Unit 31 - computer animation

> Assignment 2 - animation in practice

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Introduction

In this assignment I will go through the animation process and show you the many ways that animation can be done as well as how different factors will come into account when you do this, finally i will also create 2 different animations to demonstrate this.

P4 Describe the software tools available for animation

In this section I will go through and explain different features that are used when you are creating animation in software and there terms are:

- frame
- layer
- buttons
- libraries

frame

When ever you see a video either as past of an animation or really any video at all you think that you are seeing fluid motion and things moving on the screen but in reality you are actually seeing a series of images over and over again really fast and your brain thinks that you are actually seeing fluid motion even though you are not. These images in their own are called frames and the speed at which they are played back at is called the frame rate of the video that you are watching. When you are watching these individual frames the rate at which they are shown to you would effect how well and fluid the motion appears to be. For example if you are looking at a video with a frame rate of 5 then you will only get 5 images shown to you per second and this will look very choppy and stutter a lot and won't provide you with the motion that you wanted to see. But at a higher frame rate like 60 you will be able to see the motion very clearly and it will fool your brain into thinking that there is actual motion where there is not. Due to this when you create an animation you will want to make the frame rate as high as you can while still keeping it creatable in a reasonable amount of time.

layer

When you create digital images layers are used to separate different sections of an image so that different effects and processing can be applied to different layers to that only the things you want will be effected. The best way to think about this is that imagine that when you want to create in image you would have different parts of the image in different layers of glass and then to see the whole image you would look down through all the layers of the glass. For example of the glass at the bottom you could have the main background for the whole scene like a hilly back drop or something and then on one of the foremost glass panes you would have the subject of the animation like a character or something. With this set-up when you want to change the subject of the animation against the background then you don't have to redraw the whole image as you just need to move the glass pane with the subject on it over the glass. And this is exactly what the purpose of layers are, they allow you to edit only parts of an image while keeping some of is the same.

Buttons

When you are using an animation software you will will probably see many buttons that will do many things but there are a few main buttons that you will see and use a lot more than the rest and these are the play/pause, stop, forward and backward buttons. When you are playing back your animation you will be able to hit the play pause button to toggle the state of the playback of the animation and so you can easily stop halfway through change something and then play again from where you paused from. This is good as you don't loose your position when you are animating. The next button that you will use is the stop button, all that this does is it stop the playback of the animation and then return you to the start of it. This is good as you can instantly play the whole animation from the beginning really easily and get at idea of how the animation will go on. The final two buttons are used to go forwards and back in your animation and so are useful for when you want to move where you are in your animation. There are good as you can easily move by a certain amount through the animation.

libraries

Similar to when you are programming, libraries are used to add additional functionalities to what you are doing. For example lets say that want to add in reflections to your animation but this is not supported by default then you would have to apply the reflection on to every frame in your animation manually and that would take a lot of time for something that could be animated. This is where the libraries come into play as there is probably some code that is out there that will add in this functionality to the program that you are using for animation and so you can just impost that library and have all the surfaces that you want reflective.

P5 Describe factors that need to be taken into account when creating animations for the web

In this section I will go through and explain factors that you will need to keep in mind when you are creating an animation for use online, I will be going through the following:

- size
- email attachment
- house style
- output device

size

When you are designing an animation for use on a website, one of the main things that you will have to keep in mind is the file size of the animation. This is because if the animation is too big then the webpage will take a while to load and therefore will be a bad experience for the user, but if the animation is too small then it will not look good by being compressed too much or you wont be able to get all the animation in that you want. Due to this you will have to keep an eye on the file size of the animation that you create. One of the main things that you can use to reduce the file size when you have created an animation is to use a different format, delay one that is lossless as that will ensure that the space on the disk and the download size will be as small as possible.

