FIRST PERSON SHOOTER GAME USING VIRTUAL REALITY

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Abstract— **The capabilities of virtual reality is very high. Future of media consumption is virtual reality. With the likes of Oculus Rift etc. future of gaming is Virtual Reality. The future of computing is mobile. Virtual Reality together with mobile is a good combination for entertainment at low cost. The likes of Oculus Rift are expensive hardware wise and the requirements to use Oculus. First Person shooter games are very rare in Virtual Reality and ones for android are even non-existent. Here a first person shooter game in virtual reality is implemented.**

Keywords— **Virtual Reality, Gaming, First Person Shooter**

I. INTRODUCTION

Gaming in mobile devices is a hard thing. Especially for first person shooter games. In current first person shooter games for android, the controls take up majority of the screen area. This makes it hard for anyone to enjoy a first person shooter properly in mobile. The proposed system is Virtual Reality. VR is an alternate world filled with computer-generated images that respond to human movements. With Google's help, it has been possible to easily incorporate virtual reality to android and IOS. Google cardboard is a device which helps a user view a plane in 3D Virtual plane With the help of Accelerometer in the mobile device it is possible to track the movement of the head. This acts as a major feature of a VR game. For a first person shooter the major requirement is the head tracking. Because of the accelerometer it is much easier. The game is designed around simplicity. Anyone can just start the game and play. There is only one button for shooting. Rest is handled by the accelerometer and the game itself. This helps to distinguish from other first person shooter games where there are multiple buttons which increases the learning curve of a game and hence complexity.

II. SYSTEM DESIGN

A. Input Design –

It consists of developing specifications and procedures for entering data into a system and must be in simple format. The goal of input data design is to make data entry as easy, logical and free from errors as possible. In input data design, the source document that captures the data and then selects the media used to enter them into the computer is designed.

Input design is a part of overall system design which requires careful attention. Often the collection of input data is the most expensive part of the system, in terms of the equipment used; it is the point of most contact for the users with the computer system; and it prone to error. If data going into the system is incorrect, then the processing and output will magnify these errors.

Here, to create a first person shooter android game. For this accelerometer is used to track head movement. Smart phone is used as the gaming device. Then compare the head movement of the user and location of the character in the game.

Tap on the touchscreen by the user is another input. On the detection of the tap on the screen, the shoot function is triggered and the bullet is made to move. Other information is taken from accelerometer in smart phone for position detection. It contains values for x axis, y axis, z axis. Then is compare with previous values for position detection.

B. Output Design –

Designing computer output should proceed in an organized, well throughout manner; the right output element is designed so that people will find the system whether or executed. When designing an output identify the specific output that is needed to meet the system requirements.

The main output of the system is the character movement and the interaction of the character with the game objects. Other outputs are effects for enhancing the gameplay.

III. EXPERIMENT AND RESULT

A. Design Terrain

First objective is to design a terrain on which the gameplay will revolve around.

B. Build Character

After the design of the terrain characters present in the game must be designed and introduced in the game. These characters form a crucial part of the game. All game objects interact with the characters.

Various levels of detail and animation can be provided to the characters. These can be coded later as well. Fig. 1 shows a sample character developed for the game.

Fig 1. Character Development

C. Game Design

The characters and terrain created are merged together using any suitable engine. The game can be made virtual reality compatible by using two different cameras to represent the perspective of the human eyes. The two cameras provide a view of the terrain from two different angles thus providing a virtual reality experience. A 360 degree terrain is required to facilitate the full rotation of the android phone. A timer to keep track of time elapsed, a kill counter, ammo counter etc. are also designed.

Virtual reality was originally conceived as a digitally created space which humans could access by donning special computer equipment's. It enables people to deal with information more easily. VR provides a different way to see and experience information, one that is dynamic and immediate. For example, in a computer game, user's joystick motions are tracked and the objects in the game are moved according to the joystick movements. In the same way a simulated, three-dimensional world is created around the user in which he/she could interact with objects, people, and environments. Typically three-dimensional life-sized images with support of audio devices are presented around the user and the perspective is modified in accordance with the user input. Many devices along with the computers are used to

create a virtual environment. An example is given in Figure 2 which shows game design in virtual reality using unity engine.

Code is written for various animation and interaction in supported languages such as c#, JavaScript etc.
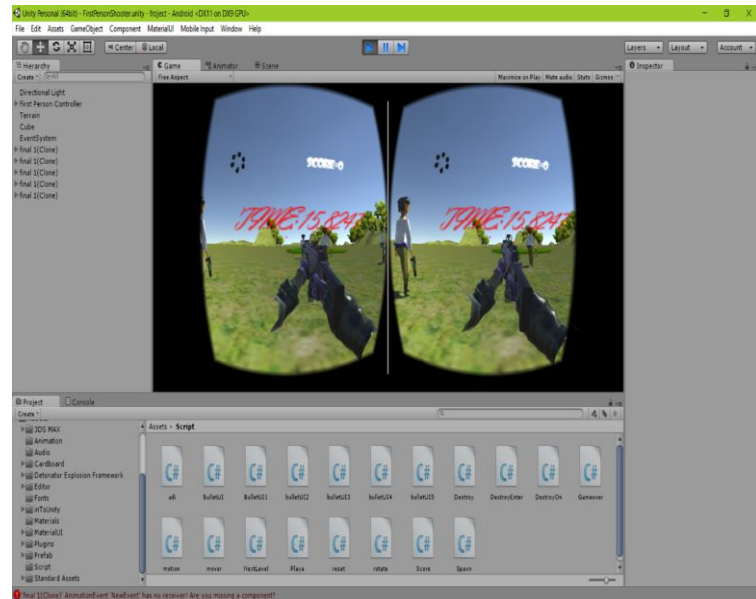

Fig 2. Game design in VR engine

D. Producing output

The entire game is finally build and exported to android compatible apk format. It is then installed on any android phone compatible android phone. Users then interact with the device using VR headset of various kind to perform action such as shoot, run etc. Enemies are spawned at random places at random intervals of time. A win is achieved when a user attains a fixed amount of kills in a fixed interval of time. Maximum entertainment is generated due to the great graphics and sound environment.

IV. CONCLUSION

A 3D game in android is implemented in virtual reality. It is a first person shooter game .Users control the movement of the character using their head. On contrary to the usual games, it provide a real world gaming experience. There is more user interaction here. The game effects can be experienced by the player with more realism. The game runs in android operating system which is now used in most smartphones. Virtual reality is now one of the most researched fields in entertainment industry and games in it are expected to be the next revolution in the industry

V.   REFERENCE

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