

Glossy of Digital Photography Terms

A

Aberration

A distortion of image quality or color rendition within a photographic image caused by optical limitations of the lens used to produce the image. Aberrations commonly show up in the form of halation around contrasty portions of the image and/or 'smearing' of color toward the edges of the frame.

Absolute resolution

Image resolution as expressed in horizontal versus vertical pixels. (E.g. 1600x1200 Pixels is the absolute resolution, and is also expressed as 2.1 Megapixel)

A-D Converter

The A-D Converter converts the analog signal that is emitted from the image sensor into a digital signal.

Acquire

To import digital image files into a software application for processing or editing purposes. The term is often applied differently within different types of software.

Adobe RGB (Adobe RGB 1998)

A widely accepted color space that encompasses a wider range of color than the more commonly used sRGB color space. Adobe RGB is the preferred color space for images intended for prepress applications.

AF Servo

A.k.a. Continuous Focus, AF Servo, is maintained by partially pressing the camera's shutter release button, which enables you to maintain focus on a moving subject as the subject moves within the frame. Shutter response times are usually faster in AF Servo since the subject is already in focus.

Aliasing

The process by which smooth curves and lines that run diagonally across the screen of a low-resolution digital file take on a 'jagged' look as opposed to a smooth, natural rendition. Smoothing and anti-aliasing techniques can reduce the effect of aliasing.

Anti Shake

Also known as Image Stabilization (IS) or Vibration Reduction (VR), anti-shake technology is a method of reducing the effects of camera movement to the photographic image. Image stabilization can be achieved in the lens or in the camera body. In-camera Image Stabilization is achieved by mounting the camera sensor on a 'floating' micro-gear stage that rapidly shifts the sensor in the opposite direction of the camera's movement, which effectively cancels out the image movement.

The alternative method of canceling camera movement is by employing a gyroscopically-driven 'floating' element in the rear portion of the lens that rapidly shifts the element in the opposite direction of the camera movement. Needless to say, either process is quite complex and requires extreme high-speed data processing coupled with precision lens/sensor movements in order to achieve the desired effect.

The ultimate benefit of IS technology is that it enables you to hand-hold a camera three to four shutter-speeds slower than non-IS enabled cameras or lenses.

Aperture

The adjustable opening, or f-stop of a lens, determines how much light passes through the lens as it travels to the film plane, or surface of the camera's imaging sensor. 'Faster' lenses have wider apertures, which in turn allow for faster shutter speeds. The wider the aperture is set, the shallower the depth-of-field of the image.

Wider apertures allow for 'selective focus', or the ability to isolate your subject within the frame. Conversely, if you stop the lens aperture down to its smallest openings, you increase the depth-of-field, or how much of the image is in focus. Generally speaking, most lenses display the highest level of resolution when set to about 3 stops down from the widest aperture.

Note- Highest resolution does not mean the greatest level of depth-of-field. It just means what is in focus cannot be rendered any sharper by that particular lens regardless of the images depth-of-field.

Aperture Priority

A metering mode in which the photographer sets the desired lens aperture (f-stop) and the camera in turn automatically sets the appropriate shutter speed to match the scene being recorded. Portrait photographers usually prefer wider apertures, while landscape photographers prefer smaller apertures, regardless of the lighting conditions. Aperture priority is a preferred method to maintain a fixed degree of depth-of-field while shooting under rapidly changing lighting conditions.

APS-C (APSC)

A term used to describe the size of a digital camera sensor with a 1.5x magnification factor. The name is derived from the APS (Advanced Photo System) film format that was introduced in 1996 for the amateur point-and-shoot market. The APS format is 50% smaller than a standard 35mm frame. All Nikon, Pentax, Fuji, and Sony (Alpha) DSLRs contain APS-C sized imaging sensors. Canon's EOS Rebel-series, 20D, and 30D DSLRs are also described as containing APS-C sized sensors even though their sensors are about 20% smaller (1.6x).

Artifact

Artifacts refer to distortions within the image as a result of image compression or interpolation. Artifacts can be seen as light halos around dark areas of an image or as 'blockiness' of a highlight area of an image. Forms of artifacts include blooming, chromatic aberrations, 'jaggies', moiré, noise, and halation.

ASA

An abbreviation of the American Standards Association, ASA is the term used for film-speed -or light-sensitivity - ratings, which are expressed in numerical terms. The higher the number, the more sensitive and faster the film is. While traditional cameras don't have a specific ASA rating, digital camera sensors have variable ISO sensitivities, e.g. ISO 100 - 1600. The lower ratings offer better color, sharpness levels, and tonal qualities, as well as less noise and 'grain'. The terms ASA and ISO (International Standards Organization) are interchangeable.

Aspect Ratio

Aspect ratio refers to the shape, or format, of the image produced by a camera. The formula is derived by dividing the width of the image by its height. The aspect ratio of a 35mm image is 3:2. Most computer monitors and digicams have a 4:3 aspect ratio. Many digicams offer the choice of 4:3 or 16:9 aspect ratios.

