FISWG Glossary

Term	Form of Speech	Definition	Discussion Points
		A	
Accessories	n	Removable items (e.g., glasses, sunglasses, colored contact lenses, Bluetooth devices, headphones, piercings, bandages) that are worn on, in, or near the face that may obstruct any head, face, or neck features.	
ACE-V	n	A scientific method of analysis, comparison, evaluation, and verification utilized in most comparative processes.	
Ad Hoc Image	n	See Uncontrolled Image.	
Algorithm	n	A set of instructions or steps that tells a computer system how to perform tasks.	In the context of facial recognition technology, facial recognition algorithms detect, analyze, map, and compare faces.
Alterations	n	Refers to any intentional modification to the face with the exception of scarring.	
Analysis	n	(1) The assessment of an image to determine suitability for comparison, including the ability to discriminate significant features. (2) The first step of the ACE-V method.	
Annotation	n	An explanation added to a diagram that details a particular anatomical feature or references a markup added to the facial images.	
Anthropometry	n	Scientific study of the measurements and proportions of the human body.	
Aptitude	n	Natural talents, special abilities, or the capacity to learn - trainings that are considered highly stable over a long period of time.	
Aspect Ratio	n	Ratio of width to height. This can be specific to pixels or images.	
Assessment	n	A quick image-to-person or image-to-image comparison typically conducted in a high throughput environment (e.g., screening and access control applications or field operations).	
Atmospheric Distortion	n	Uneven magnification or illumination of elements within an image that may obscure details.	
		B	
Backlight	n	A light source placed behind a subject in a controlled capture that reduces background shadows.	
Barrel Distortion	n	A type of lens distortion which is observed as straight lines appearing to bend away from the center of the image, with the center of the image enlarged.	
Batch Mode Search	n	A mode of searching in which a group of probes are simultaneously or sequentially launched. Such computer resource intensive searches are usually performed during non-peak usage hours (e.g., nights or weekends). Also known as batch search mode.	
Bias	n	An inclination of temperament or outlook. (Webster). A systemic tendency to over- or under-estimate the true value of a measurement. Bias can result from human factors or from factors related to the method or calculation being used. See also Cognitive Bias, Confirmation Bias, and Contextual Bias.	
Binning	n	(1) Any technique used by a Facial Recognition System (FRS) to organize or optimize searching based upon some piece(s) of metadata. (2) Process of parsing (examining) or classifying data in order to accelerate and/or improve biometric matching.	
Biometric Match	n	A determination that two biometric samples (see biometrics below) correspond to the same source based on some level of computer-evaluated similarity. This does not inherently imply that the probe and candidate are the same person.	
Biometrics	n	The measurement and analysis of unique physical or behavioral characteristics, especially as means of verifying a personal identity (Webster).	

