Game-based Storytelling Using Role Playing Game and Expansion to Virtual Reality


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Abstract – This paper represents a story-based Role-Playing Game. This article outlines a virtual role-playing game where a user or gamer can do anything (which actions are loaded previously) in the virtual gaming environment. There is growing attentiveness in the case of video games. The recent improvement of online, social joined video games (broadly multiplayer online role-playing games) now has created an experience for new gamers. A system in the Role-Playing Game (RPG) has some real-world scenarios that can be interconnected to the people of the real world, and some real action of life. An interactive environment in the gaming world has some characteristics that can participate in some action of the game based on the option available and in the choice of the user or gamer. Developing a new 3D virtual environment by using a game engine strategy is to incorporate various multimedia data in one platform. Doing so we create the domain for a virtual reality console experience. We created this Role-Playing Game using Unity and designed graphics as well as animated the characters by using the Blender.

Keywords: role-playing game, experience, video game, game engine, interactive environment, multimedia

1. INTRODUCTION

Game theory has been defined to be the analysis of mathematical models and correlates to intelligent decision making (Watcharasukarn, 2011). Gaming is a highly popular and entertaining medium because it challenges a player in a way that improves one's cognitive skills. Game is not only for entertainment, but also it can be used for storytelling and also at some point, it can be mixed with education to train people (Smyth, 2007). We live in a time where the technology and method of developing the game are changing very quickly (Abdullah-Al-Shafi, 2019b; Abdullah-Al-Shafi, 2017; Abdullah-Al-Shafi, 2019c; Abdullah-Al-Shafi, 2018f; Abdullah-Al-Shafi, 2019d).

We live in the future right now and the Future is Virtual Reality (VR). Virtual reality is a system that provides a simulated experience that furnishes a reality that is devoid of our existing reality, yet it gives a fabricated impression of genuine reality if proper devices (such as VR headsets, motion sensors) are in use (Smyth, 2007). For decades, VR technology has been improved and now it is being massively utilized for various purposes (Watcharasukarn, 2011).

The games that we used to play traditionally has now been modified into modern games (Abdullah-Al-Shafi, 2018a; Abdullah-Al-Shafi, 2016a; Abdullah-Al-Shafi, 2018b; Abdullah-Al-Shafi, 2016b). Those same methods of traditional games have been integrated into computer and console devices. These games are now known as digital games or Video Games. There are many types of video games. Among that vast classification, Role-Playing Game is one of them.

A role-playing game is the kind of game where a user or player plays the role of a character in a fictional setting (Smyth, 2007). “Player” or the user plays and takes responsibility for acting with that narrative role. RPG is a structure of a turn-based plan in every battle. There are many types of RPGs. Like 1. Action RPGs, 2. MMORPGs, 3. CRPG, 4. Tactical RPGs, 5. Roguelike, 6. Hybrid RPG, etc. Our game is a Hybrid RPG that is a
combined version of Tactical RPG and Roguelike RPG.

The video-game industry could benefit from Virtual Reality technology as it provides the ideal environment for gameplay (Indraprastha, 2009). RPG has the most potential to employ VR when proper equipment like Gloves, VR headsets, Body Suit, Multidirectional Treadmill are implemented (Indraprastha, 2009). To make an RPG game some points must be considered. A few basic features are to be implemented, like character stats, leveling up, gears, inventory system, tactical combat, quest-based gameplay, a meaningful story, decision or choice-making, etc. So these features must be implemented in an RPG, where a player can choose a character and take decisions for it to be involved in an action or to ignore it. A crucial element of any RPG (Role-Playing Game) is Interactive objects with which the player can interact.

We create this game using the Unity3D game engine and created character assets by using Blender. A game engine is a software that is used to create or build a video game. It is a software development environment (Abdullah-Al-Shafi, 2019a; Abdullah-Al-Shafi, 2018c; Abdullah-Al-Shafi, 2018d; Abdullah-Al-Shafi, 2018e). It provides a rendering engine for 2D and 3D graphics, a physics engine or collision detection, animation, artificial intelligence, networking, streaming and may include video support for cinematic (Harteveld, 2011). Unity3D is a fourth-generation game engine that links visual simulation capabilities with interactive functions. Blender is an open-source software by which we can create 3D computer graphics that are used for animation, visual effects, motion graphics, computer game character, 3D modeling, texturing, rigging and skinning, etc. (Harteveld, 2011).