Aspherical surface

An Aspherical lens surface possesses more than one radius of curvature, which allows for the correction of lens aberrations common in simpler lens designs. Sharper definition towards the edges of an image is the most common benefit of a lens containing aspheric elements.

Audio Annotation

Many digital cameras have the ability (via built-in microphone) to capture short segments of sound associated with an image. This feature can be used for creating audio notes related to the image such as location info, subject IDs or to capture the ambient sound at the time the image is taken. Audio annotations are embedded into the file and can be called up as needed.

Average Metering

Average metering takes all of the light values for a given scene - highlights, shadows, and mid-tones - and averages them together to establish a good overall exposure. Average metering is best used for front-lit subjects. Backlit subjects tend to be silhouetted when metered in Average mode.

AWB- (Auto White Balance)

An in-camera function that automatically adjusts the white balance of the scene to a neutral setting regardless of the ambient light source.

B**Barrel Distortion**

An optical distortion in which the image 'bows' out of square. Barrel distortion is usually associated with less-expensive wide-angle lenses and digicams, and is most apparent in architectural photographs or images containing lines that run parallel to each other in the horizontal or vertical plane.

Batch Scan

The ability to scan and process more than one image in a single action.

Bit

A bit (binary digit) is the smallest unit of digital information. Eight bits equals one byte. Digital images are often described by the number of bits used to represent each pixel. I.e. a 1-bit image is monochrome; an 8-bit image supports 256 colors or grayscales; while 24 or 32-bit supports an even greater range of color.

Bitmap

A method of storing digital information by mapping out an image bit by bit. The density of the pixels determines how sharp the image resolution will be. Most image files are bit mapped. Bitmap images are compatible with all types of computers.

Blocked Shadows

Term for lack of, or loss of, shadow detail in a photographic image, usually the result of underexposure or lower resolution (and less dynamic) imaging sensor. Can sometimes be partially corrected in Photoshop or similar photo editing applications.

Blooming

The appearance of a bright or colored halo around brighter areas of digital image files. Blooming is caused when a portion of the imaging sensor in a digital camera is exposed to too much light, causing signal "leaks" to the neighboring pixels.

**Also see Chromatic Aberration.*

Blowout

Blowout is caused by overexposure, which results in a complete loss of highlight details. With the exception of RAW files captured within 2-stops of the correct exposure, 'blown' highlights are difficult, if not impossible, to correct after the fact.

BMP

A bit-mapped file format used by Microsoft Windows. The BMP format supports RGB, indexed-color, grayscale, and Bitmap color modes.

Bracketing

Bracketing involves taking multiple images of the same scene, usually in 1/3, 1/2, or full-stop increments in order to have a choice of exposure options. Many cameras offer the option of 'bracketing' as a custom function.

Buffer Memory

Memory that is built into a device such as a printer or camera that temporarily holds the data until the device can process and/or transfer the information to a memory card or other storage device.

Burst Rate

The number of consecutive images a digital camera can capture continuously before filling the

buffer memory.

Bus

A collection of wires through which data is transmitted from one part of a computer to another. You can think of a bus as a highway on which data travels within a computer.

Byte

Abbreviation for binary term, which is a unit of storage capable of holding a single character. On almost all modern computers, a byte is equal to 8 bits. Large amounts of memory are indicated in terms of kilobytes (1,024 bytes), megabytes (1,048,576 bytes), and gigabytes (1,073,741,824 bytes). A disk that can hold 1.44 megabytes, for example, is capable of storing approximately 1.4 million characters, or about 3,000 pages of text information.

C

Card Reader/Writer

A device that allows you to transfer data directly from a camera's removable memory card to the computer without the need to connect the camera to the computer.

CCD (Charge-Coupled Device)

A semiconductor device that converts optical images into electronic signals. CCDs contain rows and columns of ultra-small light-sensitive mechanisms (pixels) that, when electronically charged and exposed to light, generate electronic pulses that work in conjunction with millions of surrounding pixels to collectively produce a photographic image.

Area CCD

A square or rectangular CCD that can capture an entire image at once, which is essential for dynamic subjects and flash photography.

Linear CCD

A.k.a. scanner-type CCD, these sensors are long and thin, and capture an image by recording a vast number of individual "exposures" while scanning across the picture frame. These are best suited for still subjects and continuous illumination.

CD-R (Compact Disk-Recordable)

A type of data storage disc that enables you to securely record up to 700Mb of back-up and/or storage data. Depending on the brand and materials used in the manufacturing process, many CDs claim up to 80-plus years of storage stability.

CD-ROM (Compact Disk -Read Only Memory)

A type of optical disk capable of storing large amounts of data. CD-ROMs are stamped by the vendor, and once stamped they cannot be erased and filled with new data.

CD-RW (Compact Disk- Re-Writable)

A type of CD disk that enables you to write onto it in multiple sessions. With CD-RW drives and disks, you can treat the optical disk just like a floppy or hard disk, writing and erasing data onto it multiple times. CD-RWs do not have the same level of stability as CD-Rs.

