made more visible to users when multiple images are available to view by adding a horizontal bar, indicating that the user may swipe to scroll.

Several changes were made to improve navigation. For example, a ‘Home’ button has been implemented at the bottom-center of each screen; while the ‘Back’ button is always available, deep navigation may require the user to

use it multiple times to return to the main screen. Providing a ‘Home’ shortcut on each screen allows users to bypass redundant clicking, mitigating frustration and streamlining navigation. The shortcut uses a symbol of a house which should be familiar to many users. and its function easily inferred by those who are not. Another example is the inclusion of an ‘Inventory’ button on Item screens, allowing users a quick way to review their current inventory on a screen they will frequently used.

The Alert screen, which notifies users if recipes cannot be generated with their current inventory, now has additional buttons to allow users to scan or manually enter items. Originally users could only access a shopping list, which didn’t take into consideration that a user may not updated their inventory, or may have missed an important item, before attempting to find possible recipes. In this situation, a user would have to move through additional screens to add items and retry, which is counter-intuitive to the goals of the app. The new options available with the alert addresses that issue, making the screen more helpful for the user.

Because learnability is a focal point, a considerable amount of thought was directed towards whether or not a tutorial or help function was needed. Although heuristic evaluations using team members noted a lack of these options, user testing of target demographics did not demonstrate a need for them. Participating users noted that they had no difficulties accomplishing the tasks, though one did acknowledge that technologically inexperienced or elder users may inherently struggle. Troubleshooting features in some apps have been noted to be difficult to use and/or unhelpful, to the point of adding to user frustration - successful implementation them requires proper attention. Future testing and research is needed to provide more conclusive data on its necessity, and will remain under consideration.

ACKNOWLEDGMENTS

Shannon Farazi, Carter Fritsch, Dylan Kieu, Yu Chuan Tey, and Michael Ton, "Project 8", pp 1-4, unpublished.

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Appendix A: (Our workflow was submitted separately)

Appendix B: Our Interactive Prototype in Figma

Please wait for all pictures to load, then click the play arrow in the upper-right corner to enter the interactive prototype:

https://www.figma.com/file/qJ8lpF9D2uCxRwrS5ZZ8Xe/Reverse-Recipe-Revised-Prototype?node-id=325%3A2320

Peer-Evaluation of Team Members:

Table 1: Group members, Assigned Tasks, and Task Completeness Grade

Group Member name	Role	Responsibilities and Assigned tasks	Tasks Completeness Grade* 0-5
Shannon Farazi	Leader	● Managing the meetings ● Prototype and Workflow ● Helping on writing the document	5
Carter Fritsch	Collaborator	● Report: Justifications of design decisions ● Helping on writing the document	5
Dylan Kieu	Collaborator	● Prototype and Workflow ● Helping on writing the document	5
Yu Chuan Tey	Collaborator	● Prototype and Workflow ● Helping on writing the document	5
Michael Ton	Collaborator	● Report: Justifications of design decisions ● Helping on writing the document	5