Here we tried to give a brief description of our game and its building techniques (Bahar, 2018). We discuss some game material and looking forward to it.

2. BACKGROUND

Our project is basically a role-playing video game (Role-Playing Game or RPG as well as Computer Role-Playing Game or CRPG). CRPG (Computer Role-Playing Game) is a kind of game genre where a gamer or player can control the actions of any character (any several party member) in a virtual world. RPGs have changed from simple text based console pc games into visually gorgeous 3D experiences.

The RPG video game uses most likely the same settings, terminology and game mechanics as in early tabletop role-playing games. Players can explore the game world while engaging in some combat and solving a puzzle. A basic key feature of this genre is that characters grow in power and are normally designed by the gamer or player.

The important feature of RPG games is exploring the world (Player can walk), talking to AI (Artificial Intelligence) non-player characters, avoiding dangers or trap and picking up some game objects. These types of games usually focus on AI (Artificial Intelligence) and the behavior of the non-player computer characters. Dungeons & Dragons (D&D) was the first role-playing video game that was published commercially in 1974 by Gygax’s Tr.

3. RESEARCH

A storytelling game is one kind of game where two or more characters collaborate on spontaneous storytelling. Every player takes care of one sometimes more characters in a developing story. The most popular storytelling game is RPG. Most of the role-playing games have the favor of creating a believable story. One of the simplest ways to telling a story is to do exactly that, tell it.

The narrator in “Thomas Was Alone” (Harteveld, 2011). A brilliant voice by Danny Wallace tells the story of a group of colored rectangles on a journey to find Purpose. And he does so in past tense. This makes for a very linear way of giving narrative to the player. The player can simply lean back and passively let the story unfold as they go along. The narrator tells the story from Thomas’ point of view. Yet he often informs the player about what the other characters are thinking and feeling. This is a very direct way of storytelling. The narrator explicitly says what the character actually feel and think. It actually kind of genius because being a one-man studio this allows Mike Bithell to communicate emotion using vary simple visual elements. Added up with a lot of humor, Thomas Was Alone is an example of how even colored rectangles can be the subjects of interesting storytelling.

“Stanly Parable” on the other hand, is a game that changes this in a simple way of narrations (Alrehaili, 2019). This game in no way “linear”. The play is constantly presented with the choices
they have to make and these choices will have further consequence on the rest of the game. This is where the writing of the game excels, because no matter what the player chooses the narrator always has an opinion about it. It almost feels like you are breaking the rules of the game when you are faced with two doors and chose to walk through the one on the right while the narrator is explicitly telling you that ‘He entered the door on his left’. The game is filled with these kind of contradictions. It served to both confuse the player and create a very surreal experience of playing the game and more importantly creating the story. Stanley Parable has 19 achievable ending and the player actions throughout the game have direct influence on which one they would get. This is the most unique ways to storytelling allowing the player to create their own.

The opposite approach on this is by giving away almost no information about the character, they make it easier for the player to project themselves onto them. If done right, this can eliminate the boundary between the player and the game. A great Example of this is “Half Life 2” (Alrehaili, 2019). Gordon Freeman being completely silent is a way of not giving him personality. Also Half Life 2 never breaks the first person’s point of view. The game does not tell you what to do instead it places you in a world and lets you figure out for yourself what you want to make of it. A police stops you deliberately, knocks you over a soda can and orders you to pick it up. Refuse to do it and the police will beat you. It shows the player one of the key features of the game’s story. The people are being terrorized and forced to follow orders.

Another game that does a great job immersing the player and making them feel like they are the one playing the game is “Portal 2” (Alrehaili, 2019). Frist of all Glados is one of the main characters and she has a rich interesting personality for the player to explore; at the same time, she’s also the narrator. In some ways the classic all-knowing narrator that we have seen in Thomas Was Alone. But allowing Glados’ personality and her evil agenda to sort of peep through the seemingly innocent narration is a really clever trick and it helps make the story flow incredibly well. She is not just some prerecorded voice, Glados is there with you commenting on your actions as you go along, mocking you. This is the sort of writing that plays a major role in keeping the player interested and engaged.