CMOS (Complementary Metal Oxide Semiconductor)

A type of Imaging Sensor. CMOS chips are less energy consuming than CCD Type sensors and are becoming increasingly common in pro DSLRs, most notably in Canon DSLRs.

CMY Color (Cyan, Magenta and Yellow)

These three secondary colors can be combined to recreate all other colors. Like CMYK, CMY is used in printing to create the colors seen in a print, though with less density in the 'blacks' as compared to CMYK color.

CMYK Color (Cyan, Magenta, Yellow, Black)

The color model in which all colors are described as combinations of these four colors. Most color

printers (ink-jet, laser, dye-sublimation, Wax thermal) are based on CMYK color; even if they contain additional colors, i.e. dilute magenta, dilute cyan, red, blue, etc.

Color Calibration

A process by which the image source (digital camera or scanner), monitor, and output (printer) are matched to use the same or similar color palette. This insures that the image viewed on the monitor has the same range of colors as the image that is printed, and any adjustments made to the color of the image in the computer are accurately represented when the image is printed.

Color Depth

The number of distinct colors that can be represented by a piece of hardware or software. Color depth is sometimes referred to as bit depth because it is directly related to the number of bits used for each pixel. A 24-bit Digital Camera, for example, has a color depth of 2 to the 24th power (about 16.7 million) colors.

Color Management

A system of coordinating and calibrating the color responses of digital cameras (or scanners), monitors, and printers to ensure the color and tonal values of the image you see on the screen matches the final print image.

Color Palette

A palette is the set of available colors. For a given application, the palette may be only a subset of all the colors that can be physically displayed. For example, many computer systems can display 16-million unique colors, but a given program would use only 256 of them at a time if the display is in 256-color mode. The computer system's palette, therefore, would consist of the 16 million colors, but the program's palette would contain only the 256-color subset.

Color Space

The range of colors that can be reproduced on a computer monitor or in print form. The most commonly used color spaces for digital imaging are the baseline sRGB and wider-gamut Adobe RGB (1998).

Compact Flash Card (CF card)

A popular flash memory device, which is available in a number of storage capacities. Unlike earlier mechanically-driven MicroDrives, newer CF cards are solid-state, quite stable, and are capable of operating under extreme environmental conditions.

Compression

A method of reducing the size of a digital image file in order to free up the storage capacity of memory cards and hard-drives. Compression techniques are distinguished from each other by whether they remove detail and color from the image. Lossless techniques compress image data without removing detail, while "lossy" techniques compress images by removing some detail.

Joint Photographic Experts Group (JPEG) is a lossy compression technique supported by JPEG, PDF, and PostScript language file formats.

Chromatic Aberration

Also known as color fringing, chromatic aberration occurs when the collective color wavelengths of an image fail to focus on a common plane. The results of chromatic aberration are most noticeable around the edges of contrasty images, especially towards the edges of the frame. Chromatic aberration is most common on less expensive lenses, although even the best optics can occasionally display lower levels of chromatic aberration under certain conditions.

Another form of chromatic aberration is called 'purple fringing', which are the purple streaks or halos that often appear within images produced by digicams. Purple fringing originates from light refracting off of the light-gathering microlenses that cap the sensor's pixels. In backlit scenes, this form of purple fringing is commonly called 'blooming'.

Color Temperature

A linear scale for measuring the color of ambient light with warm (yellow) light measured in lower numbers and cool (blue) light measured in higher numbers. Measured in terms of 'degrees Kelvin', daylight (mid-day) is approximately 5600-degrees Kelvin, a candle is approximately 800-degrees, an incandescent lamp is approximately 2800-degrees, a photoflood lamp is 3200 - 3400-degrees, and a mid-day blue sky is approximately 60,000-degrees Kelvin.

CPU (Central Processing Unit)

The heart of a computer, the CPU is responsible for most all of a computer's basic data processing functions.

D

Dark Current

Pixels collect signal-charges in the absence of light over time, which can vary from pixel to pixel. The result is known as dark current, or more commonly as noise.

Digital Zoom

Unlike an optical zoom, the digital zoom takes the central portion of a digital image and crops into it to achieve the effect of a zoom. This means that the existing data is not enhanced or added to, merely displayed at a lower resolution, thereby giving an illusion of an enlarged image.

Disk Drive

A device that both reads data from a disk and writes data onto a disk. A disk drive spins the disk at high RPMs while one or more heads that read and write data. There are different types of disk drives for different types of disks. For example, a hard disk drive (HDD) reads and writes hard disks, and a floppy drive (FDD) accesses floppy disks. A magnetic disk drive reads magnetic disks, and an optical drive reads optical disks. Disk drives can be either internal (housed within the computer) or external (housed in a separate box that connects to the computer).

DSLR (Digital Single Lens Reflex)

A digital single lens reflex camera.

Dye-Sublimation

A printing method where a waxy ink is heated to temperatures high enough for the ink to vaporize, and is then forced to bond with a special receiver paper. The dye sublimation (dye-sub) printing method produces images with continuous tone color.

