

Testing Results

Project: MyWuff AR App

Table of Contents

1	Introduction	1
1.1	Purpose of this document	1
1.2	Testing Approach and Scope	1
2	Testing Results	1
3	Recommendations	1

Revision History

Date	Description
9/5/2023	Setup the document
14/5/2023	Update testing approach
28/5/2023	Update the testing approach and test results
30/5/2023	Update the testing approach and test results
1/6/2023	Update the testing approach and test results
2/6/2023	Update recommendations
2/6/2023	Update introduction
2/6/2023	Finalising the document

1 Introduction

1.1 Purpose of this document

This document provides details of the testing approach and scope for the development of MyWuff AR app along with the test results and the recommendations for future development. Four tests including user test were conducted at different stages of the development cycle to measure progress and identify technical and usability issues. With the test results, the recommendations are suggested to improve the app's usability and overall quality.

1.2 Testing Approach and Scope

Tests were conducted to identify functional and usability issues in the app development as well as to measure the completeness of the functionality of the app. Four types of tests were planned and conducted at different stages of the development as follows.

Component/Unit Test

Throughout the development cycles, unit tests have been conducted by the developer to check the functionalities of the app. Each feature or component was separately tested. To simplify the process, it measured whether the component successfully worked on iPhone. The goal of the test was to make sure the components were ready to be integrated with other components.

Limitation: Code function test was not conducted due to the time constraint.

Integration Test

At the integration stage in the development, the integration test was conducted to check that the components worked as collective features. Groups of features were tested on iPhone by the developer. The goal of the test was to ensure that the features worked together and improve the quality of solutions.

Limitation: Due to the version difference between Unity projects for two key technologies, the features were integrated into two separate projects and compiled into two iPhone apps.

System Test

At the final stage of development, the system test was conducted to check the app as a whole in the state close to the production environment. The app on iPhone was tested to ensure that the flow was complete and UI elements enhanced user experience. The test was conducted by the developer.

Limitation: The two separate iPhone apps were treated as a whole, due to the version difference as mentioned above.

User Test

As the final test, the selected potential end-user tested the app functionalities in a similar environment as the real users would use the app. The test participant tested the app and answered questionnaires to measure the usability and functionality of the app. The goal of the test was to identify potential useability issues and receive feedback to improve the app's quality.

Limitations: Due to the time constraint, the participants were not from the user target group of the app.

The following questionnaires were given to the participants.

ID	Question	Answer
Q1	Was the text readable in the git activity (image tracking) ?	Yes/No
Q2	Did the gift activity work as expected?	Yes/No
Q3	Did you understand how to start the toy activity?	Yes/No
Q4	Was the action icon (heart) easy to recognise?	Yes/No
Q5	Was the action menu bar (walk, teddy bear icons) easy to understand?	Yes/No
Q6	Was the instruction clear in the toy activity?	Yes/No
Q7	Did you enjoy the gift feature?	Yes/No
Q8	Did you enjoy the toy play feature?	Yes/No
Q9	Did you like the interaction with the AR dog?	Yes/No
Q10	How would you rate the usability of the app?	1 (bad) – 5 (great)
Q11	How likely would you use the app with all features from the design document implemented?	1 (never) – 5 (frequent)
Q12	Please leave comment.	Freeform

Note: Two participants could not attend the test due to the flue and replacement could not be organised in time.

2 Testing Results

The following are the results from the tests conducted throughout the development process. The test stage columns indicate which sprint tests were conducted with sprint IDs.

Feature ID	Date Tested	Test Stage (Sprint)	Pass/Fail	Finding	Category	Notes
A04	18/4/2023	SP1, SP3	Fail	The app launched without crashing, however, nothing happened. Some flickering around the image marker occurred a few times.	Component Test	
A03	2/5/2023	SP2	Pass	The 3D model spawned in the AR view by the tapping action. Changed the size by pinching actions	Component Test	
A04	9/5/2023	SP3	Fail	The app launched without crashing, however, nothing happened. The debug output showed that the image tracking was not triggered.	Component Test	
A04	9/5/2023	SP3	Pass	The image tracking system recognised the image marker and the square model was spawned to cover the image.	Component Test	
A03, A05	14/5/2023	SP4	Pass	The dog 3D model picked a ball and walked with animations in Unity 3D environment.	Component Test	Only within Unity.
A04	28/5/2023	SP3	Fail	The AR tracked image manager setting did not change the object to be spawn.	Component Test	

A04	28/5/2023	SP3	Pass	The couch 3D model was spawned in the AR view by the image tracking technology.	Component Test	
A03	29/5/2023	SP5	Pass	The dog model grabbed the ball model and walked close to drop the ball. The animations worked and the interaction was success.	Integration Test	
A01, A03	30/5/2023	SP6	Pass	The action menu bar opened by tapping on the action icon. The scene switched by tapping on the action menu bar. Then the toy play activity started.	Integration Test	
A01, A03, A04	30/5/2023	SP7	Pass	Image tracking placed two different models using two image markers. The toy play activity started by tapping the action icon and menu. The dog model fetched the ball model placed by the user. The interaction was repeated as intended.	System Test	
A01, A03, A04	31/5/2023	SP7	-	Overall, the app worked as intended and UI elements were easy to understand. The toy icon (teddy) was recognised as toy which resulted the quick access to the toy activity. The text message in the gift activity was not noticeable for the user. The user moved when dog was fetching the ball which resulted the slightly off location. The user enjoyed the experience overall.	User Test	See the user test result below.

User Test Results

ID	Question	User1 (45-year-old, lives in a unit, dog owner)
Q1	Was the text readable in the git activity (image tracking) ?	No (Didn't notice the text.)
Q2	Did the gift activity work as expected?	Yes
Q3	Did you understand how to start the toy activity?	Yes
Q4	Was the action icon (heart) easy to recognise?	Yes
Q5	Was the action menu bar (walk, teddy bear icons) easy to understand?	Yes
Q6	Was the instruction clear in the toy activity?	Yes
Q7	Did you enjoy the gift feature?	Yes
Q8	Did you enjoy the toy play feature?	Yes
Q9	Did you like the interaction with the AR dog?	Yes
Q10	How would you rate the usability of the app?	4
Q11	How likely would you use the app with all features from the design document implemented?	3
Q12	Please leave comment.	I don't use apps in general so I won't use this type of app. In the toy activity, I wanted the dog to come closer to feel connected. The white text was hard to read sometimes.

3 Recommendations

Based on the test results in the previous section, the following recommendations are presented for future development to resolve issues and improve the app's quality.

White text readability

As surfaced in the user test, the white text colour was sometimes hard to read. It needs some drop shadows or a shape in the background to give a contrast to improve the readability. Due to the time constraint, the rounded light grey opaque shape in the design document was not implemented and it would have resolved the issue.

User position accuracy

The placement of where the dog drops the ball in front of users can be improved. In the development process, the location was changed from a dynamically determined location of AR camera to a fixed location which is set at the start of the script. This was done due to some animation issues. As observed in the user test, the location needs to be updated to the latest user's position for a better experience. The user interaction with AR pets is important to build an emotional connection.

Distance adjustment and feedback

In both the system test and user test, the dog did not move to pick up the ball a few times. This is due to the distance variable set in the script how far for the dog to respond to the ball. It worked as intended, however, it looked like an interaction error from the user's perspective. This may potentially negatively affect users' confidence in the app and disturb users' experience. A distance adjustment and feedback to users to tell the ball needs to be closer are essential to solve the potential issue.