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Term	Form of Speech	Definition	Discussion Points
		C	
Capture	v	The process of collecting a biometric sample from an individual.	
Case Original Image	n	The original submitted case image that was received.	
Certification Authority	n	A body that issues a (biometric) document and certifies that the data stored on the document is genuine.	
Characteristic Descriptors	n	Minutiae of the component characteristics.	
Cheeks	n	Refers to the regions of the face surrounded by the eyes, ears, nose, mouth, chin, and jawline.	
Chin	n	Refers to the area of the face defined by the lower jaw below the mouth.	
Chromatic Aberration	n	Color fringing that creates color and tonal changes in the high contrast areas of an image.	
Class Characteristics	n	Characteristics common to many individuals within a group (e.g., the overall shape of the nose, eyes, mouth).	
Clustering	v	The automated grouping of people represented within a collection of facial images based on computer evaluated similarity.	
CMYK	n	The color gamut spectrum widely used in printing. Cyan, Magenta, Yellow, and Black.	
Cognitive Bias	n	(1) A mental error caused by one's simplified information processing strategies. It does not result from any emotional or intellectual predisposition toward a certain judgment, but rather from subconscious mental procedures for processing information. (2) A mental error that is consistent and predictable. (3) Influences that may affect the reliability and validity of one's observations and conclusions.	
Color Depth	n	The bit scale of the image.	For example, 8-bit grayscale and 24- or 48-bit RGB (Red, Green, Blue).
Color Misrepresentation	n	A change in the actual color of subjects or objects depicted in an image.	
Comparison	n	The second step of the ACE-V method; the examination of two or more samples to establish similarities and dissimilarities.	
Complex Distortion	n	A combination of both barrel and pin cushioning, and can result in uneven magnification of the image.	
Compression	n	The process of reducing the size of a data file.	
Conclusion	n	A reasoned deduction or inference.	
Confirmation Bias	n	Tendency to focus on data or interpret information in a manner that supports one's preconceptions.	
Contextual Bias	n	Influence of extraneous information that is not needed to draw the conclusion.	
Control	n	A sample or standard against which other conditions can be compared in a scientific experiment.	
Controlled Image	n	An image captured in accordance with facial identification (FI) or facial recognition (FR) standards or guidelines.(e.g., a driver's license photo).	
CSI Effect	n	The perception of the near-infallibility of forensic science in response to popular media.	
		D	
Descreen	n	The array of dots used in the halftone or desktop printing processes is called a screen where the color dots are placed at different angles, and a scanning software option can be used to minimize the screen pattern by use of a screen frequency filter algorithm.	This filter is called a Descreen option setting. CMYK stands for Cyan, Magenta, Yellow, and black.

FISWG Glossary

Term	Form of Speech	Definition	Discussion Points
Digital Zoom	v	Method of decreasing the apparent angle of view of a digital image accomplished by cropping an image down to a centered area with the same aspect ratio as the original. Digital zoom could be misleading because it enlarges the image without adding extra details.	
Doppelganger	n	An apparition or double of a living person.	
Dots Per Inch	n	The resolution setting of the printer and resolution capture for printed media.	Use of DPI as a resolution term when scanning printed media will enable the use of post-scanning descreen software enhancement to more accurately reproduce the original artwork or image. For example, a 1200 DPI resolution printer will deposit a much higher density of ink per inch than a 300 DPI printer.
		E	
Ears	n	Refers to the external characteristics of the ears.	
Enroll	v	The act of capturing a sample, creating a template, and entering the template into a database.	
Evaluation	n	The third step of the ACE-V method, where an examiner assesses the value of the details observed during the analysis and comparison steps and reaches a conclusion. Ascertaining the value of dissimilarities and similarities between two facial images.	
Examination	n	A comparison of image(s)-to-image(s) often used in a forensic application.	
EXIF	n	(1) Acronym for exchangeable image file format. (2) EXIF is a specification for the image file format used by some digital cameras to add image capture metadata to file formats. EXIF headers can be found in file formats such as JPEG, TIFF, and RIFF WAV.	
Expression	n	Change in facial characteristics resulting from muscle movement or position.	
Eyebrows	n	Refers to the strips of hair above the eyes.	
Eyes	n	Refers to the orbital region below the eyebrows and above the cheeks.	
		F	
Facal Image Capture	v	The process of collecting a biometric sample from an individual via a sensor.	
Face Detection	n	Automated determination of the locations and sizes of human faces in digital images.	
Face Matching	n	A type of face identification task requiring a perceptual decision whether two simultaneously presented faces (photo, video, live) depict the same person or different people.	
Face Recognition	n	(1) By humans, the cognitive process by which an observer identifies a person as being one they have seen before.	
Face/Head Composition	n	Overall configuration of the facial components, to include their alignment and relative sized, internal to a single face.	
Face/Head Outline	n	Overall shape of the head (cranial vault) and face.	
Facial Assessor	n	A human conducting a comparison in a high throughput environment (see Assessment).	
Facial Comparison	n	A manual process to identify similarities or dissimilarities between two (or more) facial images or facial image(s) and a live subject for the purpose of determining if they represent the same person or different person.	
Facial Components	n	Gross features considered in virtually all comparison.	

