SENG 310 – Human Computer Interaction

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PA 5:

July 4th, 2024

B03-4

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Pilot Study

We conducted a pilot study with two of our peers to identify and address any potential issues before running the final study.

Peer 1

- Color Schema:

  Issue: The color scheme, especially on the sign-up and sign-in pages, was not appealing and looked odd.

  Improvement: Revised the color scheme to enhance visual appeal and consistency.

- Font Size:

  Issue: The chosen font size was too small, making it difficult to read.

  Improvement: Increased the font size for better readability.

- Side Panel Transition:

  Issue: There was no transition effect when opening the side panel, which made the interaction feel abrupt.

  Improvement: Added a transition effect and blurred the background to improve the user experience.

- Layout of Contents on Specific Hike Page:

  Issue: The layout was overwhelming as the contents were covering too much area of the screen.

Improvement: Adjusted the layout to make it more organized and less overwhelming.

Peer 2

- Font Type:

  Issue: The font type was not satisfactory.

  Improvement: Changed the font type to Roboto Condensed for a better look and feel.

- Signout Link Functionality:

  Issue: The signout link was only functional from the homepage.

  Improvement: Fixed the signout link to work from any page within the app.

- Data Authenticity:

  Issue: The presence of fake data detracted from the app's credibility.

  Improvement: Replaced fake data with real data from local hikes and trails to improve authenticity and user engagement.

- Clickable Items Distinction:

  Issue: It was difficult to distinguish between clickable items and non-interactive information.

  Improvement: Added a shadow effect to clickable items to make them stand out, while non-clickable information is displayed as plain text boxes like hike stats.

The pilot study was very helpful and the feedback provided by the participants allowed us to make significant improvements, resulting in a more polished and user-friendly app.

Description

Our current prototype consists of proof-of-concept pages that feature hard-coded data and interlinked navigation, simulating a realistic user experience. It allows participants to interact with the app as if it were fully functional. Below are the descriptions of the prototype and rationale on how it aligns with the design requirements.

- **Home:** Displays a welcome message, a menu button for navigating to other pages, weather information, and a list of popular hikes. It also displays the overall statistics of the hikes explored by users with information like average pace, total distance on those hikes and number of hikes. Clicking the menu button in the top-right corner opens a menu with links to the Home, Your Hikes, Hikes Near You, Achievements, and AR Glasses pages. The list of popular hikes fulfills the Trail Suggestions requirement as it suggests popular hikes based on the user's location.

- **Your Hikes:** Shows a list of your past hikes, each with a description. Each hike item is clickable, leading to a detailed view that includes information on difficulty, distance, time, and nature items scanned with AR glasses during the hike. Clicking on any Flora or Fauna category takes you to a detailed page with descriptions and information. This covers the Detailed Information Review, Real-Time Identification and Educational Content requirements as the user can review detailed information about identified flora and fauna from the hikes. Each item identified can be viewed in detail with all the information about them. Opening a single hike gives the user the exact trail map plotting the user location frequently overall tracking the pathway followed by the user covering Pathway tracking requirement.

- **Hikes Near You:** Similar to the Your Hikes page, this page lists nearby hikes with hike information instead of user-specific stats and discovered items. It covers the Detailed

Information Review and Educational Content requirements as well as the user can review detailed information about identified flora and fauna from the hikes explored by other people and can learn more about their journey.

- **Achievements:** Accessible from the menu, this page displays rewards earned from hiking and scanning different flora or fauna. This covers the Gamified Elements requirement as users earn badges for identifying various flora and fauna, overall enhancing the user engagement.

- **AR Glasses:** Also accessible from the menu, this page shows the status of your AR glasses, display preferences, and custom display settings for easy manipulation of the visual screen on the AR glasses. This page satisfies the requirement for Customizable Display as the users are able to customize AR glasses display, enabling them to choose what they want to see. For example, experienced hikers might not need navigation. The user who has the navigation checked can reliably navigate, especially novice hikers on poorly labeled trails, using visual overlays which can be turned on from this page. They can also have the alerts/updates option turned on which provides real-time trail updates, including alerts for weather conditions and hazards, and detect potentially dangerous animals using the built-in camera.

