

Digital Imaging Glossary

A

Achromatic Colour

The primary colours of light (red, green, and blue) used by scanners, monitors, and other computer devices. When combined, they produce white light.

Anti-aliasing

A process used to remove the stair stepping effect found in diagonal lines of an image. Involves inserting dots of an in-between tone along the edges.

Array

A grouping of elements such as sensors.

Aspect Ratio

The relative proportion of the length and width of an image. For example, if you scan an original that measures 4 by 6 inches, it will have an aspect ratio of 4:6, or 2:3.

Attribute

Characteristics of a page or character, such as underlining, boldface, or font, that can be captured by an optical character recognition (OCR) program.

Automatic Document Feeder (ADF)

A device attached to a scanner that automatically feeds in one page at a time, allowing the scanning of multiple pages.

Auto Trace

A feature found in many object-oriented image editing programs, such as Adobe Illustrator, that allows you to trace a scanned image and convert it to an outline or vector format.

B

Bar Code

A small pattern of vertical lines that is read by a laser or an optical scanner, and which corresponds to a record in a database. An add-on component to imaging software, this feature is designed to increase the speed with which documents can be archived.

Batch Processing

The name of the technique used to input a large amount of information in a single step, as opposed to individual processes.

Bilevel

In scanning, a binary scan that stores only the information that tells whether a given pixel should be represented in black or white.

Binary

Base-two arithmetic, which uses only 1's and 0's to represent numbers. 0001 represents 1 decimal, 0010 represents 2 decimal and so forth. Binary numbers are used indirectly to refer to colour depth, as in 24-bit or 8-bit colour.

Bit

The abbreviation for binary digit, either 0 or a 1. Scanners typically use multiple bits to represent information about each pixel of an image.

Bit Depth

The number of bits used to represent colours or tones.

Bitmap

An image represented as pixels in a row and column format. (Note that Adobe refers to a bitmap as a two-colour image.)

Bleed

An image that continues to the edge of the page, often accomplished by having the image extend past the edge and then trimming the page to the finished size.

Blend

To improve the transition between image areas by smoothing the boundaries between them.

Blowback

Blowback is the practice of printing electronic - typically, previously scanned - documents to paper (blowing them back to tangible form).

Boolean Logic

The use of the terms "AND," "OR" and "NOT" in conducting searches. Used to widen or narrow the scope of a search.

Burn

To record or write data on a CD or DVD. (Can also refer to making a portion of an image darker.)

C

Caching (of Images)

The temporary storage of image files on a hard disk for later migration to permanent storage, like an optical or CD jukebox.

Calibration

A way of correcting for the variation in output of a device such as a printer or monitor when compared to the original image data from the scanner.

Carriage

The scanner component that moves down a page to capture an image.

Cast

A tinge of colour in an image.

Charge-Coupled Device (CCD)

A type of solid-state sensor used in scanners that captures light reflected or transmitted.

Chrome

Colour, combining hue and saturation.

Chromatic Colour

A colour with at least one hue available, with a visible level of colour saturation.

Contact Image Sensor (CIS)

Used in smaller, low-cost scanners, a new type of image sensor that has limitations on resolution.

Clone

To copy pixels from one part of an image to another.

Complementary Metal Oxide Semiconductor Sensor (CMOS)

A type of sensor used in scanners and digital cameras that is based upon a semiconductor process designed for digital electronics instead of analog electronics as in the CCD.

CMYK

The abbreviation for cyan, magenta, yellow, and black.

Colour Correction

Modifying the colour balance of an image, usually to produce a more accurate representation of the colours in an image. Colour correction compensates for the deficiencies of process colour inks, inaccuracies in a scan or colour separation, or an undesired colour balance in the original image.

Complementary Colour

The opposite hue of a colour, or the direct complement.

Compression

Squeezing a file (especially an image) into a more efficient form to reduce the amount of storage space required.

Contrast

The range between the lightest and darkest tones in an image. In a high-contrast image, the shades fall at the extremes of the range between white and black. In a low contrast image, the tones are closer together.

Crop

To trim an image or page.

D

Data Compression

A method of reducing the size of files, such as image files, by representing the sets of binary numbers in the file with shorter string that conveys the same information. Many image editing programs offer some sort of image compression as an optional mode when saving a file to disk.

Density

The lightness or darkness of an image or a portion of an image.

Desaturate

To remove colour from an image or hue.

De-shading

Removing shaded areas to render images more easily recognizable by OCR. De-shading software typically searches for areas with a regular pattern of tiny dots.

De-skewing

The process of straightening skewed (off-centre) images. De-skewing is one of the image enhancements that can improve OCR accuracy. Documents can become skewed when they are scanned or faxed.

De-speckling

Removing isolated speckles from an image file.

Device Driver

A software module that tells your operating system how to control a given piece of hardware, such as a scanner.

