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Enhancing Gallery Experiences Through Interactive Apps: A Pathway to Democratizing Art Appreciation

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Abstract

To enhance the visitor experience at the Stanley & Audrey Burton Gallery, the author endeavors to develop an Augmented Reality (AR) application. This article initially engages in data collection, employing diverse research methodologies, wherein visitors serve as the subjects of the study. Subsequently, an extensive examination of several analogous gallery apps presently available in the market is conducted through case studies. Ultimately, the article presents three distinct user interface solutions subjected to user testing. This iterative design process expounds on the application's development and establishes a robust groundwork for enhancing its ultimate iteration.

Keywords: user experience, interactive design, art gallery, design method, Augmented Reality

1. Introduction

The Stanley & Audrey Burton Gallery constitutes an integral component of the Leeds University Library Gallery, offering art exhibitions and public events accessible to all visitors without charge. Its primary focus is presenting the distinctive collections housed within the Leeds University Library (Anon, 2020).

1.1 Aims

The core of this project is to explore the implementation of an Augmented Reality (AR) mobile application within The Stanley & Audrey Burton Gallery. The visitor experience in the gallery is perceived as a journey of introspective exploration (Williams et al., 2020). To amplify the gallery's cultural significance for the audience, the project's design solutions have been tailored to achieve the following objectives:

- Enhancing the viewing experience of the galleries and fostering meaningful interactions between the audience and the artworks, thereby bridging the gap between art and human engagement.
- Utilizing AR to facilitate the audience's comprehension of artwork backgrounds and catering to the diverse needs of visitors.
- Embracing cutting-edge technology to modernize the gallery's accessibility, attracting a broader audience base, and elevating the overall user experience.

1.2 Objectives

- Conducting a pre-survey encompassing questionnaires, interviews, observations,

and focus groups on gallery visitors on understanding their demographics, user behaviors, motivations, and perceptions of AR.

- Performing a comparative analysis of existing AR apps utilized in other galleries, examining their merits and drawbacks.
- Developing three distinct app interface concepts based on the survey results and user preferences.
- Ensuring a user-centered approach throughout the design process, conducting a follow-up questionnaire survey on the proposed concepts to gather user feedback for further refinements.
- Enhancing the visual design of the final app prototype, inviting users for testing sessions, collecting their valuable suggestions, and iteratively improving the solution to achieve the optimal outcome.

2. Initial Research

2.1 Literature Review (Individual)

To establish a solid theoretical foundation for the project's research, a comprehensive literature review has been conducted as an individual endeavor before initiating the investigation. Numerous academic articles have been referenced, and relevant notes have been annotated for future reference.

One of the fundamental principles underpinning this research is the concept of user-centric interaction design. The identified article emphasizes that galleries often prioritize the display effectiveness of artworks within the space, sometimes neglecting the audience's experiential aspect. The author argues for a more integrated approach, considering the fusion of artwork, audience, and space rather than treating them in isolation (Sharif, 2020).

Analyzing the gallery's functionality makes it evident that it serves as a space for communication. The information conveyed to visitors relies on the designer's creativity and concepts (Parsons, 1965). Beyond the exhibits, the overall visitor experience is significantly influenced by the enhancement of related facilities, shaping the audience's initial impression (The Scout Association, 1999). This encompasses both hardware and software aspects that necessitate careful consideration by the designer.

2.2 Competitor Analysis (Individual)

During comparing similar gallery apps, the assessment will focus on four key aspects: visual design, color matching, AR effect, and functionality.

2.2.1 Smartify

Smartify is an app widely applicable to numerous renowned galleries and museums. Its visual style leans towards simplicity, employing a swimlane layout on the homepage within the UI design. The overall design facilitates vertical scrolling, while each category can be independently navigated through horizontal sliding. This approach promotes an enjoyable and interactive experience. However, the considerable content may be concealed, necessitating effective differentiation of primary and secondary elements and appropriate guidance.

The color scheme primarily features black and white tones, lending an elegant ambiance to the app. The minimalist colors serve to accentuate the main artwork.

The AR icon, easily noticeable within the bottom menu bar, allows viewers to access background knowledge by scanning artworks and obtaining specific location details. Additionally, an audio mode is available for those who find reading inconvenient. Notably, the app enables users to superimpose scanned artworks onto any real-life scene, thus elevating interactivity and amusement in the interaction process.