- **Sign-in:** Contains text fields for email and password, alternative sign-in options like Google, and a link to the Sign-up page.

- **Sign-up:** Features text fields for first name, last name, email, and password, as well as a sign-up button to create an account.

This high fidelity prototype effectively demonstrates the application's functionality and user experience, providing a realistic and interactive environment for participants testing the app. The design choices made covers most of the requirements as evidenced above.

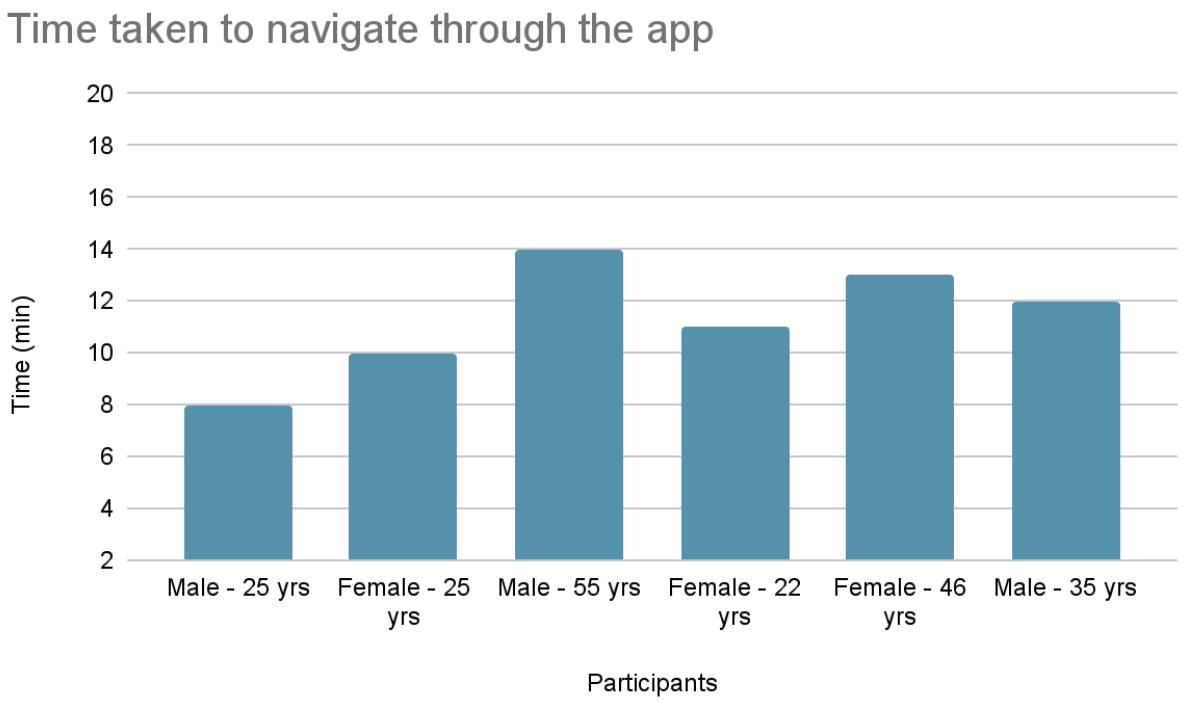
Results

We conducted the final study with six participants to ensure comprehensive feedback. The total time taken by participants to navigate the app is shown in the chart below, averaging out to be 11.5 minutes. Overall, participants navigated through the app relatively easily throughout the study but had some interesting notes. Initially, some participants had a couple of notes regarding the specific hike pages. A main instance of confusion on specified hike pages was that participants didn't realize the Flora and Fauna components under "Items Discovered By You" were clickable links to more information. Next, participants noted that the map was too small to see and didn't have any action to increase the size. These 2 points have proven to be important notes for the high-fidelity prototype.

Another key result is confusion within the AR Glasses page. Participants found that they didn't understand that the page, from the table, was the settings of their glasses. Additionally, participants particularly had issues with the custom display and upload components of the AR Glasses page. For the custom display, participants found there was little context to what these settings referred to. In addition, participants found the upload button unclear thinking it may be for live streaming on social media. Thus, this study has discovered moderate pain points surrounding the AR Glasses page.

