

**AA Filter** - Most Digital SLR's have a "Low Pass Filter" (LPF) or AA (Anti-Aliasing) Filter in front of the CCD or CMOS sensor. This helps to eliminate colour aliasing problems, or the "moire" effect.

**AC Power** - Alternating Current which is used to operate your digital camera directly from the mains supply rather than a battery. Sometimes supplied, but normally requires additional expense.

**Add-on Lens** - Some point and shoot digicams have a filter thread on the front of the fixed lens that will enable the attachment of an additional lens. Usually wide-angle or telephoto.

**AE** - Auto Exposure. When the camera is set to this mode, it will automatically set all the required modes for the light conditions. I.e. Shutter speed, aperture and white balance. The 3 types are:

- **Program Mode.** The camera will choose the shutter speed and aperture automatically, effectively making your SLR a "point-and-shoot". It will normally assign a shutter speed of 60th of a second or higher if possible.
- **Aperture Priority.** You choose the aperture setting and the camera will automatically choose the shutter speed according to the lighting conditions. Best setting for controlling the depth of field.
- **Shutter Priority.** You choose the shutter speed and the camera will select the correct aperture as long as there is enough light. Good for sports or action photography where you need control over the shutter speeds.

**AE Lock.** This enables you to lock the current exposure reading and re-frame the shot using the same setting. A half-press of the shutter is normally required to activate this function, fully pressing only when you want to capture the image.

**AF.** Auto Focus. All digicams and most modern SLR lenses have this function now. The lens automatically focuses on the subject as quick as the eye. The only difference is that with an SLR you can normally select manual focus if necessary.

**Aliasing.** This is an effect caused by sampling an image at too low a rate. It causes rapid change (high texture) areas of an image to appear as a slow change in the sample image. Once this has happened, it is extremely difficult to reproduce the original image from the sample.

**Angle of View.** This is calculated by the focal length of the lens and the size of the image sensor. The 35mm equivalents differ according to the sensor size.

**Anti aliasing.** This is the process whereby you can reduce the "Stepping" effect on your images, by smoothing the edges where individual edges are visible. A great program for correcting this is Genuine Fractals by LizardTech. It is a plug-in for Photoshop.

**Aperture.** The lens opening that allows more, or less light onto the sensor formed by a diaphragm inside the actual lens.

**Aperture Priority AE.** When using this mode, the user selects the aperture giving control over the Depth of Field. A large aperture letting more light in gives a small depth of field, meaning not much will be in focus. Whereas a small aperture, not letting much light in, will give a greater depth of field or more will be in focus from the front to back of the image.

**Archive.** A collection of data in long term storage, usually the hard drive on your PC or an external hard drive.

**Aspect Ratio.** The ration of horizontal to vertical dimensions of an image. For example, 35mm slide film = 3:2, TV = 4:3, HDTV = 16:9, 4x5 Film = 5:4.

**Aspherical Lens.** A lens with edges flattened so that it is not a perfect sphere. These produce a much superior image.

**Automatic Exposure.** The camera sets the shutter speed and aperture for the correct exposure according to the light.

**Automatic Focus.** The lens on the camera focuses automatically when the shutter is half pressed. The viewfinder normally has focussing points shown to assist the user in knowing what will be in focus.

**AVI.** Movie clip in Windows AVI format. A lot of digicams now have this feature for producing small video clips.

**AWB.** Automatic White Balance. Most digital cameras have this feature where the camera sets the white balance. Override is available in most DSLR's.

**B & W .** Abbreviation for Black and White.

**Back Lit.** Meaning the subject is lit from behind which can cause underexposing. Is also used for portrait photography for special effects and bringing catchlights to the hair.

**Backlight.** The illumination for a colour LCD display on digital cameras or phones.

**Banding.** An artefact of colour gradation in computer imaging. When graduated colours break into larger blocks of a single colour, the smooth look of a proper gradation is reduced.

**Barrel Distortion.** A common geometric lens distortion causing an aquired image to pucker towards the centre and be *rounded* along the outer edges.

**Bit Depth.** Refers to the colour or grey scale of each individual pixel. For example a pixel with 8 bits per colour (red, green and blue), gives a 24 bit image. 24 bit resolution is 16.7 million colours.

**Bitmap.** The method of storing information that actually maps an image pixel bit by bit. Formats include; .bmp, .pcx, .pict, .tif, .tiff, .gif. Most picture files are bit-mapped.

**Blooming.** An effect caused by overexposing a CCD or sensor to too much light. This can cause distortions of the subject and/or colour.

**BMP.** Bitmapped graphics file format which is popular with Windows PC's. It is an uncompressed file format like a TIFF.

**Borderless.** Quite simply, this means a printed photograph with no border around it.

**Bracketing.** Can apply to flash or exposure. It is used to create usually 3 photographs. One photo is exposed by the cameras meter automatically, one under exposed and one overexposed by a predetermined number of stops. Also "exposure bracketing".

**Brightness.** Value of a pixel in a digital image giving its value of lightness from black to white, with 0 being black and 255 being white.