FISWG Glossary

Term	Form of Speech	Definition	Discussion Points
Facial Examination	n	A human undertaking a formal systematic examination (e.g., ACE-V) of facial images to determine if the same person is depicted.	
Facial Hair	n	Refers to the hair on the face typically covering the cheeks, chin/jaw, upper and lower lip, and neck of the face.	
Facial Identification (FI)	n	The discipline of image-based comparisons of human facial features.	
Facial Line	n	Refers to wrinkles, folds, or creases.	
Facial Mapping	n	(1) The process of locating defined anthropometric landmarks. (2) A colloquial term often mistakenly used to describe facial comparison.	
Facial Marks	n	Refers to portions of the skin that contain a different level of pigment that the rest of the surrounding skin.	
Facial Recognition System (FRS)	n	A computer system that leverages facial recognition technology.	An FRS contains multiple components (hardware, software, data).
Facial Recognition Technology (FRT)	n	An algorithm-based technology that compares facial images and produces a resulting similarity score.	There are two main types of comparisons in an FRT, *identification* and *verification*.
Facial Review	n	(1) The review of a candidate list to identify possible matches. (2) One-to-one verification conducted in a high-throughput environment (e.g., border crossing).	
False Match Rate (FMR)	n	Proportion of the completed biometric non-mated comparison trials that result in a false match. This will be referred to as FAR (false acceptance rate) and does not include errors from images which do not create valid templates.	
False Non-Match Rate (FNMR)	n	Proportion of the completed biometric mated comparison trials that result in a false non-match. This will be referred to as FRR (false reject rate) and does not include errors from images which do not create valid templates.	
Familiar Faces	n	Faces of people known to an observer.	This includes the faces of family, friends, and colleagues, but also the faces of celebrities and people we encounter regularly (e.g., barista at a café). Familiarity is largely developed over multiple, separate encounters.
Features	n	(1) Observable class or individual characteristics of the face. (2) The components of biometric templates.	
Feedback	n	Information provided to trainees to minimize the gap between their current and optimal performance.	
Forehead	n	Refers to the part of the face above the eyes, including the brow ridges.	
Forensic Report	n	A document whose intent it is to provide information to assist a trier of fact (e.g., judge or jury).	
Frontal Pose	n	A facial image captured directly in front of the subject with the focal plane approximately parallel to the plane of the subject's face.	
		G	
Gallery	n	The FR system's database, which typically contains all known-person templates.	
Gnathism	n	Apparent convexity or concavity of the mouth complex, related to the relative projection of the upper or lower teeth, or both).	
Gonial Angle	n	The point at which the lower border of the mandible abruptly changes direction from a primarily horizontal line to a primarily vertical line.	
Guideline	n	Recommended practice that allows some discretion or leeway in its interpretation, implementation, or use.	
		H	

FISWG Glossary

Term	Form of Speech	Definition	Discussion Points
Hair	n	Refers to the shape and distribution of head hair and does not include other facial hair (eyebrows, lashes, facial hair).	
Head Coverings	n	Removable objects (e.g., hats, caps, scarves, wigs, spit masks) that obstruct any head, face or neck features.	
Histogram	n	A graph of a frequency distribution in which rectangles with bases on the horizontal axis are given widths equal to the class intervals and heights equal to the corresponding frequencies. In digital images, a histogram is frequently used to document the number of pixels of a given brightness value (e.g., 0-255).	
Holistic Process	v	The innate human ability of comparing faces by looking at the face as a whole without specifically considering the component parts in osolation.	
Horizontal Video Misalignment	n	Horizontal misalignment is observed where subjects and objects in the image are positioned differently between alternating horizonal lines of a video image.	
Hot Spots	n	Bright areas of light reflection that reduce the visibility of features.	
		I	
Identification	v	A task where the facial recognition system searches a facial image against a database and returns a corresponding candidate or candidate list and associated similaritiy scores.	
Identity	n	The collective set of biographic data, images, or templates assigned to one person.	
Image processing	n	In image analysis, any activity that transforms an input image into an output image.	
Individual Characteristics	n	Characteristics allowing one to differentiate between individuals having the same class characteristics (e.g., scars and marks).	
Intentional Alteration	n	A temporary or permanent deliberation modification to the face (e.g., tattoos, piercings, make-up).	
Interpolation	n	The process whereby the number of pixels comprising an image is increased based on the available pixels.	
Investigative Lead Report	n	A document whose intent it is to provide information to operational personnel to assist them with meeting their objective.	
		J	
Jawline	n	Refers to the area of the face defined by the lower border of the mandible between the chin and the gonial angle.	
		K	
Known image	n	The image of an individual associated with a known or claimed identity and recorded electronically or by other medium (also known as exemplars).	
		L	
Lamina	n	A clear/low opacity sheet of film or security designed film that is sealed onto a substrate by cold or hot adhesion.	
Lens Flare	n	Haze, bright streaks, orbs, or polygonal bright regions within an images as a result of a bright light source.	
Levels of Conclusion	n	A verbal or numeric scale that indicates the level of confidence regarding identification or exclusion of a source.	
Lighting	n	The illumination of the subject.	
Lighting Direction	n	The direction of the illumination source.	
Lights Out	n	An automated conclusion based upon threshold scores with no human involvement.	