Lastly, participants noted disinterest in some of our UI decisions on the application. Firstly, at the sign-in page participants preferred a logo instead of the app's text title. Moreover, participants noticed that the sign-in and sign-up screens do a poor job of giving the impression of a hiking app, some stating "It looks like a brain app from the name". Additionally, throughout the app, noticeably on the home page, participants disliked the amount of text and would prefer the data

to be represented differently, particularly on the home page. Finally, participants mentioned dislike about the burger menu as it creates extra steps for navigation.



Discussion

After reviewing the results from our usability study we found several key insights into the user experience and interface design of our application. First, while most participants found the app intuitive and easy to navigate, some specific issues occurred with particular functionalities. For example, most users did not realize you could click on the flora/fauna from individual hikes to view a more detailed view of it. This highlighted that we needed a better queue for clearer navigation and potentially a more integrated method to view the information.

The AR settings page also caused a fair amount of problems. Many testers were unclear on the usage and purpose of the page and components, such as the custom display dropdown and the upload button. This suggests a significant gap in the information architecture and user guidance

for this page. To address this issue we believe that adding more text to clearly describe the purpose of each setting and perhaps changing the layout of the settings page will also help prevent future confusion.

Additionally, the study revealed preferences and aversions to some of our UI designs. Participants expressed a desire for a more visually pleasing sign-in page, preferring a logo over text to better convey the app's theme. The participants also mentioned that the sign-in and sign-up pages did not properly convey the app's purpose, with many testers mistaking it for a different type of application. This feedback tells us the importance of proper thematic consistency and the use of visual elements to convey the app's nature and purpose.

Lastly, participants gave feedback that the extensive amount of text throughout the application is too much, particularly on the home page. They also expressed their dislike of the hamburger menu, saying it undermines the streamlined nature of the application. Reducing textual content in favor of more graphical representations and simplifying the navigational structure could enhance the user's overall experience. This study and analysis will help inform our next steps in refining the prototype to better meet user expectations and improve the overall usability of our application.

Study Limitations and Reflection

Small Sample Size: The study was conducted with only six participants, which is a relatively small sample size. This limits the generalizability of the findings to a larger population. A more extensive study with a larger and more diverse group of participants could provide a broader range of insights.

Limited Scope of Testing: The study focused primarily on usability and UI design but did not address other potential issues such as app performance, security, or accessibility.

Context of Use: The study is not conducted in a real-world setting, which can impact the findings. Users' interactions with the app could differ significantly when using it on an actual hike compared to a controlled testing environment.

Short Duration: The study's duration was short as it was only 15 minutes and we felt participants haven't had enough time to explore all features thoroughly. A longer testing period would allow users to engage with the app more deeply and provide more detailed feedback.

Reflections

Importance of Clear Navigation Cues: The confusion around the clickable links for flora and fauna highlights the need for intuitive design elements that guide users. Enhancing visual cues and integrating more obvious navigation elements can improve user interaction and satisfaction.

Need for Improved Information Architecture: The issues with the AR settings page underline the importance of a well-structured information architecture. Providing clear explanations and context for each setting can help users understand and utilize features more effectively. Simplifying complex components and ensuring clarity in their purpose is crucial.

Visual and Thematic Consistency: Feedback on the sign-in page and overall thematic elements emphasizes the significance of visual design in conveying the app’s purpose. Incorporating a logo and ensuring that the visual elements align with the hiking theme can create a more engaging and relevant user experience.

Balancing Text and Graphics: Participants' preference for less text and more graphical representations indicates the need for a balanced approach to information presentation. Reducing textual content and utilizing visuals can make the app more appealing and easier to navigate.

Simplified Navigation: The dislike for the hamburger menu suggests that a more straightforward navigational structure is preferred. Considering alternative navigation methods that reduce the number of steps to access different parts of the app can improve usability and user interaction.

Iterative Design and Testing: The study's findings underscore the importance of iterative design and testing. Incorporating user feedback into successive versions of the app and continually refining the design based on user interactions can lead to a more polished and user-friendly final product.

Overall, we feel that improving on the study limitations can significantly enhance the results and provide better insights in the future.