**Buffer.** Temporary storage areas held in your camera or computers RAM. This acts as a temporary holding area for data that will be manipulated by the CPU before saving it to another device. For example if you are shooting in continuous mode, when the RAM buffer on your digital camera is full it will slow to a much slower rate while the buffer empties to your compact flash card or other device.

**Bulb.** Term used for a long exposure setting normally more than 30 seconds. The start of the exposure is made by pressing the shutter, only ending when the shutter button is released. Excellent for night photography and a remote release is recommended to prevent camera shake as you press the shutter button.

**Burst Mode.** Also known as continuous mode or "Auto wind" on older SLR's. However, today's Digital SLR's have burst modes of up to 8 frames per second. Great for sports and action shots.

**Calibration.** The act of adjusting the colour of one device to match that of another. For example when you match the calibration of your screen to that of your printer to ensure what you see is what you print. It is also used in the film SLR's Canon EOS-3 and EOS 5 which have eye-controlled focussing. You calibrate the camera's focussing to where your eye is looking in the viewfinder. (Some fighter planes also have this. The missile follows the trajectory of the pilot's eye).

**Card Reader.** Used for transferring data from your flash memory card to your PC. A better way of transferring your image files than connecting the *camera* to your PC. Sometimes the camera's circuitry can become corrupt. Better to fry a memory card than your camera.

**CCD (Charged Coupled Device).** This is a light sensitive chip used in your digital camera for image gathering. The CCD Pixels gather the colour from the light and pass it to the shift register for storage. CCD's are *analogue* sensors, the digitising occurs when the electrons are passed through the A to D converter. This "Analogue to Digital" converter converts the analogue signal to a digital file or signal.

**Centre -Weighted.** Term used to describe an automatic exposure system that uses just the centre portion of the image to adjust the overall value. So in effect, the exposure will be weighted to what you see towards the centre of your viewfinder.

**CF.** Compact Flash card. Used in your digital camera to record images. Storage space ranges from 16MB up to 12GB. A company in Japan is currently developing a CF card that will store 2TB of information or 2,000 Megabytes.

**Channel.** One piece of information stored with an image. For example, a true colour image has 3 channels, red, green and blue.

**Chroma.** The colour of an image element or pixel. A chroma is made up of saturation plus the hue values, but is separate from the luminance value.

**Chromatic Aberration.** Also known as *purple fringing*. It is fairly common in 2MP digital cameras and above, especially if they have long telephoto lenses. You can see it when a dark area is surrounded by a highlight. In between the dark and light, you may see a band of purple pixels that shouldn't be there. There are ways of removing this which I have covered in the Photoshop section.

**CIFF.** Camera Image File Format. This is an agreed type of image storage used by many camera makers.

**CMOS.** Complementary Metal Oxide Semiconductor (now you can see why it is abbreviated) - Another imaging system used by digital cameras. These produce lower amounts of power consumption, but are not as popular as the CCD sensors used in most digital SLR's

**CMS.** Colour management system. A software program designed to ensure colour matching and calibration between video and/or computer monitors and any form of hard copy output.

**CMYK.** Cyan, Magenta, Yellow and Black. Colours used by most printers to produce your prints. Colour shifts can be caused when the colour management system tries to convert your PC's RGB files to CMYK. Before printing, try converting your images to CMYK and see what the difference is.

**Codec.** A Codec compresses information to enable it to be sent across a network much faster. It will also *decompress* information received via the network.

**Colour Balance.** The accuracy with which the colours captured in the image, match the original scene.

**Colour Cast.** This is a very unwanted tint of one colour in an image caused by the wrong amount of Cyan, Magenta and Yellow. It can be corrected using your editing software.

**Colour Correction.** To correct or enhance the colours within an image.

**Colour Depth.** Digital Images can approximate colour realism but the process is referred to as colour depth, bit depth or pixel depth. Most modern computer displays use 24 bit true colour. It displays the same number of colours that the human eye can discern, about 16 million.

**Colour Space.** Digital cameras use known colour profiles to generate their images. The most common is sRGB or Adobe RGB. This along with all of the other camera data is stored in the Exif header of the Jpeg file. The *colour space* information ensures that graphic programs and printers have a reference to the colour profile that the camera used at the time of taking the exposure.

**Compact Flash.** See CF. This is the most commonly used type of memory. It is small, removable and available in a wide range of sizes up to 12GB.

**Compression.** A Digital photograph creates an image file that is enormous. To enable image files to become smaller and more manageable cameras employ some form of compression such as JPEG. RAW and TIFF files have no compression and take up more space.

**Continuous Autofocus.** As it says. The auto focus system is continuously working on focussing on the subject.

**Contrast.** The measure of rate of change of brightness in an image.

**CRW.** The RAW CCD file format used by Canon Digital Cameras. Comes from Canon RAW.

**Dark Frame.** A noise reduction process where a camera takes a *second* exposure of a black frame after the camera takes a long exposure image. The image **noise** is easily identified in the black frame shot and is then electronically removed from the actual image. This helps to reduce the amount of **hot** pixels that normally show up in long exposure shots from digital cameras.