FISWG Glossary

Term	Form of Speech	Definition	Discussion Points
Lines Per Inch	n	A term in resolution setting in scanner software used for scanning original artwork for printing.	
Liveness Detecion	v	An algorithm-based technology used to establish and confirm the physical presence of a human being.	
Lossless Compression	n	File size reduction process in which no data is lost and all data can be retrieved in its original form (e.g., TIF with LZW compression).	
Lossy Compression	n	File size reduction process in which data is lost and cannot be retrieved in its original form (e.g., JPEG).	
		M	
Make-up	n	Removable cosmetics (e.g., costume make-up, excessive make-up, facial make-up appendages) that are applied to the face that may obstruct any head, face, or neck features.	
Markup	n	An identifier (e.g., symbols, shapes) added to a diagram that highlights a particular anatomical features.	
Match/Matching		See Identification.	
Mentor	n	An individual who has competency, proficiency, and experience in the relevant role.	
Mentorship	n	A program administered under the direction of a competent facial reviewer or examiner during the course of a trainee's professional development. Mentorship should include, but is not limited to, the evaluation of skills and competencies, the review and supervision of facial comparison casework, and where applicable, the observation of expert testimony.	
Metadata	n	Non image-based information associated with an image file.	
Mirroring	n	An image flipped in the horizontal plane.	
Moiré	n	A moiré pattern occurs when a scene or an object that is being scanned contains repetitive details (such as lines, circles, dots, etc.) that exceed the sensor resolution.	As a result, many scanners produce a moiré pattern that is not visible in the physical item being scanned.
Morphological Analysis	n	The direct comparison of class and individual facial characteristics without explicit measurement. The method of facial comparison in which the features and components of the face are compared.	
Mouth	n	Refers to the entire oral region including the teeth and encompasses the philtrum.	
		N	
Natural Expression	n	An expression where the facial characteristics and muscles are relaxed.	
Neck	n	Refers to the transitional zone between the head and the trunk/limbs of the body.	
Neutral Expression	n	An expression where the eyes are open and the mouth is closed.	
Noise	n	Fixed, random, and semi-random spots, shapes, or patterns.	
		O	
One-to-one (1:1)	v	(1) In humans, the direct comparison of facial features in one image ot facial features in another image by a trained practitioner. (2) in biometric system, a task where the facial recognition system compares one facial image to another facial image, resulting in a computer-evaluated similarity score. *See also Vertification (2).*	
Original Image	n	An accurate and complete replica of the primary image, irrespective of media	For film and analog video, the primary image is the original image.
		P	

