

Computer Animation

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ABSTRACT –

This paper covers the topic of Computer Animation. Computer animation is the process used for generating animated images by using computer graphics. Computer animation only refers to moving images. Modern computer animation usually uses 3D graphics although 2D computer graphics are still used for stylistic , low bandwidth and faster real time renderings. Sometimes the target of the animation is the computer itself but sometimes the target is another medium such as film. For 3D animations, all frames must be rendered after modeling is complete. Movie film seen in theaters in the United States runs at 24 frames per second, which is sufficient to create the illusion of continuous movement. For high resolution , adapters are used. Computer animation helped create blockbuster films such as TOY STORY3(2010) , AVTAR(2009) , LIFE OF PI(2012) and FROZEN(2013).Computer animation from name suggests is essentially digital successor needed to the stop motion techniques which were used in traditional animation with the help of 3D models and frame-by-frame animation of 2D designed illustrations. Computer-generated animations basically are more controllable other than more physically based processes which include constructing miniatures which are needed for effects shots or

hiring the extras for crowded scenes, and because of the reason it allows radially creation of images that exempt would not be feasible by using any of the other technology. It also allow a single graphic artist which produces such content without the use of actors, expensive set pieces, or props in this manner computer graphics reduces the intense of the materialistic things that is the cost of money given to the actors for there performance else where the utilization was made to the computers so that ammense full creatures be designed with the help of 3D technology in the computers so that more and more animations be made in the processing part.

Introduction:-

Computer animation, or CGI animation, is basically a process which is used for generating the animated images with the help of computer graphics . The most general term used in computer-generated imagery mainly encompasses both of the static scenes and dynamic images while in case of computer animation it *only* refers to the moving images.

Modern types of computer animation usually comprises of 3D computer graphics, although now- a- days 2D computer graphics are still in use for the stylistic, low bandwidth, and also the faster real-time

renderings . Sometimes or can say usually , the main target of the computer animation is the computer itself, but on other hand the target is another fixed medium , such as film.

Computer animation on other side is essentially a digital successor to the stop motion techniques which were used in traditional animation with the help of 3D models and by the virtue of frame-by-frame animation of the 2D illustrations. Also, Computer-generated animations are more controable and fixed as compared to the other more physically used processes, while suitably consists of constructing miniatures for the effective shots or hiring extras for the scenes which are crowded, and because it allows the making and simulating of images that would not be possible or feasible using any other recurted technology. It can make possible to allow a single graphic artist which is done to produce such content which does not use the actors, expensive set pieces, or props.

To create effect of the illusion of movement, an image is firstly displayed on the monitor of the computer and then it is continuously replaced by a new number of image that are bit similar to it, but they are slightly advanced in time (usually they rate at a time of 24 or 30 frames/second). This famous technique is similarly identical to the process that how the movement is achieved of illusion with the help of television and motion pictures.

Now, for the 3D animations to occur the objects (models) or scenes are made on the computer monitor (modeled) and the 3D

figures are rigged on them by a virtual skeleton. Now, for 2D figure animations, the separated objects (illustrations) and separated transparent layers are made in use with or without help of a virtual skeleton. Then the limbs, eyes, mouth, clothes, etc. of the figure or the picture to display are moved by the animator on key frames by the help of which the animations occur on the . The differences which appears in between the key frames are automatically calculated by the help of the computer in a process known as tweening or morphing. Finally, the animation is rendered.

Also for 3D animations, all frames are needed to be rendered after the modeling is to be done or complete. For 2D vector animations, the rendering process is basically the key frame illustration process, while the tweened frames are rendered as needed. For the pre-recorded presentations to happen, the rendered frames are made to transfer to a different or a new format or medium, example is film or digital video. The frames may also be rendered in real time as they are used to be presented to the end-user audience. Low bandwidth animations are mostly transmitted via the internet e.g. 2D Flash, X3D and often these software are used on the end-users computer to render in real time as an backside to streaming animations of high bandwidth.

Technical aspect:-

In the 3d animation to be happen the animator needs to create a specification of computer anatomy or the character used to

specified is to be studied about which is directly analogous to the stick and the skeleton figure. The position of each figure of the skeleton model is directly prescribed by the animation figure. In case of human and animal characters, many of the parts of the skeletal model corresponds to the actual no. of bones, but in case of skeletal animation it is also used to do the animation of other things, such as facial features. The computer model doesn't mostly render the basic of the skeletal model directly as it is invisible, but it makes use of the skeletal model in order to compute the exact position, location and orientation of that certain character, which is usually rendered into an image. Thus by frequently changing the values of Avars over time by time, the animator creates the motion by making the character to move from one frame to other frame.

There are many methods used for generating the Avar values in order to obtain the realistic motion. Traditionally, the animators manipulate directly the avars rather than the use of set of Avars for every frame, they set Avars maximum at strategic points (frames) in mean time and also let the computer interpolate or 'tween' between the scenes in a process called as keyframing. Keyframing makes to put the control mainly in the hands of the animator and roots made in hand-drawn traditional animation.

In comparison to it, a newer method is determined called the motion capture which makes the use of live action footage. Let us take an example When a computer animation is to be get driven by motion capture, a real

performer mainly acts out the scene as in the way the character to be animated. The motion made is recorded to a computer with the help of the video cameras and the markers the done performance is then applied to the animated character.

Each method done in the animation has its advantages and as of 2007, games and films are using either or both of these methods 3-D and 2-D productions. Keyframe animation can produce motions that would be difficult or impossible to act out, while motion capture can reproduce the subtleties of a particular actor. For example, in the 2006 film *Pirates of the Caribbean: Dead Man's Chest*, actor Bill Nighy provided the performance for the character Davy Jones. Even though Nighy himself doesn't appear in the film, the movie benefited from his performance by recording the nuances of his body language, posture, facial expressions, etc. Thus motion capture is appropriate in situations where believable, the realistic behavior and action is required, but the types of characters required exceed what can be done throughout the conventional costuming.

Conclusion:-In this description, we presented the results of research of fields of computer graphics and animation. With regard to computer graphics, it is to be proposed, implemented, and demonstrated an animation framework that enables the creation of realistic animations of certain scenes from the animator. In our approach, the virtual animators are self-animating, as are real creators and humans. Thus, the strength of our approach to animation lies in the fact that it turns the role of the animator

from that of a graphical model puppeteer to that of an virtual nature cinematographer, a job not unlike that done by nature cinematographers of the National Geographic Society. Our artificial animation work approaches to advanced the state-of-the-art of computer animation, as evidenced by the unprecedented complexity and realism of the behavioral animations that we have been able to achieve without keyframing..

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