Critical Review of Open Source Tools for 3D Animation

Shilpa Sharma[1], Navjot Singh Kohli[2]
[1]PG Department of Computer Science and IT, [2]Department of Bollywood Department
[1]Lyallpur Khalsa College, Jalandhar, India, [2] Senior Video Editor at Punjab Kesari, Jalandhar, India

ABSTRACT- the most popular and powerful open source is 3d and animation tools. blender is not a free software its a professional tool software used in animated shorts, tv adds show, and movies, as well as in production for films like spiderman, beginning blender covers the latest blender 2.5 release in depth. we also suggest to improve and possible additions to better the process. animation is an effective way of augmenting the learning of lab experiments. 3d animation is not only continues to have the advantages offered by 2d, like interactivity but also advertisement are new dimension of vision probability. it has been to used in equivalent in different domains but high cost of recovery tools and scarcity of trained personnel for the content creation has not extended the reach as expected. blender (www.blender.org) is a very popular open source 3d animation. some modeling animation scene sets to texture making and rendering, lighting, rigging, and presently, full animation. then you will create and mixed own your movie scenes, and you will even learn basics of games. if you are new modeling, animation, and game design, or in case you are simply new to blender, this will be show you everything you need to get your 3d projects in progress. what you will learn to create models to using sculpt mode, extrusion modeling, and more playing with color to learn procedures texturing and uv image mapping how to use light and depth of focus to make are realistic-looking model adding rigging and realistic animation. blender has most of the great features to create the e-learning 3d animations. students who viewing the content to found it useful and enjoyed working with it.. by receiving the data from a previous stage in a pipeline, we can use the 3d modeling to program in blender to render and import or export a model into the game engine irrlicht. we also suggest improvements and possible additions to better the process. the blender foundation considers education and training projects crucial for a successful open source project.

KEYWORDS- 3danimation, blender, 3ds max, maya, software terms open source tools.

I. INTRODUCTION

Modeling is the main process of taking a shape and molding it in a complete 3D mesh. The most typical means of creating a 3D model is to take a simple object, called a primitive, and extend or "grow" it into a shape that can be refined and detailed. Primitives can be anything from a single point, with a two-dimensional line, curve, to the three-dimensional objects.

Using the specific features of your chosen 3D software, each one of these primitives can be manipulated to produce an object. We can create a new model in 3d, of fern learn some method to create your models, then go back to it time and again when you need to create a new model. There are three basic methods you can use to create a 3D model.

Blender is a 3D computer graphics software program for developing animated movies, visual effects, 3D games, and software It's a very easy and simple software you can use. It's also easy to download. Blender is an open source program, that's free software anybody can use it. Its offers with many features included in 3D modeling, texturing, rigging, skinning, smoke simulation, animation, and rendering.

Camera videos more suitable for the students. For e.g. litmus paper changing color, a video would be more convincing instead of animated clip, On the other hand, camera video is not adequate in certain work e.g. like separating hydrogen from water or melting of metals in a furnace. Certain objects are not visualized without help of software's .
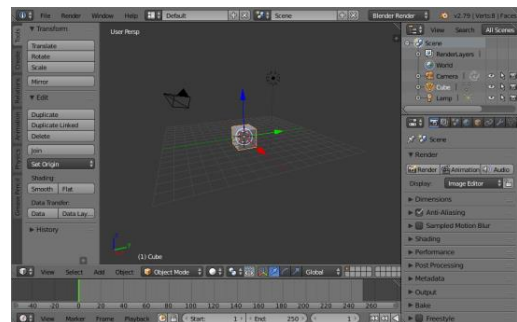

Fig.1: Blender 2.79 start with a cube

3ds Max is offers to users various ways to create animations. Its also provides powerful tools that help to manage and edit their animations. It can also create 3D computer animations and effects which can apply to computer games, films, and broadcasts, medical illustrations, or forensic presentations.

The software has multiple animation controllers. These are used to store animation key values and procedural animation settings, handling everything that users animate through the software. 3ds Max enables them to link objects together. As a result, they will be able to form hierarchies or chains. With these hierarchies, they can animate sets of objects at once, simplifying the animation process.3ds Max has a dialog tool called Material Editor that allows users to create and edit materials and maps in their scenes. They will be able to apply creative textures, as well as, simulate refractions, reflections, and other effects as they assign materials to objects.