**DC.** Direct Current. Battery power such as 9v DC battery

**Decompression.** Process by which the full data content of a compressed file is restored.

**Dedicated Flash.** An Electronic Flash Unit that is made to be used directly with a specific make or model of a camera. Canon, Nikon Minolta and Olympus for example, all have electrical contacts in the hotshoe which passes TTL (through the lens) metering and AF range information to and from the flash unit or speedlight. You **cannot** interchange flash units and cameras. I.e. a Nikon speedlight on a Canon camera.

**Depth of Field.** (DOF). The range of items in focus in an image. This is controlled by the focal length and aperture opening of a lens. A large or wide aperture gives a shallow depth of field (not much range in focus) and a smaller or narrow aperture give a large depth of field (more range in focus).

**Digital Film.** Quite simply that. Solid state flash memory cards in place of emulsion film.

**Digital Zoom.** A digital magnification of the centre 50% of an image. These give less than sharp images because the new zoomed image has been interpolated. Don't be swayed by the **incredible 500% zooms** on some cameras, the images won't be really acceptable. The optical zoom gives much more clarity to an image.

**Digitisation.** The process of converting analogue information into digital for use by a computer.

**Dioptr Adjustment.** This adjusts the optical viewfinder's magnification factor to suit the eyesight of the camera's user. There should be a knob or dial near the viewfinder's eyepiece, however, not all cameras have this feature.

**DOF.** Abbreviation of Depth of Field.

**Download.** Term used for the transference of image data from the camera to your computer. Can be done via a serial port or the faster USB port. Downloads can also be done via Bluetooth or Infra-red without the need for cables.

**DPI.** Dots per Inch. This is a measurement value used to describe the resolution of a display screen or that of a printer.

**DPOF.** Digital Print Order Format. This allows you to embed printing information on your memory card. You just select the photographs that you want printed and how many prints to be made. Some photo printers such as Pictbridge use this information at print time.

**DRAM Buffer.** All digicams have a certain amount of fixed memory to facilitate image processing before the finished picture is saved to the flash memory card. Cameras with burst mode have a larger buffer of 32MB or bigger to cope with the files however, they are more expensive.

**DSLR.** Digital Single Lens Reflex (SLR). Camera with interchangeable lens.

**Dye Sub.** Dye sublimation is a printing process where the colour dyes are thermally transferred to the printing media. The printers use CMYK colour format. The paper is run in and out of the printer 4 times, once for each colour (C, M and Y) and a fourth time when a protective overcoat is applied. Dye sub is continuous tone printing, it prints tiny square dots each of which is denser in the centre and lighter on the edges. The dyes are transparent so different coloured dots can be printed on top of each other to form any one of 16 million colours.

**Dynamic Range.** This is a measurement of the accuracy of an image in colour or grey level. More bits of dynamic range results in much finer gradations being preserved.

**EPP.** Enhanced Parallel Port. This is the newer, hi-speed, bidirectional printer port on modern PC's.

**E-TTL.** Canon's "Evaluative Through The Lens" exposure system that uses a brief pre-flash before the main flash in order to calculate the correct exposure.

**EV.** Exposure Value. The ability to override the auto exposure system to under or over expose the image.

**EXIF.** Exchangeable Image File Format. The embedded information about camera and exposure for each image. Most decent graphics programs can read this information.

**Exposure.** Amount of light that hits the image sensor of film controlled by the shutter speed and aperture.

**Exposure Bracketing.** Camera will take 3 or 5 images and varies the exposure up or down for each photograph ensuring at least one will be well exposed.

**Exposure Compensation.** You can lighten or darken the image by under or over exposing the image. (EV compensation).

**F-Stop.** Number indicating the size of the aperture. It is an inversely proportionate number as in F2.8 is a large opening and F16 is a small opening.

**File.** A collection of information like data, text or images which are saved on a CD, DVD or hard drive.

**File Format.** Type of program or data file. Includes JPEG, TIFF and BMP

**FireWire.** Officially known as the IEEE 1394 protocol. A high speed data transfer interface used on digital camcorders and the more expensive Digital SLR's.

**Firmware.** A micro program often used and stored in ROM. Normally the ROM based software is in all computer based products from PC's to digital cameras. You will often see firmware updates for electronic goods that deal with problem issues.

**Fixed Aperture.** Aperture remains constant regardless of the lens' focal length. I.e. The Canon "L" series have a constant fixed aperture when zooming.

**Fixed Focal Length.** Basically a non zoom lens. 100mm, 50mm, 200mm etc.

**Flash Memory.** This is the equivalent to film for digital cameras. It can be re-used over and over and some of the better brands have a lifetime warranty. Types include Compact Flash (CF), Smartmedia, memory stick etc.

**Focal Length.** A lens' angle of view. Such as Wide angle, standard or telephoto.

**Focus Assist.** Cameras with this send out a light, either normal or infra red to light up the subject to assist with the autofocus in low light or darkness.

**Focus Lock.** Focus lock means pre-focussing the subject and re-framing by moving the camera. This is done by half pressing the shutter to focus and fully pressing to expose. Done to ensure crisp, sharp eyes for example.

