The Fino Project

Helena Wilde*
University of Applied Sciences
Upper Austria School of Informatics,
Communications and MediaCampus Hagenberg

ABSTRACT

Due to advancing technology, a lot has happened in the field of augmented reality games [1] in recent years. AR is an extension of the real world through computer-supported virtual content. AR is being used more and more in everyday life. Areas known for it are, for example, operating manuals, which can visualise maintenance procedures better through AR. Further, it is finding increasing enthusiasm in the gaming industry. This paper documents the creation of an Augmented Reality Tamagotchi named **The Fino Project**.

Index Terms: Human-centered computing—Augmented Reality, Tamagotchi—;

1 INTRODUCTION

A Tamagotchi is an electronic toy from Japan that became popular in the 1990s [2]. It represents a virtual pet that has realistic needs which must be cared for. If a Tamagotchi is neglected, it dies. This paper describes an augmented reality Tamagotchi through its design and implementation, which was created using C Sharp in Unity.

2 DESIGN

When designing a game application, user-friendliness is crucial. Due to a lack of explanation of the applications, it is important that the interface and the functions are intuitive as possible for the user. The interface of the application was designed in a simple and retro way and should be a reference to the earlier Tamagotchis.

2.1 Requirements

The requirement for the project is an interactive augmented reality application. The Tamagotchi is to have needs fulfilled through different interactions. These interactions are carried out by the user. For each of these needs, there is a bar that illustrates the current vital signs. These vital values are supposed to update themselves continuously. If these needs are not met sufficiently, the Tamagotchi interacts with the user through pop-ups and asks for attention. If these requests remain unanswered and the vital values drop to 0 Further, provided you take good care of your animal, the game is an endless one.

2.2 Functions

The user has four needs to care for and fulfil with the Tamagotchi.

- **Fedding**: The Tamagotchi has a changing food request. The current food request is displayed on the interface for the user. If the wrong food is given to the Tamagotchi, the current value remains. If you give the Tamagotchi the requested food, the value increases.
- **Playing**: For the play function, there is a virtual button located on a marker. After pressing the virtual button, the scene changes to the play function. The part was edited by Janine Mayer and is not described in detail.
- **Sleep**: If the sleep function is activated, the Tamagotchi goes to sleep. Meanwhile, the counting down of the value stops and instead the value is slowly accumulated. The Tamagotchi wakes up automatically as soon as the value reaches 100
- **Socializing**: For the need to cuddle, the Tamagotchi needs a play partner and does not want to be left alone. If you give the Tamagotchi his Teddy Bear, the bar is set to 100

The age and name of the Tamagotchi are displayed in the upper bar. The name can be selected individually on the start page while the age always stars with 0.

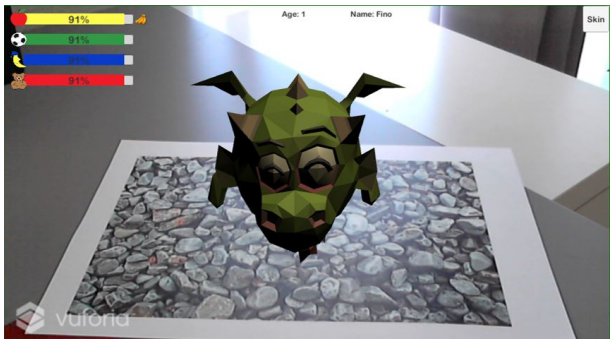

Figure 1: Main page

3 IMPLEMENTATION

The game was graphically realised with the Unity scene graph. C Sharp was used for the programming. The vital signs, the age, the name and the methods for updating the vital signs are contained in the script ”Tamagotchi”.

3.1 Scene Management

The game consists of several scenes. The scenes are changed either via buttons in the interface or via virtual buttons located on markers. The scenes are described below:

- **Start page**: The name for the Tamagotchi is set on the start page. The name is displayed on the top bar in the main game. If no name is given, the game cannot be started. There is also an **exit button** on the start page. This button can be used to exit the application.

*S2010745024@fhooe.at

- **Main page**: After entering the name and pressing the **start button**, the main page is displayed. The **start button** appears as soon as a name has been entered and confirmed. The Tamagotchi can be seen on the main page. Three of the four functions (feeding, sleeping and socialising) play in this scene.

- **Play function**: The Tamagotchi can be played with in the play function scene. This is Janine Mayer's part of the project, so it is not described in detail.

3.2 Customization

The player has the possibility to change the colour of his Tamagotchi. He has this option during the entire game. The **skin button** is located on the main page. Pressing the button opens a panel on the right edge of the screen. Five colours (red, blue, green, pink and yellow) are available. Changing the colour automatically changes the colour of the sleeping and dead game object.