Max is 3D modeling , animation, and rendering software which develop for games and design visualization. The program has included in the collection of media and entertainment software products offered by Autodesk. These are all part of Autodesk's architecture, engineering, or construction collection, and most of tools in product design. Max is used visual effects and professionals in films and TV industries and games developers and designers for the creation of reality games. The software is also very useful for building design, infrastructure, and

construction for product development and manufacturing planning. [5-6]

Another 3d animation software's application is developed by 3D Maya that enables videos professional who to work with animated films, tv programs, visual effects, and video games to create highly professional three-dimensional. Then we can use to create the same asset, animation in Maya or Blender. Blender software is very user-friendly.

This is most powerful program that it can make models, texture, render, rigging and animate. It can be used to create the same resource, animation or render than maya software. Blender in some areas more intuitive than Maya. 3D animation, character modeling, visual effects, and other animation fields will discover many benefits of using Maya.

Blender has interface with colors that is very user friendly. If you can find out that the colors you see on the screen then do not match those mentioned in the manual then it could be your default theme has been altered. Blender has a wide mixture of tools to make it suitable for almost any other suit of media production. Peoples or studios around the world use it for projects, commercials adds, films, games and other interactive applications like kiosks, games and scientific research. [5-13]
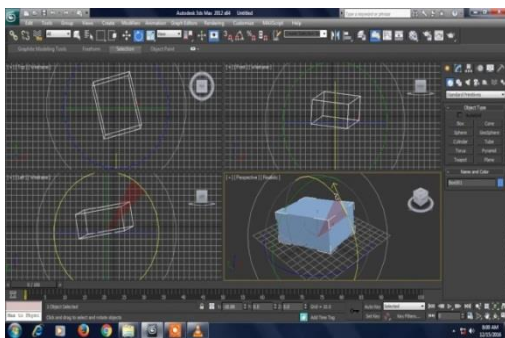

Fig.2: Blender 2.79 with Design a cube.

3D software such as Blender have the added technical complexity and jargon associated with the underlying technologies. Terms like UV maps, materials, shaders, meshes are the mediums of the digital artist, and understanding them, even broadly, will help you to use Blender is best.

Multi-resolution meshes, multi-layer UV textures, multi-layer images and multi-pass rendering and baking, sculpting, erotology, multiple additional mattes, distort and filter nodes, modeling and animation improvements, better painting with multiple brushes, fluid particles, proxy objects, Sequencer rewrite, and post-production UV texturing.

It supports the entirety of the 3D pipeline, 3d modeling, rigging, animation, simulation, rendering, compositing and motion tracking, even video editing and game creation.

Fig.3: Blender 2.79 with Room Interior scene opne.

This software also has 3D rendering aspect such as the capability to simulate real-life camera settings. Also, it offers an asset library which enables users to easily search for 3D content. 3ds Max also provides features for 3D modeling, texturing, rendering, UV mapped and effects. Users will also able to create and animate in various ways, as well, apply surface and mesh modeling. [1-2]

In adding and removing:

a)There are some different ways to add drivers in Blender.

b)After adding drivers they are usually modified in the Graph Editor with the mode set to Drivers.

II. DIFFERENCE BETWEEN MAYA, 3D MAX AND BLENDER

Maya dominates film it was originally a Unix suite or everyone in fx was using SGI machines. Nowadays it's for different reasons, but being able to work on Unix is a big reason since most fx houses is used. Max doesn't play well with either Unix or render so it's used would be limited to most big fx studios. Max is a more suitable program for film making, although it's built-in particles and character tools could use some work to compete with Maya and xsi in those areas. Modeling is texturing, rendering and rigging are available in Max.[3,4] No sense making Maya better for Max better for a film when you already have products that fit the bill. Max is a 3D user mostly and Arch viz or games I generally prefer 3D Max, it's better modeler and with the great Vray mixture its tools of choice for those areas to focus on. Blender is a bit of a work in progress right now, but for free is catching up quickly with the boys. Being open source it's developers can't have the sort of focus a commercial team can I guess, but it's sporting some pretty cool features.