Dynamic Range

The range of brightness and tonality reproduced in a digital (or traditional) photographic image. Wider dynamic range translates into greater tonal values between the darkest shadow details and the brightest highlight details.

DPI (Dots-Per-Inch)

Printing term for resolution. Also referred to as PPI (Pixels-per-Inch) when describing monitor resolution. The higher the PPI/DPI, the higher the resolution of the resulting image will be. For viewing images at magnifications of up to life-size on a computer screen you only need 72 DPI. For off-set printing the image must be set to 300 DPI at the desired print size, and for inkjet prints anywhere from 180 to 360 DPI at the desired print size.

Note- DPI settings above 400 can actually diminish the quality of inkjet output.

Driver

A program that controls the sequencing of commands for an input/output device. Every device, whether it is a printer, disk drive, or keyboard, must have a driver program. A driver acts like a translator between the device and programs that use the device. Each device has its own set of specialized commands that only its driver knows.

E

Effective Pixels

The effective pixels of a sensor are a measurement of the number of pixels of a sensor that actually record the photographic image. As an example a camera might contain a sensor that contains 10.5 megapixels, but an effective pixel count of 10.2 megapixels. The reason for this discrepancy is because digital imaging sensors have to dedicate a certain percentage of available pixels to establish a black reference point. These pixels are usually arranged frame-like along the edge of the sensor, out of range of the recorded image.

EXIF (Exchangeable Image File)

Commonly used header format for storing metadata (e.g. camera/lens/exposure information, time/date/, etc) within digital image files.

Export

The act of sending a file out through a specialized mini-application or plug-in so as to print or compress it. The term is also used to describe the action of saving the data to a specialized file format, i.e. JPEG, or GIF.

Exposure

Exposure explains how light acts on a photographic material. The lens opening (f-stop or aperture) controls light intensity, while the duration is controlled by the shutter speed. A camera with auto-exposure can automatically control the exposure. The same principle works with digital cameras where film is replaced by the CCD.

Exposure Compensation

Adding to or subtracting from the 'correct' exposure time indicated by the camera's meter, which results in a final exposure that is either lighter or darker than the recommended exposure time. Most cameras allow for exposure compensation in $\frac{1}{2}$, $\frac{1}{3}$, or full-stop increments.

F

F-stop

A term used to describe the aperture, or opening of a lens. F-stops are defined numerically - f1/4, f5.6, f22, etc. Larger, or wider apertures, allow more light to enter the lens, which results in faster shutter speeds. Faster apertures also allow for selective focus (narrow depth-of-field), while smaller (slower) apertures allow for greater depth-of-field. Wider apertures are preferred for portraits, while smaller apertures are preferred for landscapes.

File format

The way an image is saved to a digital camera's memory. The JPEG format is the most common file format found in digital cameras. Other commonly used formats include Tiff, RAW, PSD, and Bitmap

Firmware

Software programs or data that has been written onto read-only memory (ROM). Firmware is a combination of software and hardware. In digital cameras, the Firmware is the program that allows the user to activate and control the features of the camera.

Flash Sync

Flash sync is used to describe either the connection point where you plug an external electronic flash into your camera (usually a PC port or the camera's hot-shoe), or the fastest shutter speed your camera can 'sync' with an external flash. Most DSLRs have top sync speeds of 1/125 th to 1/250 th, though some camera/flash combinations can be synced at speeds of up to 1/15,000 th.

Focal Length Magnifier

Also known as Magnification Factor, this term is used to describe the angle of view of a lens used on a DSLR in terms of how it would appear on a full-frame 35mm camera. Nikon, Pentax, Fuji, and Sony (Alpha A100) DSLRs contain APS-C sized sensors that are 50% smaller (1.5x) than a standard 35mm frame. As a result, the effective focal length of a 50mm lens on any of these DSLRs would be 'cropped' to 75mm. Canon EOS Rebels and the Canon EOS 30D have a 1.6x

magnification factor which would make a 50mm lens effectively an 80mm lens, while on a Canon EOS 1D Mark II (1.3x) a 50mm would effectively be the equivalent of a 65mm lens.

Fringing

Fringing, commonly associated with less-expensive lenses, describes the 'bleeding' of color along the edges of contrasty portions of a digital image. Fringing often shows up as cyan blurring on one side of a contrasty object complimented by red or magenta blurring on the opposite side of the object.

G

Gamma

The brightness curve of the color spectrum as displayed (or reproduced) on a computer monitor, a printer, or scanner.

Gain

Gain refers to the relationship between the input signal and the output signal of any electronic system. Higher levels of gain amplify the signal, resulting in greater levels of brightness and contrast. Lower levels of gain will darken the image, and soften the contrast. Effectively, gain adjustment affects the sensitivity to light of the CCD or CMOS sensor. In a digital camera, this concept is analogous to the ISO or ASA ratings of silver halide films.

GIF

Graphic Interface designed by CompuServe for using images online. This is a 256-color or 8 bit image.

