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Scanner Glossary: A Definition Of Terms And Graphic Formats

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Brightness:

refers to the overall whiteness of the scanned image.

Charge-Coupled Device (CCD):

is used to sense the reflected light as an image is scanned. It consists of three layers of elements, collecting each line of image data as an array. The first layer converts the reflected light into an analog signal while the second and third layers act as buffers.

Compositions:

is the methods of recording or interpreting scanned data. There are three common compositions: Line Art, Halftone, Gray-scale.

Contrast:

refers to the range between black and white; a low contrast would emphasize shades of grays where as high contrast would emphasize blacks and whites.

EPSF, Encapsulated PostScript File Format:

EPSF is the format used for importing PostScript files between many environments. This format was designed and implemented by Adobe. Basically an EPSF file follows the same standards as a PostScript file. Following is a brief summary of the exceptions: The EPSF file begins with a header of structuring comments which include: required comments (version, bounding box), general information comments (creator, title, date, end), font management comments (list of fonts in document, needed fonts) file inclusion comments (for including a separate file). A QuickDraw representation of the PostScript file may be saved in the resource fork in PICT format for screen display on a Macintosh. Or use MetaFile or TIFF for screen display in an MS-DOS environment. If a screen representation is not included, a gray box will be displayed matching the size defined by the bounding box in the header. These screen images can be manipulated within the application into which they have been imported. The application will be responsible for tracking the changes to the image and relaying this information in Postscript prior to the EPSF file.

Flatbed scanner:

is an imaging device where the document to be scanned remains stationary while the optical sensing assembly moves down the document one scan-line at a time much like a photocopier. This method allows for a more accurate scan and permits scanning of books or other thick materials.

Graymap:

is the relationship between the number of gray levels used in scanning and the densities detected in the original. The number of gray levels can be linear so that there is an equal number of light shades and dark shades or curved so that more variations would be detected within the darker tones.

Grayscale:

composition which records 4 to 8 bits of information for each dot, permitting 16 to 256 shades of gray. Grayscale requires large amounts of memory for data storage. Primarily used for scanning pictures which will be displayed on equipment that supports gray scales. Images created in gray scales are best stored either on large hard disks or CD-ROM.

Halftone Pattern/Dither:

is a matrix of threshold values that determine the patterns of black and white dots used to represent different shades of gray. The threshold levels contained in the matrix are applied to corresponding groups of scanned data. Primarily used for scanning pictures which will be displayed on equipment that does not support gray scales.

Halftone:

is the composition method of using combinations of black and white dots which form patterns to represent gray shades. Primarily used for scanning pictures which will be reprinted.

Image processing algorithms:

are used to manipulate the scanned data. An example would be inverting the scanned image.

Line Art:

is bi-level scanning which records only black and white data. This composition is used primarily for scanning text or line drawings containing no gray shades. Primarily used for scanning text.

Optical Character Recognition (OCR):

is software that enables a digitizing device or bit mapped image to be translated into editable text .

PICT:

Apple's QuickDraw Picture definition. The PICT file is a data fork file with a header, followed by a picture data structure. This data fork file contains a QuickDraw data structure within which a graphic application places drawing primitives, data structures that specify the geometry of basic graphical shapes, to represent an object or image graphic data. The pictures consist of opcodes followed by picture data. (Opcodes are predefined numbers which the QuickDraw function DrawPicture uses to determine what object to draw or what mode to change.) PICT2 opcodes are 2 bytes in length. PICT2 opcodes support color QuickDraw. A picComment opcode provides a means for passing data and commands, that are not supported by QuickDraw, directly to an output device.

PTNG:

MacPaint Document Format. MacPaint documents use only the data fork. It

contains a 512 byte header consisting of the version number and patterns, followed by the compressed data representing a single bit map of 576 x 720 pixels. The PackBits procedure in the Macintosh ROM is used to compress the data into 720 scanlines. This condenses a typical MacPaint document to 10K bytes that would occupy 52K of disk

Reflective Density:

is the measure of reflected light of each element. Black reflects less light than white, gray shades reflect varying measures between those of black and white.

Resolution:

is expressed in dots per inch. Most scanning devices available for the Macintosh are capable of reading images at resolutions of 75 dpi to 300 dpi. The selected scan resolution value should match the capability of the output device. For example, if the image will only be displayed on a Macintosh screen 75 dpi would be an acceptable resolution but if the output will be to a LaserWriter you would want to select 300 dpi as the resolution of the scanned image.

Scanning Digitizer:

consists of precision optical devices sensing light and dark areas of printed material by measuring reflected light.

Sheet-feed Scanner:

is an imaging device where the optical sensing assembly remains stationary as the document is mechanically fed through the device.

Threshold:

setting which determines the level or scanned density at which a gray shade is recorded as black or white.

TIFF:

Tag Image File Format. TIFF was designed through the combined efforts of Aldus and Microsoft for the interchange of digital image data independent of specific operating systems, file systems or processors. It has been designed for flexibility and ease of expanding to incorporate future advances in image processing (for example, color lookup tables). The TIFF file consists of a short header (specifying byte order, version number, offset to the Image File Directory), the Image File Directory (number of fields, field entries, next IFD offset), and the data. The field entry bytes contain the Tag, field type, length, offset to field value. A collection of fields describe the image.

Video Digitizer:

converts video signals into digital data. Because it is accepting video input you are able to digitize three dimensional and two dimensional objects.

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