• Blender as a modelling tool

• Projects [Modeling]

• Radio Wave Propagation

[Modeling]

• Global Illumination   [Video Editing]

[Scripting]

• Character Animation

III.   DESIGN

a. Multiple 3D visualization angles of the given experiment: The assembly of the experimental apparatus is often complex. The 2D drawings in the lab manuals are usually insufficient to convey the details procedure. 3D models can provide options to view the experiment from any angle thereby helping the user's comprehension. Another advantage of 3D models is the ability to view cross-sections of the apparatus.

b. Incorporating relevant animation in the 3D models created: The procedure of the experiment often includes the motion of various components. A static 3D model is insufficient to capture the moving aspects of the experiment. Hence, our second design goal is to incorporate relevant animation into the 3D models.

c. Adding interactivity to the 3D animation.

d. Interactivity enables the users to play with the various setting of the experiment, thereby increasing their understanding. It also allows them to go through the content at their own pace. Hence, our third design goal is to add interactivity to the 3D animation created, to further enhance the user's learning.

e. Our final design goal is to formulate and articulate. a methodology that can be replicated to create eLearning 3D animations on a large scale, using open source tools like Blender.

After the animation has been created, we evaluate the extent to which these goals have been met by collecting actual usage data and feedback from students as well as instructors. We are present our methodology for creating learning animations use in Blender, along with an illustrative example.

IV.   BACKGROUND

The success of the project and our eventual 3D structure depends on the existence of good.

Other research on successfully modeling large objects does not use stereoscopic imaging to create their final structure but instead uses overlapping images.

The method of decomposed the photos of the streets into simple geometric forms , texture maps , produced a model of the exteriors of buildings with a minimal amount of polygons and flat textures. Our method, on the other hand, hoped to create a model of the interior of our science building, which contains more polygons resulting in an extremely complex model. Another team of researchers creates a 3D model of famous architecture [1].In contrast to this, our project had a specific team of photographers, who calculated the coordinates of the camera and also captured exact stereoscopic pairs of images. In order to model the data we use the open source 3D model creator programe such as Blender. The program is generally used by artists sculpting a mesh for use with animation, character creation, or personal use [4]. There is little-to-no current research in realistically rendering a 3D model from images using Blender. We hope that our paper will be useful for further research on creating meshes in Blender based on stereo imaging and polygonaldata.

V.   MODELING

You can create or compare 3D models in the blender to being a sculpture, but its digital one. 3D models you can also see in movies, games, cartoon movies are made of polygons. If you can create cartoon characters, let's get an idea of what is being used by the user.

All 3D applications can do polygon modeling to some extent, where some are better than others. Polygonal modeling is very real, you can create 'clay' as you go along.
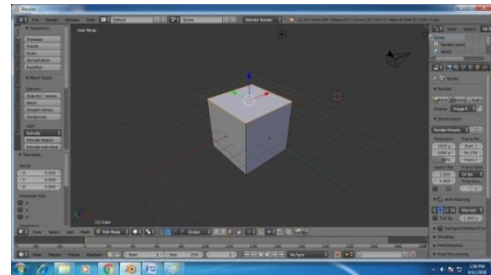

Fig.4: Blender 2.79 with some create a shape of model

We all know a cube is made up of 6 faces, and so it is made up of 6 polygons. When one is connected to other polygons, you can make a shape in 3D. You can also imagine them as sheets of paper you cut out and stick together in different ways to form a shape.

VI. TEXTURING & SHADING

Texturing can be compared to painting a model with real color. You have a bucket of paint and a brush which you can use to color the model. Once you can get into actually painting the textures. As opposed to design, texturing is a very specialized task on it and only a select few applications can actually do it.

Next, you can shade your texture with a material, if you can apply only material own yours model. You can apply material own it. You can set any color of material then apply on it. If you are creating a soda bottle in any 3D software like in blender 3d, you have to make the overall bottle transparent plastic and the cap into opaque plastic.
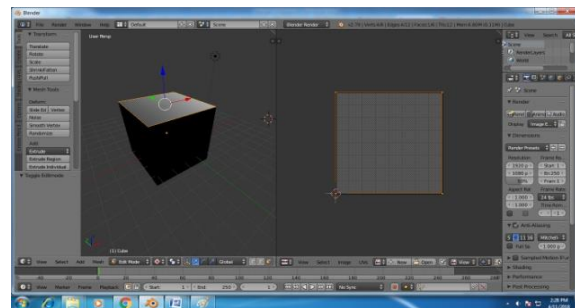

Fig.5: Blender 2.79 uv/image editor some create a shape of model.[7-8]

Shading can be more than used overall texturing, as all you are create and adjust numbers in a shaded. The main key use to mastering shading is to know how to light operates in real life and how to control all things like reflection, transparency.