3.3 Interaction

The player can interact with the Tamagotchi by holding different markers in the game. Game objects appear on each of these markers. These can be objects in the form of food or cuddly toys as well as virtual buttons.

Through these interactions, the Tamagotchi can be kept alive. The markers are recognised by the game and carry out the methods of the individual actions. This causes the bars to rise.These interactions are described in more detail below.

3.3.1 Image Target

As already mentioned, markers were used for the functions. The feeding and socialising functions are very similar. Here, it is a matter of handing the Tamagotchi the right object. This works via the scripts `Recognize Food` and `Recognize Teddy`. If these markers are recognised with the corresponding objects, the respective percentage increases. Another decisive factor in feeding is that the object served fulfils the current random wish. If this is not the case, the bar does not rise and the Fino changes its animation.

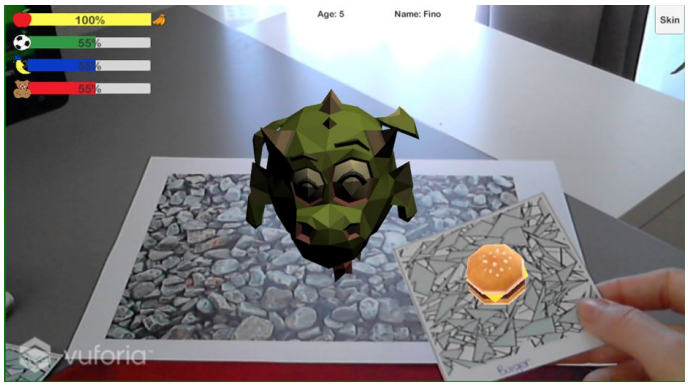

Figure 2: Interaction: Feeding the Fino

3.3.2 Virtual Buttons

To start the sleep function, you need a marker that contains a **virtual button**. If this marker is recognised and the **virtual button** is pressed, the Tamagotchi goes to sleep. The happy game object changes to a sleeping one. In addition, the sleep bar is accumulated and a lullaby sounds. There is also a virtual button on a marker for the play function; this part was implemented by Janine Mayer and is not described in more detail in this paper.

3.4 Pop ups

In order to "talk" to the player, several pop-ups were created that inform the player about the current course of the game. Several warning signals have been built into the game for the user, which appear as soon as the Tamagotchi is neglected.

3.4.1 Warnings

There are the following pop-ups that warn the player:

- **Under 50 percent**: If the bars below 50 percent, speech bubbles with texts such as "Feed me!" appear.

- **Under 20 percent**: If the needs remain unfulfilled despite the initial request, a flash appears as soon as all bars are below 20 percent.

- **Under 10 percent**: If the bars fall below 10 percent, they start flashing.

3.4.2 Game Over

If the warning signals are consistently ignored by the user and all four vital signs drop below 0 percent, the Tamagotchi dies. As soon as the Game Over method is set to true, a game over screen opens. On the Game over screen, there is the option of restarting the game or exiting the application. The happy gameobject is replaced by a dead one, which is visible through the transparent panel. Bars and warning signals become inactive. The Game Over panel offers the option to exit the application or restart the game.

4 Future Work

Currently, the four functions of the Tamagotchi work without problems as an augmented reality application. Nevertheless, there are some implementations that make the Tamagotchi game more real. Currently, all vital signs must be at 0 percent for the Tamagotchi to die. This means that the user would have the possibility to let it survive just by "sporadically putting it to sleep", even if he never feeds it. Of course, this is not realistic when compared to a real animal and could be adapted in the future. Furthermore, more emotions of the game object could be incorporated in the form of animations.

5 Conclusion

In conclusion, it is important to mention, that at the current state the game only represents a concept of the final application. The time in which the bars are updated is not set for real game use. For the tests and videos, it was important that the bars count down faster than is intended for the finished game.

Through the inspiration of the retro Tamagotchis, an Augmented Realty Tamagotchi was developed. The different functions that are offered to the user in the context of interactions were explained. The realisation in Scenegraph Unity and the implementation were described to make the application appear pictorial. Possibilities for a future expansion and further development of the application were discussed and shown. The work on the AR Tamagotchi was a good illustration of the possibilities offered by AR and VR.

References

[1] AR: Guidelines for Designing Augmented Reality Games, `http://eprints.lincoln.ac.uk/id/eprint/24599/1/Wetzel%20et%20al.%20-%202008%20-%20Guidelines%20for%20designing%20augmented%20reality%20games.pdf`.

[2] Tamagotchi: Wikipedia, `https://de.wikipedia.org/wiki/Tamagotchi`