

Glossary

This glossary defines all acronyms and selected terms used in this guide.

Numerics

2D. Two dimensional.

3D. Three dimensional.

4D. Four dimensional.

5D. Five dimensional.

A

ACR. American College of Radiology. The ACR, in conjunction with National Electrical Manufacturers Association, developed the Digital Image Communication in Medicine standard.

AE. Application entity.

Analyze. Unix-based medical-imaging display and analysis software developed by the Mayo Foundation. MIPAV allows researchers to process, analyze, and visualize Analyze-formatted image files on virtually any platform.

API. Application program interface. Pieces of code that are used to perform common tasks, such as generate a standard window frame. Software developers often incorporate these pieces of code into their programs. An API is analogous to a package of form letters; APIs reduce programming time because common functions have already been written.

BMP. Extension for Windows Bitmap formatted files. BMP is the standard bitmap graphics file format that is used in the MS Windows environment.

boolean. This data type refers to data that represents symbolic relationships between entities, such as those implied by the logical operators AND, NOT, and OR. Examples of valid boolean values are TRUE and FALSE.

bytecode. Compiled format for Java code. Bytecode is analogous to object code. When the Java program is written and compiled, the compiled program is written in bytecode. When you execute the bytecode program, it is interpreted by the platform-specific Java Virtual Machine, which serves as an interface between your platform and the platform-independent bytecode. Java bytecode can be ported to almost any platform and executed, provided the correct Java Virtual Machine has been installed.

CIT. Center for Information Technology. CIT provides, coordinates, and manages information technology so that computational science at the National Institutes of Health is advanced.

color 24. Color 24 is commonly referred to as 24-bit color images. Full [RGB](#) color requires that the intensities of three color components be specified for each and every pixel. It is common for each component intensity to be stored as an 8-bit integer, and so each pixel requires 24 bits to completely and accurately specify its color. Image formats that store a full 24 bits to describe the color of each and every pixel are therefore known as 24-bit color images.

CR. Computed radiography.

C-STORE. Composite Storage.

CT. Computed Tomography.

data type. A set of values from which a variable, constant, function, or expression may take its value. MIPAV accommodates the following data types: Boolean, Signed Byte, Unsigned Byte, Signed Short, Unsigned Short, Integer, Long, Float, Double, and Color 24.

DCB. Division of Computational Bioscience. DCB is a research and development organization that provides engineering and computer science expertise to support biomedical research activities at the National Institutes of Health (NIH). DCB applies image processing and medical imaging technologies, high-performance parallel computing, high-speed networking, signal processing, state-of-the-art optical and electronic devices, bioinformatics, database technology, mathematical and statistical techniques, and modern hardware and software engineering principles to help solve biomedical research problems at NIH.

DICOM. Digital Image Communication in Medicine. Standard protocol developed by the American College of Radiology (ACR) and National Electrical Manufacturers Association (NEMA). Specifies a standard method of communication between two devices.

Double. Primitive, 64-bit, data type. Double is a floating point data type that accommodates decimal values, up to 14 or 15 significant digits of accuracy. Valid values can range from -1.7×10^{308} to 1.7×10^{308} .

Endian. Data organization strategy. Refers to the way computer processors store data in memory. Big-endian format stores the most significant byte (MSB) first. Little-endian format stores the least significant byte (LSB) first.

FF. Feet first.

Float. Primitive, 32-bit, data type. Float is a floating point data type that accommodates decimal values, up to 6 or 7 significant digits of accuracy. Valid values can range from -3.4×10^{38} to 3.4×10^{38} .

FTP. File Transfer Protocol.

GIF. Graphic Interchange Format. A compressed, bit mapped, graphics file format that supports color and various resolutions.

GUI. Graphical user interface. A user interface that is based on graphics rather than text.

header offset. Space reserved at the beginning of some graphic files that contain non-image data.

HF. Head First

HP. Hewlett-Packard.

HSB. Hue Saturation Brightness. In this color model, hue is the color, saturation is the purity of the color; and brightness indicates the brightness or darkness of the color.

ID. Identifier.

IE. Information Entity.

integer. Primitive, 32-bit, data type. Integer is sometimes abbreviated as int. Integer accommodates values that are whole numbers. Valid values range from $-2,147,483,648$ to $+2,147,483,648$.

interlaced. A display technique that increases resolution. Half of the horizontal lines are drawn on the monitor during the first pass; the other half are drawn during the second pass. For example, the odd numbered lines may be drawn during the first pass and the even numbered lines during the second pass.

interpolation. The generation of intermediate values based on known values.