Gigabyte

One gigabyte is equal to 1,024 megabytes. Gigabyte is often abbreviated as G or GB.

GUI (Graphic User Interface)

Pronounced "Goey." Refers to a program interface that takes advantage of the computer's graphics capabilities to make the program easier to use.

H

Hardware Calibration

A method of calibrating a digital camera, scanner, printer, or monitor using specialized hardware.

Histogram

A visual representation of the exposure values of a digital image. Histograms are most commonly illustrated in graph form by displaying the light values of the image's shadows, mid-tones, and highlights as vertical peaks and valleys along a horizontal plane.

Hot Shoe

A 'live' accessory shoe, usually located on the top of the camera prism housing that enables you to mount and trigger an electronic flash or wireless transmitter.

Hot Swap

The ability to add or remove peripheral devices (scanners, disk drives, etc.) to a computer without having to re-boot the system. USB and FireWire interfaces are 'hot-swappable' interfaces.

I

ICC Profile (International Color Consortium profile)

A universally recognized color management standard for specifying the color attributes of digital imaging devices (scanners, digital cameras, monitors and printers) in order to maintain accurate color consistency of an image from the point of capture through the output stage.

IEEE-1394 interface (FireWire)

A very fast external bus standard that supports data transfer rates of up to 400 Mbps (400 million bits per second). Products supporting the 1394 standard go under different names, depending on the company. Apple, which originally developed the technology, uses the trademarked name FireWire. Other companies use other names, such as i.link and Lynx, to describe their 1394 products. In addition to its high speed, 1394 also supports isochronous data -- delivering data at a guaranteed rate. This makes it ideal for devices that need to transfer high levels of data in real-time, such as video devices.

Image Editing Software

Software that allows you to electronically retouch digital image files including the ability to adjust the color, contrast, sharpness, size, and other tonal characteristics of the file.

Image Stabilization (See Anti Shake)

Inkjet

A printing method where the printer sprays ionized ink at a sheet of paper. Magnetized plates in the ink's path direct the ink onto the paper in the desired shapes and patterns to make an image.

Interface

The connection and interaction between hardware, software and the end-user. Hardware interfaces are the plugs, sockets, wires and the electrical pulses traveling through them in a particular pattern. Software, or programming, interfaces are the languages, codes and messages programs use to communicate with each other and to the hardware. User interfaces are the keyboards, mice, commands and menus used for communication between you and the computer.

Interpolation

Method used in software to increase the resolution of a digital image. The software adds pixels to an image based on the value of surrounding pixels, thereby increasing its resolution. This method can cause artifacts.

ISO (International Standards Organization)

Film speed rating expressed as a number indicating a film's (image sensor's) sensitivity to light. The higher the number, the more sensitive and faster the film (digital sensor) is. While traditional cameras don't have a specific ISO rating, digital cameras do as a way to express their sensitivity to light. ISO is equivalent to ASA.

J

Jaggies

Term for the stair-stepped appearance of curved or angled lines in a digital image file. The smaller the pixels and/or the greater their number, the less apparent the "jaggies".

JPEG (Joint Photographic Experts Group)

The de facto standard for image compression in digital imaging devices. JPEG is a 'lossy' compression technique, capable of reducing digital image files to about 5% of their normal size. The results in decompression of the files can cause "blockiness," the "jaggies," or "pixelization" in certain digital images. The greater the compression levels the more pixelization or "blockiness" that will occur. The greater the pixel count, the less pixelization that may occur.

K

Kilobyte

1,024 bytes, written KB, used to refer to size of files, which relates to the amount of information in a file.

L

LAB Color

A perceptually linear color space (RGB and CMYK are non-linear color spaces) that utilizes

luminance as a means of increasing contrast and color saturation.

Lag Time

Also known as shutter lag, lag time refers to the delay that sometimes occurs between the time the shutter button is pressed and the time the shutter actually fires. Shutter lag is most prevalent when using less expensive point-and-shoot cameras.

LCD (Liquid Crystal Display)

LCD screens, usually found on the rear of digital cameras, allow you to preview and/or review photographs you have taken. LCDs utilize two sheets of polarizing material with a liquid crystal solution between them. An electric current passed through the liquid causes the crystals to align so light cannot pass through them. Each crystal, therefore, is like a shutter, either allowing light to pass through or blocking the light.

Lithium-Ion

A type of rechargeable battery that was originally developed for use with camcorders, and is now used as a power source for many digital still cameras

Lossy

A data compression technique that can reduce the detail of a digital image file. Most video compression techniques utilize lossy compression.

Low-Pass Filter

Used with digital imaging, low-pass filters are integrated into many digital sensors to suppress color ghosting and the effects of infra-red light.

M

Matrix Metering

Also known as Segmented Metering, Matrix metering takes the total image area and breaks it into sections, which are analyzed by the camera's light meter and compared to the light values of the surrounding sections. The results are then compared to similar lighting situations stored in the camera's memory, and a correct exposure is established. This entire process occurs in a few microseconds.

