

IMAGING & IMAGE FORMATS

BASIC IMAGE PROPERTIES

When dealing with images, a vocabulary of their foundations may be necessary. Here are a few terms you will need to know.

Pixels

Tiny rectangular picture elements

Object (or Object-Oriented Image)

A type of data (represented visually) which retains many types of data, such as behaviors or names.

Photograph

Images taken by a digital camera or scanned from an analog camera.

Bitmap

These are graphics files that contain a map of pixels

Raster Graphic

Use a grid of small squares (pixels) to represent graphics.

Vector Graphic

Use geometric foundations (such as lines, points, bendable lines, and polygons to create images.

IMAGE RATIOS

Images are based on ratios which are either representative of their size (relative to a computer's memory) or their electrical makeup (in relation to the software a person uses or how the image appears on the screen of a monitor/display).

Bit

The bit is the most basic unit of information in computing. The bit represents an electrical voltage or current pulse in a standard circuit (seen in binary code as a 1 or 0, or as "power on" or "power off").

Byte

The byte is a unit of digital information. It is an ordered collection of bits. A byte was the number of bits needed to encode a character of text in a computer.

PPI (pixels per inch)

PPI refers to image resolution. The acronym refers to how many pixels can be placed within one inch square.

Refers to the method of storing image information in a computer's memory, so each pixel is the product of a set number of byte. The more bytes of color (or bits of color) the more accurate the image appears (within the RGB spectrum).

1-bit color refers to a simple black and white color scheme.

2-bit color refers to a gray-scale color scheme (allowing shades of black, white, and gray).

8-bit Color refers to a single byte accounting for 8-bits of color representation on a screen, allowing for 256 color combinations).

Bit	07	06	05	04	03	02	01	00
Data	R	R	R	G	G	G	B	B

Whereas, 15-bit color refers to a single byte accounting for 15 bits of color representation on a screen, allowing 32,768 color combinations.

Bit	15	14	13	12	11	10	09	08	07	06	05	04
Data	R	R	R	R	R	G	G	G	G	G	B	B

03	02	01	00
B	B	B	B

However, most 8-bit to 15-bit circuits/displays have been replaced by "High Color" or True Color or LCD software/hardware allows a person to see many more colors (in the hundreds of thousands).

In a sense, the more bits, the more colors possible. Soon, many people have suggested that our color schemes for computer monitors will either be able to fool the human eye or extend beyond it.

Other engineers have speculated that since we cannot move much higher in terms of color (that is, fool the human eye much more), we might consider expanding into more realistic 3-D visualizations (which start to work with ideas such as visualized mass and life-like rendering/movement).

IMAGE TECHNIQUES

Image adjustments and imaging techniques are numerous. Here are a few imaging techniques which are available in image processing software.

Cropping

The process of cutting the corners or sections of an image to a desired height or width...

Rasterization

The process of converting image information into a series of dots for use by software...

Anti-Aliasing

Anti-Aliasing is a software technique used for cutting, clearing or diminishing the jagged edges of an image in order to make it smoother/rounded.

Auto-Tracing

Allows a bit-mapped image to be converted into an object-oriented format (or object).

Gamma correction

Compressing or expanding the ranges of dark or light shades in an image....

COMMON IMAGE FORMATS

Having knowledge of image file formats is important to knowing when and where an image will work, and why a person should use it.

BMP (Windows bitmap)

These are graphics files that contain a map of pixels. "Paint" programs and some drawing programs use this format.

TIFF (or Tagged Image File Format)

The TIFF or TIF is a rasterized graphic file used for exchanging bitmapped images between applications. Tiffs can be exchanged among several platforms: MAC OS, WIN OS, LINUX, and UNIX.

Tiffs are useful since they can retain many of the color traits of the original document, and in some cases, they may even retain layers, which can be sensed and separated by some graphic design programs.

EPS (or Encapsulated PostScript)

ESP is one of the most stable file formats used in outputting to an imagesetter. It handles both vector and raster images. The EPS supports Bitmap, grayscale, RGB, CMYK, spot color, and indexed color models. Some EPS files also may contain comments for the user or embedded paths.

PICT/WMF (Windows Metafile)

The PICT is an Apple-based graphics file. WMF is the windows version of the PICT format.

GIF (or Graphics Interchange Format)

GIF was designed by CompuServe to transfer graphic files between different computer systems. GIF files can only support raster images, but can handle up to 256 colors. GIF include a form of data compression: Because of their compression, they are useful for scanned photos or large pixel-based images on the internet.

JPEG/JPG (Joint Photographic Experts Group)

JPEGS are file formats based on the Joint Photographic Experts Group compression scheme. Because of their compression, they are widely used for internet images and for mobile devices.

PNG (or Portable Network Graphic)

PNG are file formats which are the successor of a GIF file. These files are compressed, and they can store gamma and chromatic data for improved color.

PDF (or Portable Document Format)

PDF files are document files, rather than individual image files, which may contain text and visual information.