Whack a Diglett: An Augmented Reality Game

Cláudia Marinho
MIEIC, FEUP
up201404493@fe.up.pt

Tiago Silva
MIEIC, FEUP
up201402841@fe.up.pt

***Abstract*—*Whack a Diglett* is an augmented reality video-game for Android. It takes the traditional arcade game *Whac-A-Mole* and brings it to the Android platform under a *Pokemon* skin. Through the use of an AR hammer, the player will hit the Digletts as they show up, scoring points for each successful hit.**

***Index Terms*—Whac-A-Mole, Pokemon, Augmented-Reality**

I. Description

The project consists of a modernized version of the traditional Whac-A-Mole game. The game's main objective is to hit the moles as they show up, trying to get the highest possible score in the given time. Each round consists of 60 seconds, where the player will have to try their best to *whac* as many moles as possible.

One of the key points of the project is the Pokemon theme. By replacing the typical moles with Digletts, the player will have a friendlier and funnier environment to play, as well as the feeling of nostalgia from when they were young.

The game provides different difficulty settings, allowing the player to change the level of challenge to match their skills. Each difficulty has different *uptimes* (the time window the player has to hit the digletts before they hide).

The game also saves the scores each time the player finishes a round, storing up to five high scores.

II. Technologies

The project makes use of the following technologies:

- **Unity3D:** used as the development environment.
- **Vuforia:** used as the support for all the augmented reality functions of the game.

III. Assets

The project makes use of the following external assets:

- **Diglett 3D Model:** Kataphoric, Sketchfab. [1]
- **Hammer 3D Model:** Ferolit, Unity Asset Store. [2]
- **Dirt Texture:** Katsukagi, 3D Textures. [3]
- **Poké Ball Sound:** xFoondom, Youtube. [4]
- **Game Theme Song:** pokemasterCrystal, Youtube. [5]
- **Menu Theme Song:** Slyzer, Youtube. [6]

IV. Evaluation Topics

- **3D Scene:** The scene consists of mainly two 3D objects: the digletts and the hammer. Each of these is supported through a unique Vuforia Image Target.
- **3D Models:** Two different 3D models were used: one for the digletts and one for the hammer. The former is animated through calls to *translate methods*. A texture was also applied to the digletts' box in order to simulate dirt. All of these are documented in the Assets section.
- **External Data:** Though not related to the actual game scene, the current GPS coordinates of the player are shown on the main screen of the application. This information is updated every three seconds.
- **Generic Features:** There are different game difficulties, a pause menu with a restart option, and the scene can be rotated by rotating its real world counterparts (i.e. the physical markers). Player competition can be achieved by comparison of player performances, since the app stores the top highest scores.

V. Pictures

Fig. 1: Main menu

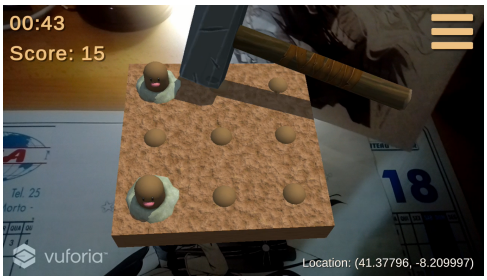

Fig. 2: Gameplay

References

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[4] xFoondom, *Sound Effects - Pokémon Anime (#9): The "POP" Pokéball Sound*, https://www.youtube.com/watch?v=puDn4cO4xOg
[5] pokemasterCrystal, *Pokemon Red, Yellow, Blue Battle Music- Trainer*, https://www.youtube.com/watch?v=2Jmty_NiaXc
[6] Slyzer, *Apollo Justice: Ace Attorney: Soundtrack - Trucy's Theme ~ Child of Magic*, https://www.youtube.com/watch?v=nyeM6Kywxp0