Another game that is interesting in terms of storytelling is “Heavy Rain” (Myerson, 2013). Created by David Cage, this game has no immediate game over the state. Instead, the actions you take and how you perform during the game influence the narrative and how the story ends. If you think about it, this is actually a great way for the player to become interested in the story. Much like in real life, you do not get another chance. Instead, you have to do your best through a series of situations and the outcome of each situation actually has an impact on the future narrative.

But in the end, it is not always necessary to play around with the possibilities and structures for video games to tell a good story. There are plenty examples of games that very well utilize what you might call a classic narrative structure. These games make use of a bunch of elements like cut scenes, text and dialogues to effectively tell a story. A great example would be the massively beloved game called “The Last of Us” (Myerson, 2013). But the best way to telling a story is always going to depend on the setting, the gameplay and, of course the story itself.4. Approach we started our game project with a game story in mind. Next, we designed the game and created assets that we used in our Video game. Creating the character required a few steps like creating models, rigging the model, adding animations, creating equipment for the character, etc. which was done using Blender. We downloaded the environment (Figure 5) for our game from devassets.com. We used Unity3D to build the game and used C# language for the programming of the game.

4.1. STORY

‘Fable’ is a role-playing game (RPG) that tells the story of a person who was banished and stranded into a world unknown to him. To escape this dimension, the player (user) has to use portals and complete quests. Our game’s story starts here. He is alone and desperate to go back to his home. He will have to gather equipment by exploring the world he is currently in. During that process, he will face auto-generated enemies whom he will have to fight and defeat in combat. He realizes that the action of destroying all the undead monsters opens a portal which leads him to another dimension. After destroying all the A.I.
enemies in every dimension his curse will be lifted from him, and he will receive mercy to come back to the realm of the mortals. There will be three portals and three dimensions throughout the game. The third portal is the portal by which he shall be retrieved back home and thus reach the end of the game. That's the whole story of this game. "Fable" tries to tell a story of an ordinary mortal in the realms of the dead through this game.

4.2. Creating Assets
An asset file in Unity is the file that contains all the elements to be used in a Unity project. Before the step, we created our character's animations and equipment for the character then imported the file to the project asset. We imported our environment to this project and used the example scene as the main scene.

4.2.1. Designing Characters
1. Protagonist character: This is the low-poly 3D player character that will be controlled by the user. It has animations, clothes, battle equipment accessible to it.

2. Antagonist enemy character: This will be the low-poly 3D skeleton that players will have to fight throughout the different phases of the game. This character has its type of battle equipment.

4.2.2. Adding Animations
After making the characters using Blender we animated them utilizing the same software after properly rigging it.

1. Running animation:

![Figure 3: Reference sheet used to create the walk animation](image)

2. Walk animation:

![Figure 4: Reference sheet used to create the walk animation](image)

4.3. The Game Engine
The game engine that we used for this game is Unity. Unity editor allows us to set up our game in infinite ways. This is the stage where we create the actual game using C# programming scripts and Unity game development software. Our work was divided into building movement system, interaction system, items and inventory system, character status, A.I. (Artificial Intelligence) enemy generation and combat system. All of this is mainly code heavy, requiring multiple C# code script for each of those systems.

In the player movement system, we designated walkable and non-walkable areas of the environment. We assigned NavMesh and created the system so whenever a user clicks on any part of the environment the player will run to it using the shortest path. We also set up the camera to follow the character and assigned keys to move the camera in order for the user to view the whole scene in 360° angle.

We set up the interaction system in the way where if a game object is right clicked on using a mouse,
the player will run to it and interact with it. This comes very handy in a dialogue system.

**Figure 5: Environment**

![Environment Image]

**Figure 6: Main game flowchart**

![Flowchart Image]

**Figure 7: Equipping Items**

![Equipping Items Image]

**Figure 8: Undo Equipped Items**

In the item pickup and inventory system we created an inventory using UI canvas (Figure 7-8). Hot key for this is “I”. When right clicked on any collectable game object, it will disappear from the scene and come up in the inventory. The player can then equip those elements on to him, like armor, helmet, sword, etc. by clicking on the icons of them. All the Items can be unequipped using “U” key. Or delete it from the game using the Red Cross button.