Texturing is an extremely important part of the project. If yours model is not good, then sometime you can hide it with good

texturing, but almost a good model can never hide bad texturing. Important concepts now we are going to explore in regards to shading, Refraction, reflection, diffusion and scattering. [4,12]

Fig.6: Blender 2.79 with uv/mapping and texturing

VII.   DISCUSSION AND CONCLUSION

The starting point was just a text describing the details of the procedure along with a diagram of the apparatus. Creating a correct appealing animation was a challenge for us. Our methodology used to create this virtual trial succeeded in achieving the design.

3ds Max, Maya or Blender is a professional 3d computer graphics program for making 3d animations, characters, games, and images. The students excited to new medium and founds easier to visualize the VLE apparatus using the animation rather than diagram.We also found that 3D enabled lab sessions have excited students towards lab experiments.

Its a frequently used in video game developers, many commercial studios, adds and architectural visualization studios. It's no surprise that Maya is known as the no.1 3D application in the industry right now, and for good reason too. That's absolutely true, you can likely create the exact same models, animation or render in either Maya or Blender. Blender has some areas that are simply more natural than Maya.

Blender is definitely useful for animation in the eLearning domain. It has all the necessary components to enable an animator to model, apply texture and animate almost any object. Most of the features like comparable to commercial, proprietary, high advertisements with mid range 3D software is MESH COLLISION DETECTION and LBM FLUID DYNAMICS. Blender's ability to the programming logic to the different ingredients in the experiment like any liquid, glass and other chemicals is an important asset to be explored. We are found it useful to have a team of animators with knowledge of 2 diversified backgrounds like fine arts or computer science. This augmented the visual communication and the programming aspects is final product. We were pleasantly surprised to find it, Blender Game is also has engine that could handle water falling; it requires significant programming effort. Also, the user interface of Blender created a stumbling block in the initial stages and it took us 2 or 3 months to learn or use the various options.

Adapting its features to build more advanced experiments for eLearning is of great value. We are studying the use of Blender for more detailed lab experiments in various domains.3dsMax is better in modeling, rendering, texturing, animation or

interior design also more then flexible and ease for customization and scripting. Blender is a very capable to use, it does the same thing, to get close, but its not better. Sculpt in Blender is much better than Max..Blender is also open source, making it easy to develop.

The Blender is also used for a games to engine allows the creation of stand-alone. Adapting its features to build more advanced experiments for learning is of great value. There are many more aspects to coved when it comes to 3d.

In the next section, we are presenting our technique for creating learning animations using Blender, along with a typical example.

VIII. REFERENCES

[1]. Hofstein, A., and Lunetta, V.N. (1982) The role of the laboratory in science teaching: Neglected aspects of research, Review of Educational Research, 52(2), 201–217.

[2]. Mackensie, D.S. and Jansen, D.G. (1998) Impact of multimedia computer-based instruction on student comprehension of drafting principles, Journal of Industrial Teacher Education, 35(4), 61-82.

[3]. "Autodesk 3ds Max — Detailed Features", 25 March 2008.

[4]. Wikipedia website, (2009) http://en.wikipedia.org/wiki/Blender_3D.

[5]. Blender website, (2009) http://www.blender.org

[6]. blenderfoundation (2011-07-09). "Blender 2.58 release notes". blender.org. Retrieved 2017-01-01.

[7]. "Blender 2.57". blender.org. Archived from the original on October 30, 2013. Retrieved April 13, 2011.

[8]. https://docs.blender.org/manual/en/dev/getting_started/about/introduction.html

[9]. A comprehensive tutorial about getting started with 3d.

[10]. https://flippednormals.com/introduction-3d/

[11]. https://docs.blender.org/manual/en/dev/modeling/introduction.html

[12]. "Introduction to Physics Simulation — Blender Reference Manual". www.blender.org. Retrieved

[13]. "Blender Animation system refresh project". Wiki.blender.org