Megabyte

1024 Kilobytes, written MB, used to refer to the size of files or media such as hard drives. Refers to the amount of information in a file or how much information can be contained on a hard drive or disk.

Megapixel (1,000,000 pixels)

Digital Camera resolution is often expressed as Megapixels (e.g. PowerShot G7 - 10-Megapixel Digital Camera)

Memory

The camera's file storage medium. Most Cameras use Flash memory, which is a safe, highly reliable form of storage that doesn't need power to hold the images after they are saved. It won't erase the images unless the user chooses to do so.

Memory Card

In Digital Photography, a Memory Card is a removable device used in digital cameras to store the images captured by the camera. There are several different types of memory cards available including Compact Flash, SmartMedia , SD , xD, and Memory Stick.

MicroDrive

Developed by IBM, microdrives are extremely small hard disks that can fit in a CompactFlash memory card slot. Most photographers opt for solid-state CompactFlash cards as they are far more reliable due to the lack of moving parts.

Microlenses

Microlenses are commonly mounted onto the tops of the light-gathering portion of pixels (a.k.a. photon). Microlenses capture the light striking the top portion of the camera sensor's pixels and redirect it into the pixel for processing. Microlenses are often angled along the edges of camera sensors in order to capture and redirect light back into the pixel as a method of reducing light falloff on the edges of the image.

Moiré

Patterns formed in portions of a photographic image as a result of confusion between a pattern within the photographic scene and the pattern of pixels within the sensor. Moiré can often be eliminated, or greatly reduced, by moving either closer to or further from your subject. Higher-resolution imaging sensors tend to be less prone to moiré problems.

N

NiCD (Nickel-Cadmium)

A type of rechargeable battery. The NiCD battery was one of the first successful rechargeable batteries used in small electronics such as digital cameras.

NiMH (Nickel-Metal Hydride)

A commonly used rechargeable battery for digital cameras and camcorders.

Noise

A common bugaboo of JPEG files, noise is the appearance of color artifacts within a digital image. Mostly noticeable in the shadow areas of images captured at higher ISO ratings, the image processors used in many current digital cameras utilize noise-suppression software to minimize the appearance of noise artifacts. Heat build-up due to continuous shooting in hot environments can also cause noise artifacts within digital images.

Noise Reduction

A process within a digital camera's image processor in which the artifacts caused by 'pushed' ISO ratings and/or other electrical or heat-related artifacts are suppressed or eliminated in an image

Non-lossy (a.k.a. lossless)

A term that refers to data compression techniques that do not remove image data details in order to achieve compression. This method is generally less effective than lossy methods in terms of resulting file size, but retains the entire original image. See also lossy.

Non-Volatile Memory

A type of memory card that retains data when power is turned off. Camera Memory Cards (Compact Flash, SmartMedia, etc.) use non-volatile memory.

O

Operating System

Every general-purpose computer must have an operating system to run other programs. Operating systems perform basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers.

Optical Resolution

The physical resolution at which a device can capture an image. The term is used most frequently in reference to optical scanners and digital cameras.

Optical Zoom

An optical zoom is made to bring you closer to your subject, without you having to move. Zooms are constructed to allow a continuously variable focal length, without disturbing focus.

P

Parallel Port (a.k.a. IEEE1286)

A computer interface capable of transferring more than one bit of data simultaneously. Almost all Windows Based personal computers come with at least one parallel port. On PCs, the parallel port uses a 25-pin connector (type DB-25) and is used to connect printers, computers and other devices that need relatively high bandwidth. It is often called a Centronics interface after the company that designed the original standard for parallel communication between a computer and printer. A newer type of parallel port, which supports the same connectors as the Centronics interface, is the EPP (Enhanced Parallel Port) or ECP (Extended Capabilities Port). Both of these parallel ports support bi-directional communication and transfer rates ten times as fast as the Centronics port.

Parallax

The difference between the image seen by a viewing system and the image recorded by the imaging sensor. In point-and-shoot cameras, as subjects move closer to the lens, the variance increases. Only through the lens (TTL) viewing systems avoid parallax error.

PC Card (PCMCIA Card)

PC cards are about the size of a credit card and were developed to be a standard for hardware capability expanding devices. PCMCIA cards provide an easy way to transfer photos from the camera to a notebook or desktop PC.

PC Sync

A standardized connector for 'syncing' external electronic flash units (strobes) to cameras.

PhotoShop

An image editing software package created and sold by Adobe Systems Inc. PhotoShop is the most commonly used image editing software used by professional photographers and graphic artists.

PhotoShop Plug-in

A software application that allows a camera, scanner or printer to work directly with Adobe PhotoShop software.

PICT

The PICT format was originally developed by Apple Computer in the mid-1980s. The PICT format supports RGB files with a single alpha channel, and indexed-color, grayscale, and Bitmap files without alpha channels. The PICT format is especially effective at compressing images with large areas of solid color.