**Frame.** One of many still pictures that make up a video.

**Frame Rate.** Number of frames that are shown or sent each second. Live action is around 30 frames per second.

**Full Bleed.** Otherwise known as "Borderless" printing. Means the ink limit extends to all 4 edges of a print.

**Gamma .** Measure of the amount of contrast in an image according to the properties of a gradation curve. High contrast = High Gamma and Low = Low.

**Gamma Correction.** With reference to displaying an image accurately on a computer screen, Gamma correction controls the overall brightness of an image. Images which are not properly corrected can look either too dark or bleached out.

**Gamut.** This is the range of colours that are available in an image or output process. Gamut is generally used in describing the capabilities of a printer to reproduce colours accurately and vibrantly.

**GIF.** A graphic file format mainly used for Web graphic or small animated (GIF) files. Not good for photographs as it only contains a maximum of 256 colours.

**Gradation.** A *smooth* transition between black and white, one colour and another or colour and no colour.

**Grey Level.** This is the brightness level of a pixel representing it's lightness from black to white. It is usually defined as a value from 0 to 255, with 0 being black and 255 being white.

**Grey Scale.** A term used to describe an image containing shades of grey rather than colour. Most commonly referred to as a black and white photograph.

**Guide Number.** The power output rating of a speedlight flash unit.

**Halftone Image.** An image reproduced through a special screen made up of dots of various sizes, to simulate shades of grey in an image. Normally used for magazine or newspaper reproduction of images. It is also how modern inkjet printers work. Half toning or dithering are the methods used to produce a smooth gradation of colour versus distinct bands of colour or moiré patterns.

**Histogram.** A histogram is a bar graph analysis tool that is used to identify contrast and dynamic range of any image. Histograms are found in the more advanced digi-cams and software programs (graphic editors), such as Adobe Photoshop 7, CS or Elements, and are used to manipulate images. The histogram shows a scale of 0 - 255 (left to right) with 0 being black and 255 being white.

**Hot Shoe.** A flash connector generally found on the top of the camera that lets you attach an external flash unit and trigger it in sync with the camera's shutter.

**Hue.** A term used to describe the complete range of colours of the spectrum. Hue is the component that determines just what colour you are using. In gradients where you use a colour model in which hue is a component, you can create some rainbow effects.

**-TTL.** Similar to Canon's "E-TTL", Nikon's new flash exposure system is used on the new D70 DSLR and SB-600 and SB-800 Speedlights.

**ICC Profile.** "The International Colour Consortium" is a group that sets the standard guidelines for colour management in the imaging world. Most monitors, printers and scanners (as well as digital cameras), usually come with a driver disc for Windows and Mac systems that includes ICC profiles for that particular device. Colour profiles simply let one piece of hardware or software know how another device or image has created its colours and how they should be interpreted or reproduced.

**iESP.** Olympus' exposure metering system.

**iLink.** Sony's term for the IEEE-1394 FireWire data port found on Sony camcorders.

**Image Resolution.** This relates to the number of pixels per unit length of image. E.g. pixels per inch, pixels per millimetre, or pixels wide etc..

**Image Sensor.** Digital cameras use an electronic image sensor (CCD or CMOS), to gather the image data, whereas a traditional camera exposes light to emulsion film,

**Image Stabilization (IS).** An optical or digital system built in to a lens for removing or reducing camera movement, most effective with telephoto or telephoto zoom lenses. Can be found on most of Canon's "L" range of lenses as well as mid-range lenses such as the EF 28-125 IS USM

**Inkjet.** A type of printer that "sprays" dots of ink onto paper to create the image rather than paint or laser it on. Modern inkjet printers now have resolutions of up to 2880dpi and create excellent photo quality prints.

**Interlaced.** This is the term used to describe an image sensor that gathers its data by first processing the odd lines, and then processing the even lines.

**Interpolated.** Most software programs can enlarge image resolution beyond the actual resolution by adding extra pixels. This normally decreases the quality of the image but can be enhanced by a program (or plug in for Photoshop) such as LizardTech's ["Genuine Fractals"](#).

**Intervalometer.** (Or Interval Recording) Another term for Time Lapse Photography. You can capture an image or images at preset intervals automatically. Good quality remote releases have this function built in, meaning you don't have to stand around pressing the shutter every 5 or 10 seconds.

**IR.** Infra Red. This uses a beam of light that is invisible to us humans to either control a device without wires or as a method of transferring data from camera to computer (or printer) without cables. Some cameras also employ infrared in the auto focusing system.

**ISO.** Or ASA. (International Standards Organization). The speed or light sensitivity of a captured image is rated by ISO numbers such as 100, 400, 800 etc. The higher the number, the more sensitive to light it is. Similar to film, the higher speeds usually bring on more electronic "noise" so the image gets grainier. An excellent program for cutting down this "noise" is Neat Image.

**JFIF.** Also known as EXIF, this is a specific type of the JPG file format.

**JPEG.** Joint Photographic Experts Group. This is the name of the committee that designed the standard image compression algorithm. JPEG was designed for compressing full colour or grey scale digital images of natural scenes. It doesn't work so well with non-realistic images, such as cartoons however. JPEG does not handle the compression of black and white (1 bit-per-pixel) images or moving pictures.