2.2.2 Gallery Explorer

The APP design of the National Gallery of Singapore presents the two buildings housed within the gallery on its start page, creating an appealing visual effect. The interactive format follows a guided swim-style layout, complemented by simple and intuitive icons.

Regarding color matching, the predominant use of white provides a clean and sophisticated aesthetic, while red serve as prompts and for title text. Notably, the logo design creatively adopts a stylized representation of the architectural forms on the start page, showcasing an innovative and noteworthy design element.

The AR icon, presented as a QR code, is conveniently placed on the bottom toolbar. Users can scan the QR code of artworks while visiting the gallery (although, here, it is only simulated for demonstration purposes). This

action leads users to text information about the artworks and offers the option to embark on an audio tour, which supports multiple language versions. Furthermore, users can download offline audio commentary for the entirety of their journey, enhancing accessibility and engagement.

2.2.3 National Gallery London

The National Gallery London app design involves a combination of tab and drawer navigation, attributed to its diverse functions and substantial information. Clicking on the top label triggers content changes and alters the label color, a widely used approach that provides users with a clear indication of their interface level. Some functions are conveniently tucked away within the side toolbar, optimizing space utilization.

The app's main colors feature yellow and blue with higher purity. As the background employs a photograph of the National Gallery, the choice of bright colors prevents integration issues with the picture, maintaining visual clarity.

For the AR function, the app employs an eye icon with a text prompt, offering obvious directionality for users. However, the AR scanner is solely operational within the gallery, and for demonstration purposes, only the simulation effect is presented here. The app also boasts work details, with an option to activate voice reading in the upper right corner. While the application excels in functionality, some design details appear rough and need more aesthetic finesse.

2.3 Research Method (Teamwork)

Throughout the gallery design project, the team was organized into four groups, each utilizing a distinct research method, including focus groups, questionnaires, interviews, and observations.

2.3.1 Focus Group

The focus group utilized a three-part questionnaire. The first part comprised general questions, while the second delved into more in-depth inquiries. The third part involved analyzing competitive brands, with input sought from gallery staff.

Based on the focus group's research findings, participants expressed concerns about existing issues at Leeds University Gallery, including its concealed location, outdated exhibitions, limited space, and lack of a comprehensive guide design. Gallery staff highlighted that university students exhibited a greater interest in contemporary art forms such as new media, installations, and videos than classical art. The addition of AR technology was seen as a potential attraction for younger audiences. These insights should be considered when devising the app's functional layout.

2.3.2 Questionnaire

The questionnaire survey was conducted collaboratively by a team member and the writer responsible for composing and administering the questionnaire. To collect more effective research data, team members approached visitors outside the gallery and invited them to participate in the survey after visiting. Most visitors were young college students, predominantly with art-related backgrounds, who regularly visited the gallery out of personal interest and for academic purposes. Additionally, groups of artists and enthusiasts frequented the gallery for sketching and interacting with fellow art lovers. Overall, participants demonstrated curiosity and optimism toward integrating AR technology in the gallery, encouraging the development of this application.

2.3.3 Interview

Based on the findings from the interviews, a common trend emerged, where most interviewees learned about the gallery through recommendations from friends. This aligns with the results obtained from the previous questionnaire survey, indicating that individuals with art-related professional backgrounds habitually visit galleries for academic and personal interests. However, other groups displayed little interest in visiting galleries. The recurring issue mentioned by participants was the gallery's hidden location, proving challenging for first-time visitors to locate. Thus, the addition of a comprehensive guide is deemed crucial. Respondents expressed a collective belief that galleries have room for improvement and expressed a desire for enhanced equipment to attract a larger audience. The integration of AR technology is perceived as a means to enhance the gallery experience and garner greater satisfaction among visitors.

2.3.4 Observation

The detailed observation provides valuable insights. Most visitors are young females, confirming the demographic trend observed in the previous three research groups. Visitors tend

to spend more time in the left and middle halls among the three exhibition halls, with the proper hall often overlooked due to its exhibition layout. Furthermore, all visitors engage with the provided instructions. Frequent interactions with videos and physical activity materials indicate that viewers prefer obtaining information through visual and dynamic means. The availability and diversity of equipment directly impact the duration of visitors' stay in the gallery.