email attachment / e-card

When you create an animation for an email attachment one of the main things that you will need to keep in mind is that the email will be able to be viewed on a variety of devices and due to this you will need to ensure that the animation that you create is as compatible as possible with as many devices as you can make it. This is because the email can be seen from a desktop computer down to a tablet or a phone and as such you will need to ensure that it can be seen on all of these devices. In order to do this you will need to have the animation is in a format that is widely used and available on almost all devices, the best way to do this would be to have it in a video format like mp4. This will also have the advantage of having lossless compression that will save on the size of the file and so the email will load quickly.

house style

When I say house style, in this case I am referring to the general style that the website has that you would have the animation in. When you create an animation from a website you will need to ensure that the animation that you make will actually be suitable for and match the design of the website. This is done so that it will fit in with the design of the website and actually be pleasant to look at and go to the website for. If this was not the case then people may not want to visit that website as it would look out of place. For example if you have a simple white website design with refined text, then an animation that has bright flashing colours with a dark background would not fit in with the design of the website well at all and it may make people not visit the site again.

output device

When you are creating an animation you would need to ensure that the animation is actually able to be seen by the people who need to see it, this then means that you will need to have the animation an appropriate size and resolution so that it can be seen on all screens. For example if you had a really big animation that took up a multiple computer screens then it would not be able to be seen well on a computer with one screen let alone a phone with a screen the fraction of the size. On the other hand, if you created an animation that was a few pixels then it would appear really small on any screen that would be able to see it, this may not be too bad on a small low resolution screen like on a phone, but on a computer with a higher resolution and larger size then this will become much more difficult to see.

P6 Design computer animations using different animation techniques

For this section see the attached pieces of paper...

P7 Implement animations using different animation techniques

For this section please see the 2 animations that are provided on the memory stick...

M3 Explain particular techniques that are used to minimise the file size of animations

In this section I will go through and explain some of the ways that you can reduce the file size of an animation that you have created. For this I will be going through and explaining the following:

- Balance against quality of image
- Frame disposal
- AutoCrop
- compression

Balance against quality of image

With all of the things that I will talk about in this section, the main thing that you will need to keep in mind is that fact that when you apply any of these you will need to think about how that will balance out to effect the quality of the image that you have. For example one way would be to remove every second frame from your animation, that would half the file size but this would mean that you would then have half the frame rate, and if that would become too distracting then this would not be a good thing to do for your animation. As you can see, the file saving measures will all have an effect on how the animation looks, but they will end up saving file size.

Frame disposal

One of the main ways that you can save file size for an image is that you can reduce the number of frames that have in your animation. For example at 24 frames displayed per second the human eye will be able to make out fluid motion, but it will not look really really smooth. So if you needed to save file size then one of the first things that you could do would be to reduce the frame rate down to 24 frames per second. This could end up reducing the file size of the file down a half or more depending on how you had the initial frame rate set for the program and animation. But, if you set the value too low then the animation would look choppy and could look like a series of images rather than a fluid motion. But if you set it too high then some displays would not be able to display the information that fast and this could lead to the file size being too big for it to be usable. I would tend to stay at about 30 for most things, but 60 for really high quality animations.

AutoCrop

Auto crop is a tool that will automatically crop the frame and by extension similar frames to a size that will cut out all unnecessary parts so that just the important information is left there. The way that this would work is that it would look at the image and what changes during this current frame (section with the same setting) and will then crop the frame down to only the parts of the frame that contain the important information that will actually change. With this in use the file size for the animation could go down quite a lot as quite a lot of the information that you had before would now be not needed / there. If you think about a rectangle that represents your screen then by removing a small amount from the edges you would have actually removed a lot of the total and this is how it works and how you can save a lot of disk space.

Compression

One of the main ways that you can compress data and information is through the use of compression tools. There any ways that this can work but in this case one of the main ways is all about the format that you store your data and information in, by this I mean that some file formats are what is called lossy while some other ones are lossless. Lossy file formats will compress the data that you have and do not retain all the information that it started with while lossless file formats will keep all of the original information that you had and so they will take up more space. The way that this works is that the frames of the animation can be set to only change what has been changed from the last frame and when you do this, in most cases you will save a lot of disk space as only a small section of the screen will change and need to be stored.

