

Post Project Review

Project: MyWuff AR App

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1 Introduction

1.1 Purpose of this document

This document provides a review of the MyWuff AR App project. It describes the approach the project took for user research, the designing process, and the development. It includes methodologies, frameworks, and tools that were utilised in the project, with what worked and what did not. It concludes with key takeaways from the project which can be passed on to future projects to share knowledge and experience.

1.2 Description of Project

The project commenced developing an iPhone application as a solution to utilise augmented reality (AR) for people who cannot have a pet. There are benefits to owning pets such as mental and physical health improvements, however, living situations, financial and other constraints exclude some populations to own a pet. The application includes features to mimic key activities of pet ownership such as toy play, walking, and gift-giving which feature AR technologies. In the second stage of the project, the toy play and gift-giving features were prototyped using Unity along with a menu bar user interface (UI) component. The prototypes demonstrated the use of image tracking and object placement to facilitate the features in AR environments on iPhone 14 Pro.

2 Approach to Project

The project proceeded with a strong emphasis on design thinking and agile development approaches. In the design stage, research was conducted to identify problems that non-pet owners had, their characteristics, the benefits of owning pets, and the typical activities that the pet owners enjoyed. The research results defined the target user and goals of the app with the essential features to be brought to the user. It also influenced the design choices which range from UI designs to the justifications for choosing AR technology over VR to be used in the app. These decisions were made to benefit the target user. These include conventional design borrowed from iPhone apps that the target user is familiar with and the low-cost factor of AR that align with the target user's income level. Thorough screen prototypes were also designed and were included in the design document to help visualise the app flow and identify potential useability issues.

Agile development style helped to frame features and plan the development to meet the delivery of a functional app in a short time. The prototype development iterated the cycle of planning, developing, testing, and adjusting for each sprint or smaller components to incrementally improve.

Some planned elements in the app were not implemented due to time constraints, however, the delivered prototype demonstrated key features and the capabilities of AR technologies thanks to the development approach.

Problem and People Research

The problem definition of non-pet owners used literature research and statical data to discover the challenges and benefits of owning pets. It detailed the characteristics of pet owners and non-pet owners which helped establish the target user and the design decisions.

Persona and Problem Statement

Based on the research findings, persona development was used to create the realistic user representation for the app to identify the needs. Problem statement method was also used to frame the identified problems to produce the needs with reasoning.

Design Tools

Adobe DX was used to produce UI elements and screen mock-ups. Apple SF Symbols were used for icon designs to deliver the unified look. The sample icon was generated by DALL-E from OpenAI to cut the design time.

Unity Development

New unity project was created for each component or sprint to minimise the risk of conflict issues and data loss from a program crash. Different Unity versions were installed and used to test plugins and solutions from the internet.

Git Version Control

Git and GitHub were used to manage version control of code after integrating components.

Project Repo: <https://github.com/toshimitsu-o/MyWuffAR>

User Test

User testing was conducted to measure the quality of the prototype and gain feedback. The questionnaires were prepared for the participant to answer after testing the prototype.

3 Project +

The research for the problem and people helped to define the target user and goals for the app in detail. Persona and problem statements worked well to visualise the target user. The persona development was helpful in envisioning how the app could be used in one's daily routine which refined

the features and the app structure. It made the decision-making process for design clear and firm. Thorough research and analysis will be an essential part of future projects as a foundation for articulating target users and effective application design.

4 Project –

The version control with GitHub faced some issues with large files because of the inclusion of Xcode project files. There were some large files in Xcode files that exceeded the limit of the GitHub account's large file storage allowance. Once it was in the log, it was difficult to remove. Including large files tends to cause unexpected issues with GitHub, it should be avoided or used with caution.

The user test could have more participants and possibly done earlier to reflect the feedback in the development. There was only one participant because of the cancelation of two others. Future projects should plan a user test with a change or cancelation in mind and have enough time to organise alternative options.

5 Lessons Learned

The most important lesson from the project is that a mixed combination of technologies can become complex to solve issues and more difficult to find a solution. Unity AR Foundation, Apple ARKit XR plugin, and Xcode were used in the core to deliver the AR solution for iPhone. The combination made the complexity of the project higher than anticipated, thus, it was time-consuming to test potential solutions and resolve issues. Information was limited for the niche combination and the available solutions became obsolete faster because of the nature of immersing AR technology. It was also difficult to locate issues were when something did not work.

The lack of an easy preview was challenging when implementing components into an AR environment. Testing required Xcode to deploy the app to iPhone each time which took a few minutes. It took longer if the build or scene settings changed in Unity. The positioning of UI elements in Unity was also challenging because of the variety of iPhone screen size configurations. Unity had no concept of the long narrow screen aspect size for previewing. If there is a solution to preview AR within Unity, it would be beneficial to include it in a future AR project.

One positive experience from AR was the social capability that was observed in the user testing. The enjoyment of the app was shared in the room. VR technology isolates the user and disconnect from the surroundings which

works well for an immersive experience. Whereas AR does not remove the user from the environment and they can share the experience with others by simply showing their screen.