The combat system has an enemy entity of which damage and attack speed we can control from unity editor. This will allow us to create multiple enemies of different power styles in the future. The enemy has a specific range, if the player character enters the range the enemy starts to chase the player and attack him. We can attack the enemy using “F”, “I”, “G”, “H” and “T” keys on our keyboard. Each key holds different values of damage.

**4.4. Portals**

The portals on this game is created using Render textures, custom shaders and some math to achieve the “watching through dimensions” effect. We are achieving this effect in the editor by creating two worlds that run side by side. The basic idea is, consider we have two environments in our scene, in one environment we have the
player and in the other, we have a camera that mimics the position and rotation of the player from the other environment. Basically we are taking whatever the camera sees and then cutting a chunk in the player’s environment to project the other environment on that cut out chuck which is a Plane. As soon as we move through the portal, our player switches to that other environment and the first environment receives another camera to work in the same method that does the exact same thing. If we move around the portal, it will be invisible on that other side because Planes in unity are rendered only on one side. This allows for a very immersive effect of moving through different worlds using Portals.

5. SYSTEM TEST
System testing is the part we evaluate different regions of our project and test to respond in the correct way. This is a crucial part because script heavy systems often generate various bugs. System test allows us to identify those bugs and fix them. The system test was done using the black box method. User was not allowed to see any code script and tested the system by using the gameplay only.

Table 1: System Testing Blueprint

<table>
<thead>
<tr>
<th>No.</th>
<th>System component</th>
<th>Test Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Movement system</td>
<td>Button test</td>
</tr>
<tr>
<td>2</td>
<td>Interaction system</td>
<td>Button test</td>
</tr>
<tr>
<td>3</td>
<td>Inventory system</td>
<td>Button test</td>
</tr>
<tr>
<td>4</td>
<td>Combat mode</td>
<td>System test and button test</td>
</tr>
</tbody>
</table>

6. THE FUTURE OF VR
The VR (Virtual Reality) technology is improving massively. Many VR games are available now. But among all the VR gaming options available, RPG (Role-Playing Game) is the best of all. VR headsets and controllers allow a user to experience a game like the user has been transported to that world. Like in the Hollywood movie Ready Player One, the virtual world in that movie called the “OASSIS”. That movie is based on the MMORPG (Massive Multiplayer Online Role-Playing Game). Virtual Reality technology is massively improving in our current time, in about a few years, heavy gadget VR consoles would be available for very cheap much like the evolution of the computer itself. So VR game industry is the next stop for many game developers.

A virtual reality method is provided with a gaming station (Harteveld, 2011). We are trying to give the experience of a world where one is limitlessly free, virtually. Virtual Reality (VR) based games, especially role-playing games (RPG), can help to learn with the simulation of different educational scenarios (Myerson, 2013).

Our goal is to convert Fable into a VR game, much like many other big games upgraded themselves. Fallout 4 and Skyrim VR are good examples. The story heavy aspect of this game could really be engaging for the user in the VR course of action. Using the same graphics objects, we can draw over our existing game system to work in VR by enabling some few settings (XR settings, Gadget support).

Table 2: Movement System

<table>
<thead>
<tr>
<th>No</th>
<th>Target</th>
<th>Expected outcome</th>
<th>Test Result</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Movement within ground</td>
<td>Move to the point where clicked</td>
<td>Move to the point where clicked</td>
<td>Success</td>
</tr>
<tr>
<td>2</td>
<td>Movement to river</td>
<td>Move to nearest bank of river where clicked but not walk through</td>
<td>Move to nearest bank of river where clicked but not walk through</td>
<td>Success</td>
</tr>
<tr>
<td>3</td>
<td>Movement near Solid objects like trees and rocks</td>
<td>Walk around them</td>
<td>Walk around them</td>
<td>Success</td>
</tr>
<tr>
<td>4</td>
<td>Camera movement for 360° angle view</td>
<td>“A” and “D” key moves camera towards left and right chronologically keeping the main character in focus</td>
<td>“A” and “D” key moves camera towards left and right chronologically keeping the main character in focus</td>
<td>Success</td>
</tr>
</tbody>
</table>
**Table 3: Interaction System**