**JPEG - 2000.** The new JPEG compression standard that may start to be used in digital cameras and software. It will feature higher compression with less image quality loss.

**JPG.** This is the most common type of compressed image file format used in modern digicams. It is a "lossy" type of image storage because even in its highest quality mode, there is compression used to minimize its size.

**Landscape Mode.** This is when you hold the camera in its normal, horizontal orientation to capture the image. The opposite is "portrait mode".

**LED.** (Light Emitting Diode). This refers to all the little red, green and yellow indicator lights used on most cameras, power supplies and electronic devices.

**Li-ion.** (Lithium ION). Some digicams are packaged with a lithium-ion re-chargeable battery pack. Lithium ION batteries are lighter but are more costly than Ni-MH or Ni-Cd (NiCad) rechargeables. One advantage is that Lithium cells can be recharged regardless of the amount of discharge; also, they are lighter and maintain a charge much better in colder temperatures than conventional batteries. Li-ion also holds a charge for longer when idle.

**Lossless.** Refers to storing an image in a non-compressed format, such as TIFF.

**Low Pass Filter.** Most DSLR's (Digital SLR's) employ a Low Pass Filter (LPF) or Anti-Aliasing (AA) filter in front of the sensor to help eliminate problems with colour aliasing (moiré).

**Macro.** Lenses with this feature can focus very close (less than 8") for taking pictures of small objects at a 1:1 ratio.

**Matrix Metering.** Most digicams have a matrix metering option which uses 256 areas of the frame to calculate the best overall exposure value.

**MB.** (MegaByte). Memory term meaning 1024 Kilobytes. Used to denote the size of a flash memory card such as 4MB, 8MB etc. MB is often confused with Mb (megabit), there's 8 bits in a byte so 256Mb = 32MB.

**MD.** (Minidisk). Digital recording media similar to a small floppy disc. Common for audio data and has been used on several digicams sold in Japan and Europe.

**Megapixel.** This is the CCD (or CMOS) resolution of one million pixels. Digicams are commonly rated by Megapixels. You multiply the horizontal resolution by the vertical resolution to get the total pixel count. For example  $2590 \times 1920 = 5$  Megapixels.

**Memory Stick.** A flash memory card type from Sony. They resemble a stick of chewing gum and vary in size.

**Memory Stick Pro.** The year 2003 upgrade to Sony's Memory Stick flash cards. The new MS Pro cards are available in 256MB, 512MB and 1GB capacities and offer faster read/write times. All of Sony's digicams made in 2003 or after can use MS Pro cards.

**Metering.** Metering is used to calculate the exposure from the existing light conditions. Includes Matrix Metering, Spot metering and Center-weighted metering.

**Microdrive.** IBM/Hitachi mini hard disk drive for digital cameras and PDA devices. Packaged in a CompactFlash Type II housing and available in 170MB, 340MB, 512MB, 1GB, 2GB, 4GB and above as the years progress!

**MiniCD.** These are small diameter (3 inch) CD discs. Mini CD-R and Mini CD-R/W discs are used in the Sony Mavica "CD" series (CD200, CD250, CD300, CD400 and CD1000) digicams.

**MMC.** Multi-Media Card. A flash memory card used in some digicams and MP3 players. The MMC is identical in size and shape to the Secure Digital (SD) flash cards.

**Moiré.** A visible pattern that occurs when one or more halftone screens are mis-registered in a colour image. Often produces a coloured checkerboard (or rainbow) pattern.

**MOV.** Apple QuickTime Movie file format.

**Movie clip.** A sequence of motion captured in AVI, MOV or MPEG formats. More and more digital cameras can now capture short movie clips, many can also record the sound.

**Motion JPEG.** A video clip composed of a sequence of JPEG compressed images. Sometimes abbreviated to MPEG (see MPEG below), although they are slightly different. The main difference is that MPEG provides temporal compression, while MJPEG simply provides spatial compression.

**MP.** Abbreviation of Megapixel, i.e. 5MP or 8MP.

**MPEG.** Motion JPEG movie file. See "Movie clip" The digital video compression standard agreed upon by the Motion Picture Expert Group from the motion picture computer industry.

**MPEG-EX.** Motion JPEG movie file created by Sony cameras. This was the first motion video recording sequence mode that was limited in length only by the amount of available storage space.

**MPEG-HQX.** Motion JPEG movie file created by Sony in 2002, whose cameras incorporate the MPEG-HQ (high quality, full-screen) and the unlimited recording capability of MPEG-EX in 320x240 resolution.

**MPEG-VX.** Motion JPEG movie file created by Sony digicams in 2003. Its VGA resolution (640x480) at 16fps with audio and the length is limited only by available storage space. VX Fine is 30fps or very high quality.

**Multi-Pattern Metering.** Exposure is determined by reading many different zones in the frame. This gives a more optimum exposure than those cameras using just a central zone metering system.

**Multi-Point Focusing.** The autofocus systems uses several different portions of the image to determine the correct focus.

**Multi Zone Focusing.** Many digital cameras now offer multi zone focusing. The camera will automatically determine which zone (centre, left, right, upper or lower) to use to perform the auto focusing. You no longer have to make sure that your subject is in the centre of the viewfinder in order to be correctly focused.