IOD. Information Object Definition

IOD. Information Object Definition. Provides an abstract definition of real-world objects applicable to the communication of digital medical information.

IP. Internet Protocol.

Java. High-level, object-oriented, platform-independent programming language developed by Sun Microsystems.

Java VM. Java Virtual Machine.

JIT. Just-In-Time compiler. The JIT converts Java bytecode into machine language instructions.

JPEG. Extension for Joint Photographics Experts Group formatted files. Also refers to a compression type.

Linux. An operating system that is an open source implementation of UNIX.

Long. Primitive, 64-bit data type. Long is a variation of the integer data type. Long accommodates values that are whole numbers. Valid values range from -9,223,372,036,854,775,808 to +9,223,372,036,854,775,808.

LSB. Least Significant Byte. Also see endian.

LUT. Lookup Table.

Mac OS. Macintosh Operating System

MB. Megabyte

MIPAV. Medical Image Processing, Analysis, and Visualization program. MIPAV is an n-dimensional, general-purpose, extensive image processing, and visualization program. It is platform-independent and assists researchers with extracting quantitative information from various medical imaging modalities.

MR. Magnetic Resonance.

MSB. Most Significant Byte. See endian for more details.

MSEE. Master of Science in Electrical Engineering

MTX. Extension for MIPAV's transform matrix files.

NEMA. National Electrical Manufacturers Association.

NIH. National Institutes of Health.

NM. Nuclear medicine.

OS. Operating system

PACS. Picture Archiving System.

PCX. Extension for PC Paintbrush formatted graphic files.

PDU. Protocol Data Unit.

PET. Positron Emission Tomography.

PICT. Extension for Macintosh formatted graphic files.

PLT. Extension for MIPAV's graphics files.

PNG. Extension for Portable Network Graphic formatted graphic files.

PSD. Extension for Adobe Photoshop formatted graphic files.

RAM. Random Access Memory

Raster. Bitmap file type.

Raw. File type.

resolution. The sharpness and clarity of an image.

RGB. Red Green Blue.

RIS. TBD.

RLE (Run Length Encoding). The file extension for graphics that have been reduced using run-length encoding. RLE is a compression method that converts consecutive identical characters into a code consisting of the character and the number marking the length of the run.

ROI. Region of Interest.

RS. Extension for Sun Raster formatted graphics files.

SCP. Service Class Provider.

SCU. Service Class User.

SGI. Silicon Graphics Incorporated.

short. Primitive, 16-bit data type. Short is a variation of the integer data type. Short accommodates values that are whole numbers. Valid values range from 0 to +32,767.

signed byte. Primitive, 8-bit, data type. Signed byte is a variation of the integer data type. The signed byte data type signifies that valid values fall within a range of whole numbers. Valid values range from -128 to +128. Negative values (indicated by the negative sign) are permitted, hence the term, signed byte.

signed short. Primitive, 16-bit data type. Signed short is a variation of the integer data type. The signed short data type signifies that valid values fall within a range of whole numbers. Valid values range from -32,768 to +32,767. Negative values (indicated by the negative sign) are permitted, hence the term, signed short.

Solaris. Unix-based operating environment that was developed by Sun Microsystems. Solaris consists of the Sun operating system and a windowing system.

SOP. Service Object Pair

SOP. Service Object Pair.

SPECT. TBD.

TCP/IP. Transmission Control Protocol/Internet Protocol. The suite of communications protocols used to connect hosts on the Internet.

TGA. Extension for Truevision Graphics Adapter formatted graphics files.

TIFF. Extension for Tag Image File Format formatted graphics files.

UID. Unique Identifier.

UNIX. Multi-tasking, multi-user operating system developed by Bell Labs. Many versions of UNIX abound, including Linux.

unsigned byte. Primitive, 8-bit, data type. Unsigned byte is a variation of the integer data type. The unsigned byte data type signifies that valid values must fall within a specified range of positive, whole-number values. Valid values range from 0 to +128. Negative values (indicated by the negative sign) are not valid, hence the term, unsigned byte.

unsigned short. Primitive, 16-bit data type. Unsigned short is a variation of the integer data type. The unsigned short data type signifies that valid values must fall within a specified range of positive, whole-number values. Valid values range from 0 to +32,767. Note that negative values (indicated by the negative sign) are not valid, hence the term, unsigned byte.

US. Ultrasound

VM. Virtual Machine.

VOI. Volume of interest (used interchangeably with ROI).

voxel. Smallest distinguishable cube-shaped part of a 3D image.

XBM. X BitMap file format.

XPM. X PixMap file format.