Diffusion

The random distribution of grey tones in an area of an image.

Digitize

To convert analog information, such as a continuous tone image, to a binary form that can be processed by a computer.

Direct Memory Access (DMA)

This term refers to the movement of data directly from memory to some other device, such as the disk drive, without first being loaded in the microprocessor.

Dithering

The process of converting greys to different densities of black dots, usually for the purposes of printing or storing colour or greyscale images as black and white images.

Dot

A unit used to represent the smallest element a printer can image, but sometimes used to represent the resolution of other devices, such as monitors or scanners.

Dots Per Inch (DPI)

The resolution of a printed page, expressed in the number of printer dots in an inch, abbreviated dpi. Scanner resolution is also expressed, somewhat inaccurately in dpi.

Downsampling

To reduce the amount of information in an image, usually to make it smaller or to discard some colours when changing bit depth. Also used when reducing the number of pixels in an image.

Dropout Colour

A colour invisible to a scanner during greyscale scan.

Duplex Scanners vs. Double-Sided Scanning

Duplex scanners automatically scan both sides of a double-sided page, producing two images at once. Double-sided scanning uses a single-sided scanner to scan double-sided pages, scanning one collated stack of paper, then flipping it over and scanning the other side.

Dynamic Range

The range of densities between the highlights and shadows of an image.

E

E-bible

A collection of scanned documents burned to CD or DVD with intelligent links to documents and word search facility.

Export

To transfer an image to another format.

F

Filter

An image transform tool used to process an image; for example, to sharpen, blur, or diffuse it. Often this is a plug-in in an image editor, but filters are also built into scanning software or hardware.

Flat

A low contrast image.

Flatbed Scanner

A flat-surface scanner that allows users to input books and other documents.

Frequency

The number of lines per inch in a halftone screen.

Full-text Indexing and Search

Enables the retrieval of documents by either their word or phrase content. Every word in the document is indexed into a master word list with pointers to the documents and pages where each occurrence of the word appears.

G

Gamma

A way of representing the contrast of an image, shown as the slope of a curve showing tones from white to black.

Gamma Correction or Gamma Compensation

The process of preconditioning or adjusting an image to correct for the gamma of the device used to reproduce the image, such as a printer or display screen. Without gamma compensation, the image will look too dark when printed or displayed.

Gang Scan

The process of scanning more than one picture at a time, used when images are of the same density and colour balance range.

Graphics Interchange Format (GIF)

A compressed image format popular on the Web. GIF was the first commonly used image format, but was largely replaced by JPEG.

Grey Component Removal

A process in which portions of an image that have all three process colours have an equivalent amount of grey replaced by black to produce purer, more vivid colours.

Greyscale

Grey values in an image.

H

Halftoning

A method of representing the grey tones of an image by varying the size of the dots used to show the image.

Highlight

The brightest values in an image.

Histogram

A bar like graph that shows the distribution of grey tones in an image.

Hue, Saturation, Brightness (HSB) Colour Model

A model that defines all possible colours by specifying a particular hue and then adding or subtracting percentages of black and white.

Hue

A pure colour.

I

ICR

Intelligent Character Recognition. A software process that recognizes handwritten and printed text as alphanumeric characters.

Image Processing Card (IPC)

A board mounted in either the computer, scanner or printer that facilitates the acquisition and display of images. The primary function of most IPCs is the rapid compression and decompression of image files.

Index Fields

Database fields used to categorize and organize documents. Often user-defined, these fields can be used for searches.

Interpolation

A method of changing the size, resolution, or colours in an image by calculating the pixels used to represent the new image from the old ones. It is also being used to increase bit-depth claims on scanners (as in "Enhanced Bit Depth" or "Enhanced Colour").

Interrupt

A signal to the microprocessor to stop what it is doing and do something else.

Invert

To reverse an image's tones to its opposite value: to make a negative.

J

Joint Photographic Experts Group (JPEG)

The JPEG format offers a compression scheme that makes the image file smaller than files in other formats by discarding some of the image information.

K

Keylines

Lines on mechanical art that show position of photographs or illustrations.

L

Landscape

The orientation of a page in which the longest dimension is horizontal.

Legal size

Paper or other media that is 8 1/2 inches wide and 14 inches long.

Line Art

Images typically consisting only of black and white lines.

Line Screen

The resolution or frequency of a halftone screen, expressed in lines per inch.

Lines Per Inch (LPI)

The yardstick used to measure halftone resolution.

Luminance

The brightness or intensity of an image. Determined by the amount of grey in a hue, luminance reflects the lightness or darkness of a colour.

M

Mask

To cover part of an image so it will not be affected by other operations.

MFP/MFD

Multifunction Printer or Multifunctional Device. A device that performs any combination of scanning, printing, faxing, or copy.

Midtones

Those portions of an image with a value between black and white, usually in the 25 percent to 75 percent range.