<table>
<thead>
<tr>
<th>No</th>
<th>Target</th>
<th>Expected outcome</th>
<th>Test Result</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Interact with intractable object</td>
<td>Right mouse click enable interaction</td>
<td>Right mouse click enable interaction</td>
<td>Success</td>
</tr>
<tr>
<td>2</td>
<td>Open Dialogue system</td>
<td>Right mouse click provides options to choose like dialogue, fight, heal, mock.</td>
<td>Right mouse click provides options to choose like dialogue, fight, heal, mock.</td>
<td>Success</td>
</tr>
</tbody>
</table>

**Table 4: Inventory System**

<table>
<thead>
<tr>
<th>No</th>
<th>Target</th>
<th>Expected outcome</th>
<th>Test Result</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Collecting</td>
<td>Right mouse click on collectable adds them to inventory</td>
<td>Right mouse click on collectable adds them to inventory</td>
<td>Success</td>
</tr>
<tr>
<td>2</td>
<td>Opening Inventory</td>
<td>Pressing “I” on keyboard opens inventory on the screen</td>
<td>Pressing “I” on keyboard opens inventory on the screen</td>
<td>Success</td>
</tr>
<tr>
<td>3</td>
<td>Equipping items</td>
<td>Clicking on items in inventory equips them on the player</td>
<td>Clicking on items in inventory equips them on the player</td>
<td>Success</td>
</tr>
<tr>
<td>4</td>
<td>Unenquiring items</td>
<td>Pressing “U” on the keyboard removes equipped Items from the player and adds them back to inventory</td>
<td>Pressing “U” on the keyboard removes equipped Items from the player and adds them back to inventory</td>
<td>Success</td>
</tr>
<tr>
<td>5</td>
<td>Deleting items</td>
<td>Clicking on Red cross button removes items from the game</td>
<td>Clicking on Red cross button removes items from the game</td>
<td>Success</td>
</tr>
<tr>
<td>6</td>
<td>Closing Inventory</td>
<td>Pressing “B” or pressing “I” keys on keyboard closes the inventory from screen</td>
<td>Pressing “B” or pressing “I” keys on keyboard closes the inventory from screen</td>
<td>Success</td>
</tr>
</tbody>
</table>

**Table 5: Combat mode**

<table>
<thead>
<tr>
<th>No</th>
<th>Target</th>
<th>Expected outcome</th>
<th>Test Result</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enemy range</td>
<td>Enemy chases the main player if player enters the enemy’s range</td>
<td>Enemy chases the main player if player enters the enemy’s range</td>
<td>Success</td>
</tr>
<tr>
<td>2</td>
<td>Enemy attack</td>
<td>Enemy attacks the player when he makes contact with player</td>
<td>Enemy attacks the player when he makes contact with player</td>
<td>Success</td>
</tr>
<tr>
<td>3</td>
<td>Player attack</td>
<td>Right click on enemy then selecting Attack from option begins combat</td>
<td>Right click on enemy then selecting Attack from option begins combat</td>
<td>Success</td>
</tr>
<tr>
<td>4</td>
<td>Player Attack keys</td>
<td>Pressing “F”, “I”, “G”, “H”, &amp; “T” on the keyboard makes 2, 4, 6, 8, 10 damage to enemy’s health</td>
<td>Pressing “F”, “I”, “G”, “H”, &amp; “T” on the keyboard makes 2, 4, 6, 8, 10 damage to enemy’s health</td>
<td>Success</td>
</tr>
</tbody>
</table>
7. CONCLUSION

The conclusion acquired from the study of “Fable” the video game which is based on the Tactical RPG, we tried to make a simple Role-Playing Game with limited time and resources. Making an RPG video game requires a large amount of time and many people with different skillsets to work on different parts of the game making. There is always room for improvement in the world of game development. There are definitely many paths this game could head towards. We are looking forward to developing this game by adding many advanced features to this game in the future.

8. REFERENCES


