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2D Platformer Shooting Game on Unity3D

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Abstract: *This review paper describes the working of the shooting game developed using unity3d[1] engine. Unity3d is a game development platform that can be used to develop 2d as well as 3d games.*

Keywords: *unity3d, shooting, game, pathfinding, standard assets, etc;*

I. INTRODUCTION

Shooting games have always been popular among gamers. From Call of Duty to Battlefield these games have a great craze among youths as well as all other age groups. When talking about US Population 27.5%[2] of the gamers like to play Shooting games, second most favourite genre among US citizens is action games. More than half of the games are played on Personal Computers[3]. However talking about mobile devices, there is less craze of mobiles games among the gamers. Most of the games released for mobiles either don't allow users to control the game smoothly or the game fails to run on devices because of high end graphics.

A. Game Concept

The concept of the Game is very simple, the objective of the game is to destroy the enemies and best the high-score. The Main Character is the Shadow Figure carrying weapons to kill the enemies. The Enemy Shadow characters are controlled using Artificial Intelligence Algorithms. Enemy follows the trail of the hero trying to kill him. With Every bullet shot towards the hero the life of the hero decreases. As this is a 2D game so to make it more interactive and to properly use both of the X and Y axis of 2D plane the Player has given the power to fly using the Jetpack. However the Jetpack has limited fuel which increases with time when the player is not using the Jetpack.

II. OVERVIEW

A. Integration with Android

Unity3D's builettings simplify the process of transferring our game to the Android mobile device. After completing the project, or during any intermediary step for testing, we can select Android from the list of options, build the project, and upload it to one of our own devices. A separate license is required for this functionality, which has already been obtained by one of the members of our group.

B. A* Path Finding Algorithm[4]

A* Path Finding Algorithm[5] finds the shortest available path from a source to the destination. The source and destination might be anything such as enemy Spawn Point to the Player or in a racing game starting point to the Finish Line. The RichAI movement script does not support any other orientation than the XZ plane at the moment. However a large part of the work to make it support it has already been done and I expect it to be included in a future update.

- 1) The AILerp[6] movement script supports movement in any graph orientation. For many 2D games you may want the +Y axis to be the forwards direction of the agent instead of the +Z axis as is common in 3D games. If so you can enable the rotationIn2D checkbox.
- 2) The Path finding algorithm updates the path from source to destination two times each second i.e in every 0.5 seconds. This reduces the load on the system and also keeps the enemy on the right path which makes it look more natural.

C. Shooting

Shooting of Bullets by the Player is done in two ways. One is done by Instantiating a Raycast Line from the player to the direction the gun is pointing to. This Shooting algorithm works for shooting with Sniper when the bullet has to be shot to long distance. One other way of shooting bullet is to shoot the actual prefab of the bullet, this is done by adding force to the bullet by the function AddForce()[7] with parameters passed to it for the direction of the bullet and the force by which bullet has to be shot. After a certain

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time the bullet Prefab destroys to keep less load on the System.

D. Controls

The Controls that are used in this game are touch controls. Two touch joysticks are used to control the Player, one for the movement of the player and other for shooting. Both of the Joystick Panels can be controlled at the same time because of the multi-touch[8] capacity of the screens. The Joystick works by finding out the angles at which Joystick slides and working according to that. For the movement of the Player 2D standard assets are used as Standard assets[9] provide a good way for the movement of the Player. As of now the game contains two stages and in both the stages the player is only allowed to move up to a desired area. If the player tries to move beyond that he is not allowed.

E. Playing Procedure

Interaction with system UI is required to start the Game. Gaming Tips are provided to the users so that the user understand about How to play the Game. There are different maps in our game. Gamer can select any Map before starting the game from main menu. Players uses his/her skill to accomplish the game. He needs to fight the AI opponents and other players to survive and get maximum scores. Jetpack and health has limited amount but increases with time. While choosing weapon, take care of range. They have limited range.

F. Settings

In the settings panel of the game the user can change the Sound and music of the game. Also, the user can change the graphic quality of the game. The Settings tab is accessible from the Main page of the game. While playing game the user can pause the game and access the settings panel from there.

III. RELATED WORK

A. Other Multiplayer Shooting Games

As there are several other multiplayer shooting games in the market in 2D as well as 3D but most of these games have Intense graphics which makes most of the users unable to play them. We have kept the graphics of the game limited to make it playable on most of the devices. Also an option is also provided in the settings panel to change the graphic intensity of the game.

IV. CONCLUSION

This Game would be even more fun when Multiplayer[10] functionality will be added to it in the later versions. Unlike other shooting games the player fly using the Jetpack which makes more of a fun in the game Playing. The sounds are very realistic and gives the user of actual experience of shooting while playing the game.

V. ACKNOWLEDGMENTS

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