Game Engine Research Paper Adrian Lu

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A game engine is a framework on which games can be created and developed. A game engine will handle background mechanics that are in video games, such as physics simulation, sound, and rendering, among many other key mechanical components that make video games operate. It allows game developers to universalize common features in games, which cuts down on development times and costs. Engines can then be reused for a variety of games depending upon how generalized it has been made by the developers.

CryEngine from Crytek, written in C++. It has support for all major consoles, including Xbox (360/One), Playstation (3/4), iOS, Android, and Windows, among a few others. It however does not have support for Mac OS. It has one of the best and most powerful graphical and lighting engines, which is why it is known for producing some of the most visually impressive games on the market. The Gamemaker Engine is a much simpler choice of game engine, made by Yoyogames. It supports only 2D graphics and has been a common choice for a multitude of indie games, a small sample of which include Spleunky and Hotline Miami. Another limitation of the Gamemaker Engine is that it has no support for Xbox.

When developing a game, there are two primary options in your choice of game engine that will be fundamental to your game. These two options are either two dimensional or three dimensional graphics. There are many factors that dictate which engine is better, and many of these factors lie in the hands of the developers. One of the biggest reasons to choose 2D graphics over 3D is simplicity. Especially in the case of independently developed games (“Indie games”),

2D graphics are attractive because they require less technical skill, and this relative ease of use is present as well for the artists working with the coders. From a more financial perspective, 2D graphics hold benefits here as well. A game that is made for a single console or platform is fundamentally more limited in its audience than a game made for a variety of platforms. Because 2D graphics are simpler, developing a game for multiple systems will be cheaper than a 3D counterpart. This again is highly appealing to Indie developers, who lack the high budgets of a AAA company. In addition to a cost difference, the simplicity of the 2D graphics makes a 2D game easier for a given console to run, opening it up to a bigger variety of platforms.

However, the advantages provided by 3D graphics can hardly be overstated. 3D graphics are capable of levels of realism that cannot be matched by 2D graphics. This realism makes the games much more immersive, and the graphical complexity can result in a much more eye-catching and aesthetically pleasing game. In addition, 3D graphics are open to a wider variety of game genres. Making a racing simulation game is something that is really only possible through a 3D game engine, much like a first-person shooter.

Finally, I want to compare and contrast 2 of the leading game development engines available today: the Unreal Engine 4, and Unity. First I will discuss what I find to be more attractive in the Unreal Engine. The Unreal Engine comes equipped with a wide variety of example projects, ranging from first person shooters to third person adventure games. In addition, the Unreal Engine carries with it no Digital Rights Management. Unity has a DRM, which means that they control the use of digital content and devices after sale. The Unity engine however does have with it a fair number of its own strengths. The Mac client for the Unity engine is a much more polished and stable program compared to the Mac client of the Unreal

Engine. In addition to a better Mac client, the Unity's editor, across other platforms as well, is a much less intensive piece of software that opens up the engine to developers who may not be running top notch machines. In general, the Unity engine is more widely accessible.