**NEF.** (Nikon Electronic Format). The Raw image data file format used by the Nikon DSLR (D2x, D100, etc) also some Coolpix digicams.

**NiCd.** Nickel Cadmium (Nicad). A type of rechargeable battery. NiCad was the original type of rechargeable battery and has been all but replaced by the NiMH type.

**NiMH.** (Nickel-Metal Hydride). A type of rechargeable battery. NiMH is the more modern type of rechargeable battery and has been touted as having no memory effect as is common with Nicad type batteries when they are charged before they have been fully discharged.

**Noise.** Relates to pixels in your image that were misinterpreted. Normally occurs when you shoot a long exposure (beyond 1/2-second) or when you use the higher ISO values from 400 or above. It appears as random groups of red, green or blue pixels.

**Noise Reduction.** Some cameras that offer long shutter speeds (more than 1 second) usually have a noise reduction (NR) feature that is either automatic or can be enabled in the menu. This is to help eliminate random "hot" pixels and other image noise. Can add a more time to the process as it needs to write the new image data along with the recorded image..

**Optical Viewfinder.** An eye level viewfinder that is used to compose the photograph.

**Optical Zoom.** Means that the camera has a real multi focal length lens, this is not the same as a "Digital Zoom" which magnifies the centre portion of the picture. Optical zoom gives better quality than a digital zoom.

**ORF.** (Olympus RAW format). The un-processed image format created by modern Olympus Digital SLR's and high end Digicams.

**Orientation Sensor.** A special sensor in some cameras that can tell when you turn the camera round to portrait orientation to take a vertical shot. It also tells the camera to display it that way later when viewed on a monitor or TV screen during playback.

**Overexposure.** This is an image that appears much too bright. The highlights and colours are totally lost and usually unrecoverable even by top software. Either the shutter speed was too long or the aperture was too wide.

**PAL.** The 50 field video format used mostly in Europe and other places outside of the U.S. and Japan.

**Palette.** A thumbnail of all available colours to a computer or devices (much like an artist's palette). The palette allows the user to choose which colours are available for the computer to display. The more colours the larger the data and the more processing time required to display your images. If the system uses 24-bit colour, then over 16.7 million colours will be included in the palette.

**Panorama.** This means capturing a series of images to create a picture wider than what you could capture in a single image, by "Stitching" the photographs together. Needs special software to allow and help you do this.

**Parallax.** An effect seen in close-up photography where the viewfinder does not see the same as the lens. This is normally due to the offset of the viewfinder and lens. This is not an issue if you are using the LCD as a viewfinder or if your camera is an SLR..

**PC.** In camera terms it denotes a type of flash synch connector, popular on most film and high end digital cameras. Otherwise, it means Personal Computer.

**PC Card.** Refers to a credit card sized device which can be a flash memory card, a network card, a modem or even a hard drive. Comes in two types; The type I/II which is a single slot height and type III which requires a double height card slot.

**PCMCIA.** These are the card slots found on modern laptop computers to enable the user to insert PC Cards. There are PCMCIA adapters for Compact Flash (CF), SmartMedia (SM), Secure Digital (SD), MultiMediaCard (MMC) and Memory Stick (MS) flash cards.

**PictBridge.** This is a new standard for direct USB printing from digital cameras to inkjet and dye sub photo printers. It does not need the use of a computer.

**PIM.** (Print Image Matching). Epson's new standard of embedded colour and printing information for digital cameras. Many of the camera manufacturers have joined with Epson and now embed the PIM information in the Exif header of the JPEG images created.

**Pin-Cushioning.** This is a common geometric lens distortion causing an acquired image to pucker toward the centre of the image, usually found at telephoto focal lengths.

**Pixel.** The individual imaging element of a CCD or CMOS sensor, or the individual output point of a display device. This is what is meant by the figures 640x480, 800x600, 1024x768, 1280x960 etc., when dealing with the resolution of a particular digicam. Higher numbers are best.

**Pixelization.** The stair stepped appearance of a curved or angled line in digital imaging. The smaller the pixels, and the greater their number, the less apparent the "pixelization" of the image. Also known as the "jaggies".

**Polarizer. (Polarising Filter).** A filter for eliminating glare and reflections which attached to the front of your lens (normally just SLR's). Just like your polarized sunglasses it will get rid of glare, the polarizer filter does the same for your digicam. There are 2 types of polarising filter, linear and circular. Linear is for film only, it screws up most auto focus systems on digicams. Therefore be sure you use a circular polarizer filter. It can also be used to darken skies and increase the saturation of colours.

**PNG.** (Portable Network Graphics). This is an image file format. It is a compressed file format similar to JPG.

**Point and Shoot.** Term used for a simple, easy to use camera with a minimum of user controls. The camera does everything automatically so you literally just point and shoot..

**PPI.** Pixels Per Inch. A measurement to describe the size of a printed image. The higher the number the more detailed the print will be.

**Pre-Flash.** Some digicams use a low power flash before the main flash to automatically set the exposure and white balance.