Moire

In scanning, an objectionable pattern caused by interference of halftone screens, often produced when rescanning a halftone and the sampling frequency of the scanner (spi) interferes with the halftone or dither pattern of the original.

Monochrome

Having a single colour. Typically refers to a black and white image, but could be any single colour image.

N

Noise

Random information that distorts an image, especially the background distortion of an analog image before it is converted to digital format.

Numbering

Putting a sequential number on each copy.

O

Optical Character Recognition (OCR)

The process of converting printed characters into the ASCII characters and other attributes of a bitmapped image of text, and so recognizes printed text as alphanumeric characters.

Optical Resolution

The resolution of a scanner that is calculated by dividing the width of the scanned area by the number of pixels in the CCD. Optical resolution is also often called true resolution and does not include any interpolation to increase pixels.

P

Palette

A set of tones or colours available to produce an image.

Parallel

To move data several bits at a time, rather than one at a time. Many scanners use parallel connections to move image information, SCSI or printer parallel.

Peripheral

Hardware that extends the capabilities of the computer, such as a printer, modem, or scanner.

Pixel

A picture element of an image that refers to a single dot within a digital photograph.

Pixels Per Inch (ppi)

The number of pixels captured per inch by a scanner. This is a more accurate rate term than dpi (dots per inch) when applied to scanners because scanners capture pixels.

Portable Network Graphics (PNG)

A lossless file format created to overcome deficiencies of the Graphics Interchange Format (GIF), such as the limited number of colours.

Port

A channel of the computer used for input or output with a peripheral. A scanner interface board includes a special port that the scanner can use to communicate with the computer.

Portrait

The orientation of a page in which the longest dimension is vertical.

Posterization

A banding effect produced by reducing the number of grey tones in an image.

Preview Scan

A preliminary scan that can be used to define the exact area for the final scan. A low- resolution image of the full page or scanning area as shown, and a frame of some type is used to specify the area to be included in the final scan.

R

Raster Image

An image defined by rows and columns of pixels. Scanners capture images as raster images, although some can convert them to vector images.

Raster to Vector Conversion

The process of examining a raster image for lines and strokes, and creating a new image that looks the same but is made up of lines rather than pixels. When a person draws, they are creating a vector image. Vector images can be enlarged much more accurately and often have a smaller file size.

Redaction

A type of document annotation that provides word-level security by concealing from view specific portions of sensitive documents. Like all annotations in a document imaging system, redactions should be image overlays that protect information but do not alter original document images.

Reflection Copy

Original artwork that is viewed and scanned by light reflected from its surface, rather than transmitted through it.

Rescale

To resize an image.

Resolution

The number of pixels or dots per inch in an image. Also the capability of a scanner to resolve detail, which requires quality optics as well as high ppi or spi.

Retouch

To remove flaws or to create a new effect in an image.

S

Sample Rate or Samples Per Inch

The number of pixels per inch captured by a scanner.

Saturation

An attribute of a colour that describes the degree to which a pure colour is diluted with white or grey. A colour with low colour saturation appears washed out. A highly saturated colour is pure and vivid.

Scalable Black-And-White Image (spi)

These images are vector drawings instead of raster drawings and can be enlarged and reduced after the scan without introducing scaling defects. Some HP scanners can create scalable black-and-white images.

Scanner

An input device commonly used to convert paper documents into computer images.

Small Computer Systems Interface (SCSI)

A computer industry interface standard used for connecting peripherals to personal computers.

Serial

Transmitting information one bit at a time in sequential order. Used with modems as well as some scanners. USB and Firewire are very fast serial interfaces.

Shade

A colour with black added.

Sharpening

Increasing the apparent sharpness of an image by increasing the contrast between the adjacent tones or colours.

Smoothing

To blur the boundaries between tones of an image, usually to reduce a rough or jagged appearance.

T

Threshold

A predefined level used by scanners to determine whether a pixel will be represented as black or white.

Thumbnail

A miniature copy of a page or image, which gives you an idea of what the original looks like without having to open the original file or view the full size image.

Tagged Image File Format (TIFF)

A graphic file format originally developed specifically for scanners. It can be used to store greyscale and colour images and now is graphic standard image file format supported by most applications, printers, and scanners.

Transparency Adapter

An add-on device used with a scanner to scan slides and other see-through media.

TWAIN

A software driver interface between a scanner and other image capturing devices that lets you scan images from a scanning application directly into an application like Adobe Photoshop.

U

Unsharp Masking

A technique used by scanners and image editors to increase the sharpness of an image.

Universal Serial Bus (USB)

An advanced serial interface that supports large numbers of devices. USB is much faster than traditional serial interfaces.

V

Vector Image

An image defined by the beginning and ending points of each line.

Video Scanner Interface

A type of device used to connect scanners with computers.