Introduction

Graphics hardware is computer hardware that enables computers to produce and show computer graphics. It works in conjunction with graphics software. Examples of graphics hardware are display devices, graphics cards, graphics processing units and motion capture hardware.

Graphics Software it is any kind of software which can be used to create, edit, and manage 2D computer graphics. These computer graphics may be clip art, Web graphics, logos, headings, backgrounds, digital photos, or other kinds of digital images.

Computer Graphics Hardware

- **SGI:**The SGI platform is one of the most widely used hardware platforms in proffesional or broadcast quality computer animation productions. SGI stands for **S**ilicon **G**raphics **I**nc.SGI computers are extremely fast, produce excellent results, and operate using the wide spread UNIX operating system. SGI's are produced by Silicon Graphics. They come in a veriety of types, ranging from the general purpose Indy®, to the high power Indigo2 Extreme® used to produce animations, to the mule of the horde, the Onyx®, which is especially suited to do the complex calculations involved in rendering. Almost all major production studios use SGI's state of the art software like Wavefront, Alias, and SoftImage are ran on SGI's.

- **PC's:**PC's are very versetile machines. They have been around for years and are favorites of many computer users. Because of their combination of flexibility and power, PC's have proven to be very useful for small companies and other businesses as platforms to do computer animation. Applications such as 3DStudio and Animator Studio are used on PC's to make animations. PC's are relatively cheap and provide pretty good quality for their price. Recently though, PC's have been getting a lot of attention from different production houses because of their relatively small price and the quality of the finished products.

- **Macintosh:**Mac's were originaly designed to be graphic and desktop publishing machines. Macs did not become that widely known until recently, when newer faster models came out. Many people consider Mac's slow and inefficient, but that is not necessarily true. Right now with the advent of the Power Macintosh, the Mac is a pretty useful tool for small scale companies wishing to do nice looking applications. Many companies are producing computer graphics and animation software for the Macintosh. Some of these are Adobe with products such as Photoshop and Premiere and Strata with Strata Studio Pro. There are also a few applications that were ported to the Macintosh from the SGI[1]s such as Elastic Reality and Alias Sketch (a lower end version of Alias). Lately, a lot of production studios strted using Macs because of their graphical abilities for smaller scale projects.

Amiga: Originaly owned by Commodore, Amiga computers have held a position in the computer animation industry for a number of years. There are two software packages that Amiga[1]s are basicly known for: Video Toaster and LightWave 3D. The Amiga is based on a Commodore, but it has been greatly customized to be a graphics machine. Many television shows use Amaiga[1]s for their special effects and animations.

Software

- **3DStudio Max**

- The successor to 3DStudio 3.0. 3DStudio Max runs under WindowsNT. It is entirely object oriented, featuring new improvments such as volumetric lighting, spacewarps, and an all new redesigned inteface.

- **3DStudio**

3DStudio is a 3D computer graphics program. 3DStudio runs on PC's. It is relativly easy to use. Many schools and small time production studios use 3DStudio to satisfy their needs. 3DStudio is created by AutoDesk. 3DStudio consists of a 2D modeler in which shapes can be drawn, a 3D Lofter, in which 2D shapes can be extruded, twisted, or solidified to created 3D objects. Then there is a 3D modelet in which a scene is created. Finally there is a animator in which key frames are assigned to create an animation and a material editor in which a great veriety of textures can be created. Overall this is a great program.

- **LightWave3D**

LightWave 3D is another high end PC 3D computer graphics software package. Originally developed for the Amiga platform, LightWave 3D is now also avilable on the PC. LightWave 3D is used in quite a few television productions such as Babylon 5 and SeaQuest. Many people debate that LightWave3D is the best 3D product for the PC.

- **Adobe Photoshop**

Although Adobe Photoshop is not a computer animation application, it is one of the top of the line graphics programs. It is created by Adobe. Photoshop runs both on Mac's and PC Windows, and even on SGI's. It can be used to touch up digitized images or to create graphics from scratch.

Adobe Premiere

Adobe Premier, just like the name says, is created by Adobe. It is a tool used to composite digitized video, stills, and apply a veriety of transitions and special effects. Adobe Premiere runs both on Macintoshes and PC Windows.

- **Alias|Wavefront**

Alias is one of the topmost computer animation packages out there. Alias was produced by the company that used to be Alias, but now it joined with Wavefront and is known as Alias | Wavefront. It runs on SGI's. Alias is well known for its great modeler which is capable of modeling some of the most complicated objects. Also , this software package is very flexible, allowing for programmers to create software that will run hand in hand with Alias.

Animator Studio

Animator Studio is a cell animation program from [AutoDesk](). It's predecessor was Animator Pro for PC DOS. Animator Studio runs under Windows. It has a multitude of features that minimize the animation creation time.

Elastic Reality

Elastic Reality is one of the top of the line morphing programs. Elastic Reality runs on Mac's and SGI's. One of the great features of Elastic Reality as opposed to other programs is that it uses splines as opposed to points to define the morphing area. Elastic Reality allows to morph video as well as still images.

SoftImage

One of the three top most computer animation software packages. SoftImage is used in many top production studios around the country and around the world.

- **Strata Studio Pro**

Strata Studio Pro is probably the most known 3D graphics application on the Mac. It is created by Strata Inc. Strata Studio Pro is mainly a still graphic rendering application, but it does have animation capabilities. Graphics for some games such as Myst were created in Strata Studio Pro.

Application

Some graphic designers will work with double monitors.

Some graphic designers use a graphic tablet, such as those by WACOM. These are extremely helpful.

Some graphic designers use a graphic monitor, such as the one by WACOM, in which you can draw directly on your monitor into the software with an electronic "ink pen."

A good graphics card is necessary for larger projects.

Research

Most computer hardware engineers research, develop, design, and test various computer equipment. This can range from circuit boards and microprocessors to routers. Some update existing computer equipment to be more efficient and work with newer software. Most computer hardware engineers work in research laboratories and high-tech manufacturing firms.