**Programmed AE.** The camera chooses the best shutter speed and aperture automatically.

**QuickTime** . A motion video standard created by Apple. QuickTime video sequences can contain an audio track and are stored as .MOV files.

**QVGA.** Refers to Quarter VGA resolution (320 x 240) motion video sequences.

**RAM** . (Random Access Memory). The most common type of computer memory where the CPU stores software, programs, and data currently being used. RAM is usually volatile memory, meaning that when the computer is turned off, crashes, or loses power, the contents of the memory are lost. More RAM usually means faster manipulation or faster background processing.

**Rangefinder.** This is the viewfinder on most smaller digital cameras and is a separate viewing device which is independent of the lens. It is often above and to the right or left of the lens. It exhibits a problem known as parallax when trying to frame subjects closer than five feet from the camera so it is advisable to use the colour LCD when shooting close-ups for just this reason.

**RAW.** RAW files store the unprocessed image data at 12 bits per channel. Directly from the camera's imaging chip to its memory storage device. "Lossless" compression is applied to reduce the file size slightly, without compromising the quality. RAW image files must be processed with special software before they can be viewed or printed. These are normally in the form of a plug in for Photoshop or as a standalone product. . The advantage is that you have the ability to alter the white balance, exposure value, colour values, contrast, brightness and sharpness as you see fit *before* you convert this data into the standard JPEG or TIFF format. Professional digital photographers import RAW image data directly into photo-editing programs like Photoshop CS (which comes with a Camera Raw plug-in that works with most popular RAW formats.)

**Red-Eye.** An effect caused by an electronic flash reflecting off the retina at the back of the eye making it look red. Compact cameras with the flash located close to the lens suffer the worst from this problem. Professional photographers use a bracket to hold an external flash unit above and off to the side of the lens to eliminate red-eye. It can also be easily reduced using most post-editing software.

**Red-Eye Reduction Mode.** A special flash mode whereby a pre flash or a series of low powered flashes are emitted before the main flash goes off. This causes the iris of the eye to contract meaning less light gets in the eye, therefore reducing red eye.

**Render.** This is the final step of an image transformation or three-dimensional scene through which a new image is refreshed on the screen.

**Resize.** In photographic terms, this means to take a large image and reduce it in size. Most editing programs offer a resize option. Good for cropping images or get them "Web-ready"!

**Resolution.** The quality of any digital image, whether printed or displayed on a screen, depends on its resolution, or the number of pixels used to create the image. More, smaller pixels add detail and sharpen the edges.

- Optical Resolution is an absolute number that the camera's image sensor can physically record.
- Interpolated Resolution adds pixels to the image using complex software algorithms to determine what colour they should be. It is important to note that interpolation doesn't add any new information to the image - it just makes it bigger!

**RGB.** (Red, Green and Blue). The primary colours from which all other colours are derived. The additive reproduction process mixes various amounts of red, green and blue to produce other colours. Combining one of these additive colours primary colours with another produces the additive secondary colours cyan, magenta and yellow. Combining all three produces white.

**Saturation** . The degree to which a colour is undiluted by white light. If a colour is 100 percent saturated, it contains no white light. If a colour has no saturation, it is a shade of grey.

**Scene Modes**. Many digicams now have an exposure mode called *scene* where the user selects the best pre-programmed scene to suit the current shooting conditions. The camera will automatically change many settings to capture the best possible image. E.g. Sports, landscape, portrait etc.

**SD**. (Secure Digital). A flash memory card used in digicams and MP3 players. It is identical in size and shape to the MultiMedia Card (MMC). The difference being that SD cards were designed to hold protected (copyrighted) data like songs. Not all cameras that use SD cards can use MMC cards so be sure to read your owner manual before buying additional cards.

**Self Timer**. Preset time delay (e.g. 2, 5, 3, 5 or 10 seconds) before the shutter fires automatically. This allows the photographer be in the picture without using a long cable release or remote control. It is also great for taking macro or night shots as by not touching the camera, you eliminate the chances of camera shake. Is also good to use the "mirror lock up" function if you have it.

**Sepia**. The (brownish) mono toned effect seen in images from the original 19th and early 20th Century cameras. This is now a feature often found as a special image effect on some digicams and/or editing software.

**Shutter**. The physical device that opens and closes to let light from the scene strike the image sensor. Digicams use both electronic and mechanical shutters.

**Shutter Lag**. The time between pressing the shutter and actually capturing the image. This is due to the camera having to calculate the exposure, set the white balance and focus the lens. Is worse with smaller digicams whereas the better DSLR's now have little or no shutter lag, like the better film SLR's.

**Shutter Priority AE**. This is where the user chooses a shutter speed and the aperture is automatically determined by lighting conditions. Shutter speed priority is used to control motion capture. A fast shutter speed stops fast action, a slow shutter speed blurs a fast moving subject. It is good to use shutter priority for sports or wildlife photography.

**Skylight Filter**. This is an Ultra Violet absorbing filter that helps overcome the abundance of blue in outdoor photographs. Not really necessary in digital photography as the camera's white balance system adjusts for the colour temperature of the scene. You can also use them to protect the camera's lens from scratching, fingerprints or dirt.

