Animation

➔ Animation is the process of displaying still images in a rapid sequence to create the illusion of movement.

➔ Animation is especially useful for illustrating concepts that involve movement. Concept such as playing guitar or hitting a cricket ball is difficult to explain using a text or a single photograph. Animation makes it easier to portray these aspects of multimedia application.

Steps of Animation sequence Designing

The following are the four steps of animation sequence designing

1) Animation story layout

The animation story layout or storyboard layout defines the motion sequence of the object as a set of basic events. For example, for creating a scene of cricket playing, one has to define action and motion of batting, bowling, fielding, running etc. The storyboard layout consists of models, sketches or even some verbal description.

2) Animation object definition

After preparing the storyboard layout, all the objects, which are used in animation scene, are defined in detail. I.e. each object is described in terms of its dimensions, shapes, colors, movements etc and any other additional information which is needed to define that object. In cricket playing scene, the player's dimensions, colors of their uniform, dimensions of the ball, bat, stamps etc are defined.

3) Frame specification

The next step in the process of creating animation is the key frame specification. Here some of the important frames are defined and created in detail. In these frames, the position, color, shapes etc of all the objects at a particular point of time in animation are created in detail.

4) Generation of in-between frames

The in- between frames are then created after frame specification. These in-between frames may be created with the help of geometric transformation. Approximately 1500 frames are needed for a clip of one minute of film.

Basic Principles of Animation

The twelve basic principle of animation are as follows:

1) **Squash and Stretch**

   Squash and stretch gives animated characters and objects the illusion of gravity, weight, mass and flexibility. Using squash and stretch, it's important to keep the object's volume consistent. So when stretch something it needs to get thinner, and when squash something it needs to get wider. Consider a bouncing rubber ball which may react when tossed into the air: the ball stretches when it travels up and down and squishes when it hits the ground.

2) **Anticipation**

   Anticipation helps to prepare the viewer for what's about to happen. When it is applied, it has the effect of making the object's action more realistic. For example: before hitting the ball through the bat, the actions of batsman comes under anticipation.

3) **Arcs**

   Most objects follow an arc or a path when they're moving, and the animations should reflect that arc. Introducing the concept of arcs will increase the realism. For example: when tossing a ball into the air, it follows a natural arc as the effects of the Earth's gravity act upon it.

4) **Slow in -Slow Out**

   While performing animation, one should always keep in mind that in reality object takes time to accelerate and slow down. To make animation look realistic, it is necessary to focus on its slow in and slow out proportion. For example: Consider a car starts up and stops. It will start moving slowly, before gaining momentum and speeding up. The reverse will happen when the car brakes

5) **Appeal**

   Animation should be appealing to the audience and must be easy to understand. The syntax or font style used should be easily understood and appealing to the audience. For example: Consider a character design where an appealing character makes the audience can connect with or relate to, whereas a complicated or confusing character design can lack appeal.

6) **Timing and Spacing**

Timing and Spacing in animation gives objects and characters the illusion of moving within the laws of physics. Timing refers to the number of frames between two poses, or the speed of action. Timing can also establish mood, emotion, and personality. For example, if a ball travels from screen left to screen right in 24 frames that would be timing. Spacing refers to how those individual frames are placed. For instance, in the same example, the spacing would be how the ball is positioned in the other 23 frames. If the spacing is close together, the ball moves slower. If the spacing is further apart, the ball moves faster.

7) Exaggeration

Exaggeration deals with the physical features and emotions. In Animation, emotions and feeling is represented in exaggerated form to make it more realistic. If there is more than one element in a scene then it is necessary to make a balance between various exaggerated elements to avoid conflicts.

8) Staging

Staging is defined as the presentation of the primary idea, mood or action. It includes setting up scene, from the placement of the characters, to the background and foreground elements, the character's mood, and how the camera angle is set up. It should always be in presentable and focus on important features only. Stagging is used to make the purpose of the animation unmistakably clear to the viewer.

9) Secondary Action

Secondary action refers to the actions that support or emphasize the main action create a more convincing performance. Secondary actions support the primary or main idea. For example: A person drinking a hot tea, then his facial expressions, movement of hands, etc comes under the secondary actions.

10) Follow Through

It refers to the action which continues to move even after the completion of action. This type of action helps in the generation of more idealistic animations. For Example: Even after throwing a ball, the movement of hands continues.

11) Overlap

It deals with the nature in which before ending the first action, the second action starts. For example: Consider a situation when we are drinking Tea from the right hand and holding a sandwich in the left hand. While drinking a tea, our left-hand start showing movement towards the mouth which shows the interference of the second action before the end of the first action.

12) 3D effect

Applying 3D effects can make animation more convincing and effective. In 3D Effect, the object is converted into a 3-dimensional plane i.e., X-Y-Z plane which improves the realism of the object. For Example, a square can give a 2D effect but cube can give a 3D effect which appears more realistic.

Types of Animation

The five different types of animation are as follows:

1) Traditional Animation

Traditional animation is one of the oldest forms of animation. Traditional animation is sometimes referred to as Hand-drawn or cel animation. In traditional animation, the animators draw images on a plain piece of paper fitted on a peg using a coloured pencil, one frame at a time. Sequential drawing screened quickly one after another creates the illusion of movement. Prior to the digital revolution, traditional animation was the industry standard, including Disney.

2) 2D Animation

2D animation is a vector based animation. 2D animation is very popular due to accessibility of the technology. 2D animation is inexpensive and easy to use. 2D animation can use many layers to build up a picture. It can show anything from backgrounds and landscapes to multiple characters. 2D animation is created by using software such as Flash, Cel Action, After Effects and TV Paint.

3) 3D Animation

The method of creating three-dimensional moving visuals in a digitalized environment is known as 3D Animation. Although 3D animation differs greatly from traditional animation, both require the artist to follow the same principles of movement and composition. 3D animation is more about moving a character in a computer than in a drawing. This is the most frequent and widely utilized animation style today, appearing in films, games, advertisements, architectural visualization, medical simulations and other media. 3D animation and visual effects are the future. In 3D animation animator use software like: Maya to create animation.

4) Motion Graphics

This visual effect technique involves the movement of graphic elements such as text or logos. Motion graphics is best suited for those in the advertising industry, those working on multimedia projects, or even those designing the opening titles of films.

Both 2D and 3D motion graphics are possible. It can be created with the help of software such as After Effects.

5) Stop Animation

Stop motion animation is very similar to traditional animation because it combines a series of still images that are slightly different to show movement. The largest difference is that stop motion uses photography and captures real objects. With stop motion, the artists take a photo of an object or scene and slightly move the objects before taking another photo. The artist repeats this process until the scene is completed and uses each photo as a frame in the animation. It's similar to a flipbook with photos.