CREATING A 3D GAME AND GAME ENGINE FOR DEVELOPMENT

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Abstract

Nowadays, the great interest of people from various fields on serious games has made even more demanding the usage of game engines, since people with limited coding skills are also involved in developing serious games. Literature in the field has studied game engines focusing on specific needs, such as open source 3D game engines. In order to validate the results of this Project a First Person shooter game was developed for computer devices based on official tutorials of the game engine that came out to be more powerful, namely Ursina Engine. A game engine is a tool box that carries all the necessary equipment needed to rapidly build a consistent world just like the real world. This project enlightens about creating a prototype game and game engine. This game engine monitors user account and provides useful assets for creating a game and keep trak of the development. A Game Engine generally includes relevant libraries and support programs. The objective of the project is to build a game engine that helps build games as a developer in future and keep consistency across the games.

Keywords— *3D Game, First Person Shooter, Game Engine, Game Development, Dynamic AI scritping*

I.INTRODUCTION

First person shooter game is video game genre characterized by the player's viewpoint of the virtual environment as with the character's eyes, as if the player is actually inside the game. This genre of videogame has usually has a large focus on realism, with gravity, light, sound, object collision and other components emulating real life counterparts. Game engines help developers to input things like physics, scripting, rendering, input, collision detection and many other things without the need for programming. Thus, makes the development process quicker and gives more time for developers to focus on object interaction, character development, story creation. This paper discusses the planning and implementation of such prototype game and engine, creating a GUI which monitors the user account, database and which has all the libraries and modules which are helpful for creating further games. We are trying to create helpful software framework and keep continuously updating it as adopt the changes in future.

II. EXISTING SYSTEM

In the existing system or previously games were created using codes and then later on new games with new codes.Existing system proposes games assets, libraries and modules for the game to development making it difficult for new and non-technical background people to pursue careers in game development. Developing a game needs coding knowledge as well as experience in developing field. Basic modules are used in the game engine are imported from Ursina Engine which are basic for beginners to study on and develop games. There are many types of engines developers can rely on like Unity, Unreal Engine, GameMaker, Godot, CryEngine Etc. But using engine for development of game and recording the workdone in a user account is not allowed in such engines. These engines also also very complex to understand for people with non coding background.

[1] Review in games and learning, Auther :John Kirriemuir, Angela Mcfarlane.This paper describes about games cultures and play. Key issues in developing a game and future directions in games and learning. [2] Dynamic scripting applied to a First-Person Shooter. Author :Daniel policarpo, Paulo Urbano. Scripts used for NPC characters in the game.[3] A survey of framework and game engine for serious game development.Published in IEEE conference on advcaned learning technologies. Given the sparsity of standard game engines and frameworks for serious game development, developers of serious games typically rely on entertainment-based game development tools.[4] A guideline for game development-based Learning:A literature review Auther :Zhigang Deng. This paper describes about game development based learning method using

game development frameworks. [5]Overview and comparative analysis for the game engine for desktop and mobile devices. Auther :Eleftheria Christopoulou, SteliosXinogalos. This paper enlightens about design and implementation, evaluation of serious games. [8] A case for research in game engine architecture, Leigh McLaoughlin, Peter Comninos.

III. PROPOSED SYSTEM

This approach towards developing a game is more reliable because user or game developer experiences playing game while developing it. A Game Engine allows Creator to create a virtual world just like and real world and can keep adding things in it. Like backgrounds, ground, terrain, levels, characters, etc… Users could place objects and models in the scene interactively, and not through code. This Finally helps developer create more creative games and platform which is like a real world simulation to develop games. The modules in engine helps user to create and deploy levels in game faster and interactively.