Pixel

Short for picture element, Pixels are the tiny components that, working together, capture the digital image record in your camera, and later view on a computer monitor. The more pixels that there are, the higher the screen or image resolution will be.

Pixelization

The 'break-up' of a digital image file that has been scaled up (enlarged) to a point where the pixels no longer blend together to form a smooth image.

Pixelization can also appear in the form of step-like, or choppy curves and angled lines (also known as the 'jaggies'). As a rule the greater the number of pixels within an image, the less likely you will see pixelization within an image.

Pincushion Distortion

An optical distortion, common in less expensive lenses, where parallel lines on the horizontal and/or vertical plane bow inward. Pincushion distortion is the opposite of barrel distortion.

Plug-and-Play

Refers to the ability of a computer system to automatically configure expansion boards and other

devices without having to restart the CPU or reset DIP switches, jumpers, and other configuration elements.

PNG (Portable Network Graphics)

Developed as a patent-free alternative to GIF, this format is used for lossless compression for the purposes of displaying images on the World Wide Web. Adopted by the WWW consortium as a replacement for GIF, some older versions of Web browsers may not support PNG images.

Port

An interface on a computer to which you can connect a device. Most personal computers have USB, USB 2.0, and/or FireWire ports.

PPI (Pixels-Per-Inch)

Also referred to as DPI (Dots per Inch), the higher the PPI, the higher the image quality of the final print.

R

RAM

Random Access Memory. A type of computer memory that can be accessed randomly. Most computers allow for installing additional RAM, which increases the computer's ability to process data faster.

RAW Files

Many pro and semi-pro digital cameras have the option of capturing RAW files, which unlike JPEGs, TIFFs, and other file formats contain all of the data captured during the exposure in an un-edited format. When processed, RAW files can be adjusted far more extensively than images captured in other imaging formats, and can be saved as JPEGs, TIFFs, etc. The original RAW file remains unaltered and can be reprocessed at any time for other purposes.

Red-Eye

Red-eye is the term used to describe the reddened pupils of the eyes that sometimes occurs when photographing people or pets with an electronic flash. The red color appears when the pupil of the eye is dilated, usually in a low light environment when the light of the flash strikes the rear portion of the eye and illuminates the blood vessels located in the rear portion of the eye. Red-eye can often be avoided by placing the flash further than 6" from the camera lens.

The reason red-eye is most common with compact digicams because the flashtube is often adjacent to the lens.

Red-eye Reduction

A method of reducing or eliminating red-eye from flash photographs by using a short burst of light, or pre-flash, to momentarily 'stop-down' the pupils of the subject's eyes prior to the actual flash exposure. Red-eye can also be eliminated electronically after-the-fact in many photo-editing programs. Many digicams contain software applications that electronically eliminate red-eye in-camera.

Reflex

A reflex camera is one that utilizes a mirror system to reflect the light (the image) coming through the lens, to a visible screen. The image seen in the camera's viewfinder is the same image that strikes the camera's imaging sensor (or filmplane). This system provides the most accurate framing and focusing. The reflex system avoids the parallax problem that plagues most direct view cameras. Reflex cameras are also called SLRs, or DSLRs.

Remote Capture

The ability to trip the camera shutter from a distance using a cable release or wireless device.

Resolution

Refers to the number of pixels, both horizontally and vertically, used to either capture an image

or display it. The higher the resolution, the finer the image details.

RGB Color (Red Green Blue)

Computers and other digital devices handle color information as shades of red, green and blue. A 24-bit digital camera, for example, will have 8 bits per channel in red green and blue, resulting in 256 shades of color per channel.

S

Saturation

Saturation is the depth of the colors within a photographic image. Photographs with deep levels of color are described as being heavily saturated. A photograph with lighter levels of saturation is described as having a muted color palate. A totally de-saturated color photograph becomes monotone – or black and white.

SCSI Port

Small Computer System Interface. Pronounced "scuzzy," SCSI is a parallel interface standard used by Apple Macintosh computers (excluding certain early Macs and recent iMacs), PCs, and many UNIX systems for attaching peripheral devices to computers.

SD Card (Secure Digital)

Far smaller than CompactFlash cards (CF), Secure Digital memory cards have enabled camera manufacturers to further reduce the size of digicams. They are also commonly found in cell phones, PDAs, and other small electronic devices that incorporate removable memory.

Serial Port

A port, or interface, that can be used for serial communication in which only 1 bit is transmitted at a time. Most serial ports on personal computers conform to the RS-232C or RS-422 standards. A serial port is a general-purpose interface that can be used for almost any type of device, including modems, mice, and printers

Sharpening

Digital images are inherently soft due to the nature of pixels and how we perceive the images they collectively produce. Sharpening is a method of adjusting the contrast levels between adjacent pixels to give the appearance of a sharper image. Un-sharp mask is the most common sharpening filter for this purpose.

Shutter

A mechanism in the camera that controls how much light reaches the film.

