# *"Digital Photo Files for Dummies"*

The purpose of this article is to improve your understanding of digital photo files. I've included a summary of the terminology, different types of files, image quality, and resolution.

(If you have any questions, I can be reached by e-mail at quadrastreet@gmail.com.)

## Terminology

*"Picasa" and "Photoshop":* These are the most common "image manipulation" programs in use today. Adobe Photoshop is used by both professional and home users, and has a huge range of features. There is also a simpler flavour of Photoshop called Adobe Elements. The main benefits of Adobe Photoshop and Elements are that they really do have a huge number of features, and are available for both Windows and Mac computers. The downside is that they can be expensive (multiple hundreds of dollars) and perhaps too complicated for beginners. A great free program is Picasa (made by Google.) It has everything you'll need for basic photo management and manipulation. The benefits of using Picasa are that it's free and easy to use (I use it all the time; in fact the photos from the artist photo-shoot were processed using Picasa.) The downside is that it doesn't have the artistic and design features of Photoshop, and it's only for Windows. NOTE You won't need a program like this to just look at your photos! Windows has built-in photo viewing programs.

*"Pixel":* A dot of colour – each dot has a red, green, and blue component. A pixel takes up 3 bytes of computer space.

*"Megapixel" or "mp":* This term is mostly used when referring to digital cameras. A megapixel is around 1 million pixels. One megapixel is around 3 megabytes (MB) on your computer, although it could be less if your images are "compressed".

*"Byte", "Megabyte" (MB), and "Kilobyte" (KB):* A byte is a small portion of memory on your computer. As they were originally just used for characters (letters, digits), you can think of one byte as enough room to store one character. A kilobyte is around one thousand bytes, and a megabyte is around 1 million bytes. This sounds like a lot of bytes, but isn't really! A typical computer hard drive today holds 40 to 80 billion bytes or gigabytes, and a CD can hold 700 megabytes.

*"Dots per Inch" or "DPI":* A "dot" in this sense is identical to a "pixel". A computer monitor displays at 72 DPI (sometimes 96 DPI) – which means that a square inch of space on a monitor uses 72 x 72 = 5184 pixels. A printer will usually print at either 300 or 600 DPI, which, when thought of in square inches, means that a print will require a lot more pixels than an image displayed on a monitor. A 600 DPI print at 4" x 6" requires 600 x 600 x 4 x 6 = 8.6 million pixels.

*"JPEG" or "JPG":* The most common type of image file. This type of file can be either good or bad quality: you can decide how good a quality when you save the file.

*"TIFF" or "TIF":* This type of image file can't be displayed in an e-mail or web page, but is always a good quality.

*"GIF":* This type of image file can be displayed in an e-mail or web page, but should only be used for simple, non-photo images, i.e., logos or icons.

## File Types and Qualities

As I've already covered in the Terminology section above, there are 3 main types of image files: JPG, TIF, or GIF. Each type has a benefits and down-sides, and each serves a purpose.

If you're e-mailing someone an image or putting an image on a web page, you usually want to use a JPG. JPGs have a full range of colours (16777216 to be precise!) and can have variable quality.

The quality is really based on how far the computer goes in compressing the file (making it smaller.)

Most image manipulation programs let you set the JPG quality as a number from 1 to 10 (or 1% to 100%, or 1 to 12!), with the higher number being the better quality. For the most part, a setting between 80% or 90% will work best: the file will be compressed to save room, and the quality will not be noticeably lower than a full 100%.

If you've already got a "90%" quality JPG file, there's no way to improve the quality afterwards. Just keep storing it as "90%".

Graphic artists quite often store their images as TIFs, because there's no chance of the quality being reduced (as there is with JPG files set to lower quality compression.) TIF images can not be displayed in an e-mail or web page.

GIF images are used mainly for logos and icons on web pages, but sometimes also for images that are just text or comprised of "solid" shapes and lines. GIF images have only 256 colours, and are really not meant for photos.

## Image Resolution

You need to save or store your files using different sizes and resolutions depending on what the intended purpose may be.

Have another look through the Terminology section above, and sharpen your math brain!

What you'll need to work with are the dimensions and the resolution. Think of your dimension in terms of inches (or cm if you're young enough), and your resolution in terms of DPI, e.g., 4" x 6" @ 300 DPI is a snap shot sized image that is suitable for most printing needs.

Typical uses of an image file are:

(For each type, I've given the dimensions, resolution, number of pixels, and the maximum number of bytes that the file will be stored at. The actual number of bytes will vary depending on the JPG compression.)

- E-mail: Use a JPG file that is around 4" x 6" @ 72 DPI. Number of pixels: 4 x 6 x 72 x 72 = 124 thousand. Maximum number of bytes: 400 KB or 0.4 MB.

- Web page "thumbnail" (a small image.): Use a JPG file that is around 1" x 1" @ 72 DPI. Number of pixels: 1 x 1 x 72 x 72 = 5 thousand. Maximum number of bytes: 15 KB (kilobytes.)

- Web page "full-size": The same as an e-mail photo!

- Printed brochure, rack card, or advertisement: Use a JPG file that is around 2" x 2" @ 300 DPI. Number of pixels: 2 x 2 x 300 x 300 = 360 thousand. Maximum number of bytes: 1 MB.

- Part of a Poster: Use a JPG file that is around 4" x 6" @ 300 DPI. Number of pixels: 4 x 6 x 300 x 300 = 2 million. Maximum number of bytes: 6 MB.

- Fine print: This is the only time you'll require a 600 DPI image! Perhaps you'll need a 4" x 6"? 4 x 6 x 600 x 600 = 8.6 million. Maximum number of bytes: 26 MB.