D1 Compare different specialist computer animation software packages

In this section I will go through and explain the different advantages of a few animation tools comparing them in a few key areas that you can see below. I will then draw up a summary of this information so that you know what could be the best for you. The points that i will compare are:

- what it can do
- price
- platform
- quality

For this I will be comparing 3 paces of animation software and these are premier pro, flash and Adobe after effects.

What can it do

One of the main things that you would want to know with any piece of software is what can it actually do and what it the use case that would best describe its features. So here is a sum up of that information:

Flash

Used for basic 2D animation(cartoons and stuff). Used more in web designing, flash features on your web page using action-scripting, sketches and animations. Lesser utility in video making , motion graphics

> Adobe Flash (formerly called Shockwave Flash, often just called Flash) is a multimedia software platform used for production of animations, rich Internet applications, desktop applications, mobile applications and mobile games. Flash displays text, vector graphics and raster graphics to provide animations, video games and applications. It allows streaming of audio and video, and can capture mouse, keyboard, microphone and camera input. - Wikipedia

After Effects

as the name suggests is used to edit your "video footages" post shooting. You can add a whole bunch of effects and add realism to your videos. Another aspect of this is motion graphics. What it means is creating whole animations within After effects only using permutations of effects and brainstorming them.

> Adobe After Effects is a digital visual effects, motion graphics, and compositing application developed by Adobe Systems and used in the post-production process of film making and television production. Among other things, After Effects can be used for keying, tracking, compositing and animation. It also functions as a very basic non-linear editor, audio editor and media transcoder. - Wikipedia

Premier Pro

Premier pro is the video editing software where you can edit your final video on a timeline, adjust audio that you want to have in it , align it as you want. after effects can do almost whole of basic premier stuff but premier provides more flexibility.

> Adobe Premiere Pro is a timeline-based video editing app developed by Adobe Systems and published as part of the Adobe Creative Cloud licensing program. First launched in 2003, Adobe Premiere Pro is a successor of Adobe Premiere (first launched in 1991). It is geared towards professional video editing, while its sibling, Adobe Premiere Elements, targets consumers market. -- Wikipedia

From this you can see that flash would be used for more simple animations while AE and PP would be used for more complicated ones with PP being generally more flexible and suited for professional situations.

Price

Nothing thing that you will need to keep in mind when you are using and piece of software it the price and for some programs this can be a lot, here is the following prices for all of these pieces of software:

Flash: £20.22 per month After effects: £20.22 per month Premier Pro: £20.22 per month

From this you can see that they all actually have the same cost per month. The reason that this is is because they are all from the same company and you can access them all from the same payment plan offer where you get access to most of the adobe software for 20.22 per month, so there is no more to say.

Platform

Another small thing that you would also want to keep in mind when you are getting the software that you need is that you would want to make sure that you can actually run the software on the operating system that you have. Here is a list of the platforms that the software will run on and support:

Flash: Web browsers, iOS, Android, Windows, macOS After Effects: Microsoft Windows, macOS Premier Pro: Windows 7 and later; OS X Yosemite and later

As you can see from this all of the software that we have will run on both Windows and mac, but flash is the only one that will actually run on other operating systems and platforms. Due to this if you are using a platform that is not windows or mac then flash would be the thing to go for to actually get the software to work.