Shutter Priority

A metering mode in which the shutter-speed is fixed and the exposure is controlled by opening or closing the lens aperture. Most modern cameras have step-less shutters that can be triggered to open and close infinitely between the camera's fastest and slowest shutter speeds, i.e. 1/236 th, 1/54 th, 1/5829 th, etc..

Shutter speed

The length of time the shutter remains open when the shutter release is activated, expressed in fractions or multiples of a second.

SLR (Single-Lens-Reflex)

A camera that utilizes a prism and mirror system to project the image seen by the lens onto a focusing screen located below the prism housing. The image the user sees in the viewfinder is identical to the image being recorded.

Software

Operating instructions for specific task based applications. The computer's processor carries out these instructions. Software has to be written for a specific computer Operating System (OS).

Software Calibration

Calibrating a computer, monitor, or printer using a software application as opposed to a hardware-driven calibration.

Spot metering

Spot metering allows for the measurement of smaller areas of the total picture area. Older cameras, as well as less-expensive digicams, only offer a single, centrally-located measuring point, usually between 1 to 5 degrees in coverage. Many newer cameras offer a selection of 3, 5, 7, 11-or-more reference points for selective metering, which enable you to selectively measure important areas of the photograph, including areas off-center to the frame.

sRGB

The standard color gamut for Windows operating systems.

Storage Card

A compact memory storage device used to store data captured by a digital camera, camcorder, cell phone, PDA, etc. Storage card formats include CompactFlash (CF), Secure Digital (SD), xD, SmartMedia, and Memory Sticks.

T**Thumbnails**

Small, contact sheet-sized image files used to reference and/or edit digital images. The images that appear on a camera's LCD are thumbnail images of the larger file.

TIFF (Tagged-Image File Format)

TIFF files are flexible bitmap image files supported by virtually all paint, image-editing, and page-layout applications. Also, virtually all desktop scanners can produce TIFF images. This format, which uses the .tif extension, supports CMYK, RGB, Lab, grayscale files with alpha channels, and Bitmap files without alpha channels. TIFF also supports LZW compression, a lossless compression format.

Time Lapse

A series of photographs captured over a period of time. These images can be captured in variable or set time intervals over the course of seconds, minutes, hours, days, weeks, etc.

While several more advanced cameras offer the option of custom-function time-lapse imaging, most cameras require optional hard-wired or remotely operated triggering devices to capture time lapse imagery.

Tonal Range

A term used to describe the quality of color and tone ranging from an image's shadow details through the brightest highlight details, including all of the transitions in between these extreme points.

TTL (Through-The-Lens)

TTL refers to a metering system that determines the proper exposure based on measuring the light that strikes the imaging sensor (or film-plane) after passing through the camera's lens. TTL readings are usually more accurate than 'hand-held' meter readings as all exposure factors, including filtration and any optical peculiarities, are taken into account when determining the final exposure. Many dedicated camera flashes also utilize TTL metering in determining the proper flash exposure.

TWAIN

An 'acquire', or import interface, developed as a standard for communications between scanners, imaging devices, digital cameras and the computer software. TWAIN allows you to import (acquire) an image into your software. This is the generally the interface of choice on the Windows platform.

U

Under-Exposure

The result of recording too little light when taking a picture, which results in a dark image. In digital imaging, under-exposure can usually be corrected to a certain extent by the use of image editing software. RAW files offer more latitude as compared to JPEGs and TIFFs for correcting over or under-exposure.

USB (Universal Serial Bus)

An external bus standard that supports data transfer rates of 480 Mbps (480 million bits per second). A USB port can be used to connect peripheral devices, such as mice, modems, and keyboards, as well as digital cameras and scanners. USB also supports Plug-and-Play installation

Unsharp Mask

The most commonly used 'sharpening' filter in Photoshop.

V

Video Mode

The ability of a digital still camera to capture short segments of low-resolution video intended for use in e-mail or web pages.

Viewfinder

System used for composing and/or focusing the subject being photographed. Aside from the more traditional rangefinder and reflex viewfinders, many compact digicams utilize LCD screens in place of a conventional viewfinder as a method of reducing the size (and number of parts) of the camera.

Vignetting

Fall-off, or darkening of the edges of a photographic image due to the inability of a lens to distribute light evenly to the corners of the frame. While correctable with filtration using on-camera center-weighted neutral density filters or electronically in Photoshop, it is often used as a creative device to direct the eye back to the center of the frame.

Volatile Memory

A Type of memory that loses its contents when the power is turned off. Computer RAM is typically volatile memory

W

Watermark

Traditionally, a watermark is an image or icon that is embedded into paper for security purposes (American paper money has a watermark). In digital photography, a watermark refers to information that is embedded in the image data to protect the copyrights of the image.

White Balance

The camera's ability to correct color and/or tint when shooting under different lighting conditions including daylight, indoor, fluorescent lighting as well as electronic flash.

X

xD Cards

A small, narrow-profile memory card format designed for use with the smallest digicams, PDAs, and cell phones that accept additional memory.

Z

Zoom lens

A lens whose focal length can be continuously adjusted through a fixed range of focal lengths.