**Slow Sync**. A flash mode in some digicams that opens the shutter for a longer than normal period and fires the flash just before it closes. Is used for illuminating a foreground subject, but allowing a darker background to also be well exposed. Good for night time shots of buildings with people in the foreground.

**SLR**. (Single Lens Reflex). This means the camera has a viewfinder that sees through the lens (TTL) by way of a 45°-angled mirror that flips up when the shutter fires and allows the light to strike the image sensor (or film). Basically, what you see is what you get.

**SmartMedia**. (SSFDC). A flash memory card that consists of a thin piece of plastic with laminated memory on the surface and uses a gold contact strip to connect to the camera. SmartMedia cards are available in various sizes.

**Spot Metering**. The camera's auto exposure system is focused on a very small area in the centre of the viewfinder to adjust the overall exposure value just for that area.

**Stitching**. Combining a series of images to form a larger image or a panoramic photo. Requires special post editing software.

**SuperCCD.** Fujifilm's image sensor used in their line of digital cameras.

**SVCD.** (Super Video Compact Disc). A CD-ROM disc that contains high quality video and audio. Normally, a SVCD can hold about 35-45 minutes (650MB) of video and stereo quality audio. The video and audio are stored in MPEG2 format, much like a DVD. SVCD video has better quality than VHS video.

**SVGA.** (Super VGA). This refers to an image resolution size of 800 x 600 pixels.

**Telephoto .** This is the focal length that gives you the narrowest angle of coverage, good for bringing distant objects closer. (i.e. 100mm, 200mm, 500mm etc.).

**TFT.** (Thin Film Transistor). Refers to the type of hi-resolution, colour LCD screen used in digicams.

**Thumbnail.** A small, low resolution version of a larger image file, which is used for quick identification or speedy editing choices.

**TIFF.** (Tagged Image File Format). An uncompressed image file that is lossless and produces no artefacts as is common with other image formats such as JPEG.

**Time-Lapse.** Capturing a series of images at preset intervals. Also known as Interval Recording or Intervalometer.

**Tran reflective.** This is a type of LCD display that uses ambient light as well as a backlight to illuminate the pixels. It can be seen more easily in bright, outdoor conditions.

**True Colour.** Colour that has a depth of 24-bits per pixel and a total of 16.7 million colours.

**TTL.** (Through the Lens). Used when talking about either an auto focus or auto exposure system that works "through" the camera's lens.

**Twain.** (Technology Without An Industry Name). Protocol for exchanging information between applications and devices such as scanners and digital cameras. TWAIN makes it possible for digital cameras and software to communicate with each other on PCs.

**Under exposure .** A picture which appears too dark because insufficient light was delivered to the imaging system. Opposite of over exposure.

**Unsharp Masking** (Unsharp Mask). The process by which the apparent detail and sharpness of an image is increased. Generally accomplished by the input scanner or through computer manipulation using editing software.

**USB.** (Universal Serial Bus). This is the data I/O port on most digicams and is also found on modern home PC and Mac computers. It is faster than the serial port and transfers up to 12Mb/s (megabytes per second) with v1.1 interfaces.

**USB 2.0.** The newest USB standard which is close in throughput speed to FireWire, up to 400Mb/s.

**UV Filter.** This is an Ultra Violet absorbing filter that helps overcome the abundance of blue in outdoor photographs. Not really necessary in digital photography as the camera's white balance system adjusts for the colour temperature of the scene. Can be used to protect the camera's lens from scratching, fingerprints or dirt.

**VCD .** (Video Compact Disc). A CD-ROM disc that contains video *and* audio. Typically a VCD can hold about 74 minutes (650MB) of video and stereo quality audio. The video and audio are stored in MPEG-1 format and follow certain standards (White Book). VCD video quality is roughly the same as VHS video.

**VGA.** Refers to an image resolution size of 640 x 480 pixels.

**Video Out.** This means that the digicam has the ability to output its images on television screens and computer monitors using either NTSC or PAL format.

**Viewfinder.** The eye level device you look through to compose the image.

**Vignetting.** The term that describes the darkening of the outer edges of the image area due to the use of a filter or add-on lens. Most noticeable when the zoom lens is in full wide-angle. It is also sometimes used as a special effect in the photo editing stage of development.

**White Balance .** Refers to the adjustment of the brightness of the red, green and blue components, so that the brightest object in the image appears white. See also "AWB"

**Wide angle.** The focal length that gives you the widest angle of view. I.e. 10mm, 16mm, 24mm etc.

**X3 Image Sensor .** Foveon's new image sensor for digital cameras that captures red, green and blue data on every pixel.

**xD-Picture Card.** A new flash memory card standard that was co-developed by Fuji film and Olympus in mid 2002. Rumoured at the time, to be replacing SmartMedia which had stalled at 128MB. xD is scheduled to go as large as 8GB (at the time of writing), in a form the size of a postage stamp.

**XGA.** This refers to an image resolution size of 1024 x 768 pixels.

**Zoom Lens .** A variable focal length lens. The most common on digicams has a 3:1 ratio (i.e. 35-105mm). Detachable zoom lenses include for example, 24-70mm, 70-200mm and 100-400mm

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