3. Design Development

3.1 Design Concepts

After conducting preliminary research and considering gallery user behavior preferences, the author conceived three user interface design solutions.

3.1.1 Concept One

This design concept maintains the basic style of the gallery's official website. The homepage features a vertical scroll layout, and the UI layout is organized into a swimlane with horizontal sliding functionality. It prominently displays three main categories: collections, events, and exhibitions, while secondary information is accessible through the menu in the upper right corner and the bottom toolbar. Users can easily scan artwork to view essential information, such as the title and author. The AR function page offers the option to switch to sketch mode, providing users with a line drawing of the artwork. Additionally, the concept supports audio functionality, allowing visitors to listen to background knowledge while enjoying the works.

3.1.2 Concept Two

This concept follows a more concise approach, primarily employing a vertical scroll layout. The AR function is strategically placed as a central icon in the bottom toolbar on the homepage to guide users effectively. Scanning artworks allows users to witness related dynamic effects and voice, sketch, and work information functionalities. The sketch mode caters to the needs of sketching club painting enthusiasts in galleries, aiding them in better-reproducing works and obtaining color schemes.

3.1.3 Concept Three

Concept Three employs large color blocks as function prompts, emphasizing aesthetic appeal and eliminating a hidden menu bar. All functions are clearly visible at a glance, reducing operational complexity. Upon accessing the AR page, users have automatic navigation, facilitating their movement through the gallery. The navigation feature presents the floor plan of the hall, guiding users to the collection locations via arrow indicators. Scanning artworks in this concept reveals captivating 3D effects, while other functionalities remain consistent with the previous concepts.

3.2 Usability Test

Following the presentation of the three design concepts, a questionnaire was devised for usability testing, and 24 users participated in selecting the preferred plan while offering improvement suggestions.

Based on the survey results, Concept 3 emerged as the popular choice, with more than half of the users favoring it. The main reasons cited were the attractive color schemes, harmonious fonts, straightforward typography, and modern aesthetics, all aligning well with the gallery's ambiance. Users expressed their desire to witness interactive prototypes, which constitutes the primary objective for refining the design in the upcoming stages. Considering these valuable insights, the team aims to perfect the design and enhance user satisfaction and experience.

3.3 Stages of Iteration

The next step aims to refine Concept 3 further based on user feedback. This includes modifying details, emphasizing the color of text and images, and ensuring a unified font style for titles and body text. Additionally, the team will work on developing a digital prototype.

The development of digital prototypes necessitates another round of user testing. Questions will be crafted from utilitarian and hedonistic perspectives during this iterative testing process. The utilitarian approach involves assessing users' functional evaluation of the design, while the hedonistic aspect explores their experiences with AR functionality, representing new ways of engaging with galleries and providing enjoyable experiences. The overall satisfaction of users in design is also a key consideration (Elson et al., 2014). Twenty participants will test the prototype, providing valuable and effective responses.

3.4 Final Design

In the final survey results, feedback from users' interactions with the prototype has yielded

numerous suggestions for design modifications. The team addressed the issue of low recognition for AR icons by replacing them with more directional icons accompanied by text descriptions. Additionally, the functionality to switch between five languages has been added. On the AR function page, users can access the exhibition hall's floor plan, identify their real-time location, preview the work numbers in the figure, and bold font is used to highlight collection works. Furthermore, some text pages have adjusted line spacing to enhance the user's reading experience. The final design reflects the culmination of user input and iterative improvements to create an optimal user experience.

4. Conclusion

In the era of rapid digital advancement, many museums and galleries are incorporating advanced interactive experiences within their exhibition spaces. The implementation of such applications allows users to partake in the enjoyment of portable exhibitions, opening up art for widespread admiration. This marks a novel endeavor to bring art, traditionally perceived as elegant and exclusive, into the public domain, fostering a closer connection between people and art. Additionally, from a sustainable development standpoint, storing artworks in digital platforms effectively preserves material heritage (Newnham, 2016).

Overall, the future of gallery experiences holds boundless possibilities, and designers will continue exploring and developing to enhance these experiences further. As technology continues, galleries will evolve alongside it, enriching how art is encountered and appreciated by individuals from all walks of life.

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