Quality

The final thing that I will go through here is the quality that each of the programs have in terms of how they function and produce animations. For this list I will rank them according to lowest at the top and highest quality at the bottom:

Flash After effects Premier pro

While this is not exactly a scientific list of all of the ways that they are and are not good, it will just give you and idea and will show you what the general thought of them all is. The reason that they are all in this order is due to the way that they are marketed. All of this information is the same as the information in the first part of this section. To sum it up, Flash is a lower quality due to the fact that it is marketed as a simple and easy to use animation tool that is suited for free games online and simple website animations. On the other side you have Premier Pro as this is marketed to the professionals who will deal with animation and film on a day to day basis as their job due to this the quality that it has is literally the best that you can get and it is needed for them. Finally, this just leaves After effects in the middle due to the fact that it is marketed towards consumers rather than professionals and due to this the quality is not as good. So that also sums up what each one should be used for and where they are used.

D2 Evaluate the tools and techniques used to create animations

In this section I will go through and explain the tools and techniques that I used for the 2 animations that I created. For each of the animation techniques I will go through the following things:

- What I liked
- What I would improve
- What did not work

What I liked

stop motion

When doing the stop motion animation one of the things that I liked about the technique was the fact that you have the ability to actually use real life items in your animation that makes it have so much more detail than other forms of animation where you would have to put in a huge amount of work to even get anywhere close to that level of detail. So for example, if you had a major film company create an animation, then in that animation the visuals would look really life like, but this is due to the fact that they have access to hundreds of professional artists working with huge computers and server farms to handle the data. Meanwhile a visual effect of the same level can be created by a camera, a phone and a single person with a few minutes on their hands.

frame by frame

The main thing that I like about frame by frame animation (drawn out in software frame by frame) is the fact that you have complete control over what you are animating and as such you have exactly what you want on the screen down to the pixel on each frame. This is also good as it means that you can have the exact light level that you want in the animation without the need for big and expensive physical lights that will cost a lot of money. This also bring in the fact that you only need to have a computer to do this type of animation and so you don't have to have a camera as well.

What I would improve

stop motion

One of the things that I would improve about the stop motion animation process would be to make the process go faster and make it less time consuming and tedious. The reason that I would say this is that when you do stop motion animation you will need to ensure that the camera is in the same position when you take the image otherwise the whole frame of the image would be moved in-between all of the frames and this would produce unnecessary motion in the animation and that can look really bad. To improve this I would make sure that the camera that is being used is fixed down to a certain point for example by use of a stand. This however does not really fit in with the fact that stop motion is the cheapest form of animation to do and so the people who use it may not be able to do that, but that is what I would improve.

frame by frame

One of the main things that I would improve with drawing out frame by frame animation is the fact that you have to completely redraw out all of the layer that you want to animate again, as you cant really just move certain parts of the image that you want to. Although this may give the feel that you are after, it is quite irritating and actually takes up a lot of time as only small parts will really change but you need to draw the whole thing again. The way that I think this could be improved in my opinion is that the frame by frame animation software should allow you do dynamically edit the frames like you can do with a program like pivot or MMD, as with these you can move certain parts of the animation from one frame to the next. Implementing this would allow the process of animation with either of these to much much faster.

What did not work

stop motion

The main thing that did not work well for me when using stop motion animation was the fact that the trying to keep the camera and the view that it had the same between each of the frames was quite difficult as I had to put down my phone to move the thing that I was animating. The reason that this did not work was due to the fact that I needed to hold the camera, (in this care my phone), in the air as I needed to get the view from above. I could have done this by using a table and some tape but that would then leave some of the table in the animation and that would not be too good. In addition to this I also found that the software that I was using for the animation to not be the best software that I could use, this was mainly due to the fact that it was a free app on my phone. The reason is that the software was not too intuitive and it would frequently crash meaning that I lost a lot of time due to this.

frame by frame

The thing that didn't work for me when using the frame by frame software was the fact that the program that I was using was online and I was doing it on my laptop, due to this the software ran really quite badly meaning that when I tried to move from frame to frame or create a new one the program would lag. In addition to this, I also had the program crash while I was using it. One other thing that I didn't like about the process was that you had to draw out the animations out over and over again when you went to a new frame as the software didn't allow you do edit the frames like you can other animations programs, this is the same thing that I mentioned in the "what I would improve" section previously.

Bibliography