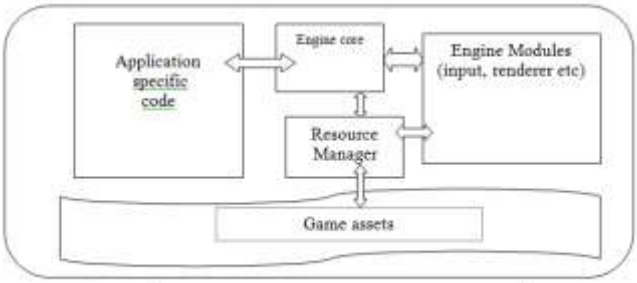
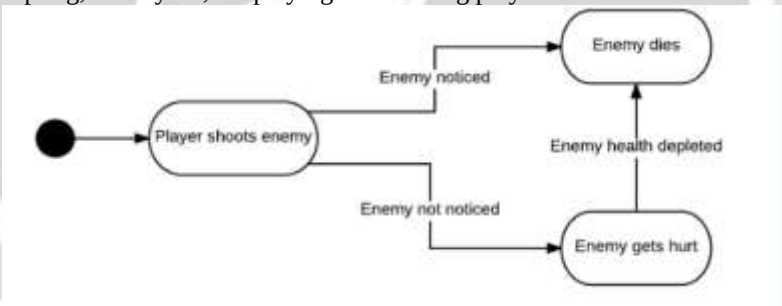
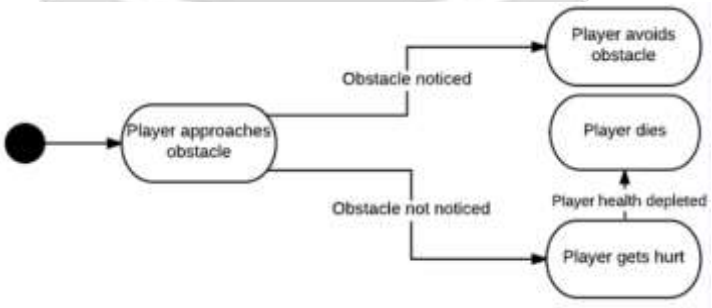


Fig. 1.Concept model of Game Engine

So for our project we created a 3D First person shooter game. In which assets are created and NPC i.e. non player characters are scripted through algorithm. This all is contained in a application. Where user need to register in the application and after that application will create account for the user and will grant access to the assets for building the game project or to test the developed game. First person shooter robot controllers are generally rule based expert systems which are scripted. Such as , many of the rules are parameterized with values. Concepts advanced while this game development are as follows:

Importing the level and configure lighting, Creating player, Coding player's movement and jump, Mouse controls, Player attack scripting, Enemy AI, Displaying health using player stats user interface.





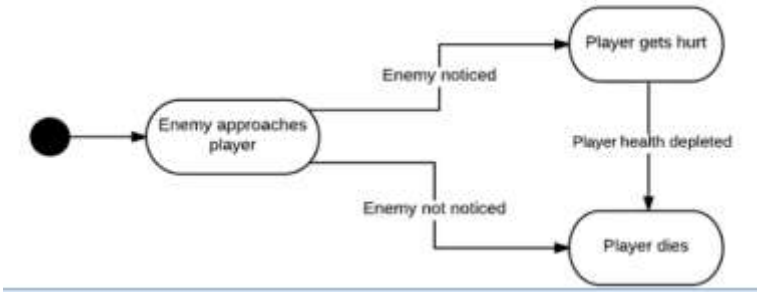


Fig. 2. State diagram of different events

The enemy in the game are dynamically scripted by genetic algorithms. In most game NPC's are based on non-adaptive techniques. A major disadvantage of non-adaptive game AI is that once a weakness is discovered, nothing can stop human player from exploiting it to the extreme. This disadvantage can be resolved by endowing game AI with adaptive behaviours i.e. the ability to learn and adapt. Dynamic scripting is an unsupervised learning algorithm with a simple yet effective mechanism for dynamically constructing proper behavior composed by a set of rules from a given rulebase. The default implementation of dynamic scripting is aimed at learning behaviors for NPC opponents.

IV. CONCLUSION

So by virtue of this project we experienced that developing games is ultimately changing at its own pace. Game industry can change a lot in terms of perspective. From playing games with just a tap of finger to playing games as a virtual reality, there is a vast probability that simulations are yet to be more researched. Somehow real life can be a simulation too. That is another theory. But sticking to this paper, developing a game engine with laws of physics already predefined in it helps develop game as well as the useful background environment easier and less time consuming. For future work, we intend ti further expand our prototype by adding different and more complex scenarios and characters types that use the different rule bases. Also there is room for improvement of the dynamic scripting algorithm.

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