FISWG Glossary			
Term	**Form of Speech**	**Definition**	**Discussion Points**
Perspective Distortion	n	Warping or transformation introduced to an object's appearance in an image caused by insufficient subject to camera distance (e.g., larger nose or smaller ears). Photographs made from a distance of less than two meters tend to introduce noticeable perspective distortion. Magnification of the subjects' features that are closer to the camera making them appear larger than closer to the camera making them appear larger than those further away.	
Photo-Anthropometric Facial Comparison	n	Explicit measurement of landmarks on the face and comparison of these measurements between images.	
Photographic Comparison	n	An assessment of the correspondence between features in images and known objects/images for the purpose of rendering an identification, elimination, or a qualified conclusion (as opposed to a demonstrative exhibit). The measurement of dimensions and angles of anthropological landmarks and other facial features visible in an image in order to quantify characteristics and proportions.	
Pin-Cushioning Distortion	n	A type of lens distortion which is observed as straight lines appearing to bend towards the center of the image, with the center of the image more compressed.	
Pitch	n	The rotation in degrees about the (horizontal) x-axis. Frontal poses have a pitch angle of 0 degrees. Positive angles represent faces looking down (a counter-clockwise rotation around the x-axis). (ISO/IEC 19794-5).	
Pixel Aspect Ratio	n	The ratio of the width to the height of a rectangle, such as an image, a pixel, or an active video frame	
Pixels Per Inch	n	Measurements of the pixel density of an electronic image device, such as a computer monitor or camera.	Use of PPI as a resolution term is generally used with digitally captured images (i.e., photography). For example, a 1200 PPI image will produce a higher quality image than a 300 PPI image.
Poor Contrast	n	The limited distribution or separation of light and dark.	
Pose	n	The orientation of the face with respect to the camera, consisting of pitch, roll, and yaw. Common poses are frontal and profile.	
Post-processing	v	Any process applied to an image after it has been captured to enhance for further use.	Post-processing can include cropping, exposure adjustments, brightness corrections, etc.
Presentation Attack	n	The deliberate presentation of a face to a facial recognition system's capture component with the intent of causing it to make an incorrect verification or identitification decision.	
Presentation Attack Detection	v	An algorithm-based technology used to help detect presentation attacks	
Printed Image	n	A printed image is the production of a digital image on a substrate by a direct or indirect printing process.	
Probabilistic Model	n	Statistical analysis tool that estimates, on the basis of past (historical) data, the probability of an event occurring.	
Probe	n	The facial image or template searched against the gallery in an FR system.	
		R	
Relative Frequency	n	How often facial features or combinations thereof occur in a given population.	
Resolution	n	The act, process, or capability of distinguishing between two separate but adjacent elements of detail in an image. Resolution normally has three components: spatial (e.g., pixels per inch), spectral (e.g., number of colors), and radiometric (e.g., number of shades).	

FISWG Glossary			
Term	**Form of Speech**	**Definition**	**Discussion Points**
Review	n	A comparison of image-to-image often used in either investigative and operational leads or intelligence gathering applications.	
RGB	n	A color gamut spectrum that stands for color channels Red, Green, and Blue.	An example of the use of RGB is in the bit depth range where 48-bit refers to 16-bits per color channel, i.e., 16 Red, 16 Green, 16 Blue.
Roll	n	The rotation in degrees about the z-axis (the horizontal axis from front to back). Frontal poses have a roll angle of zero degrees. Positive angles represent faces tilted toward their right shoulder (counter-clockwise rotation around the z-axis). A roll angle of zero degrees denotes that the left and right eye centers have identical Y coordinates (ISO/IEC 19794-5).	
Rolling Shutter Effect	n	Skewing or stretching of fast moving objects in a an image where the sensor captures images line by line.	
		S	
Scar	n	Refers to dysmorphic or discolored areas or both of skin where permanent damage has healed (that is, not recent damage).	
Search Result Set	n	The candidate list returned from a search.	
Sharpness	n	The overall clarity and detail of the facial features.	
Similarity Score	n	A value generated by a facial recognition algorithm that demonstrates the amount of similarity between two images.	
Skin	n	Refers to the overall appearance of the skin.	
Software Development Kit (SDK)	n	A set of tools that allow developers to create software applications.	In facial recognition technology, the SDK houses the algorithm(s).
Spatial Relationship	n	Specifies how a feature is positioned on the face relative to another feature.	When this term is used in this guide, it does not mean to imply that the precise value of this dimension shall be determined, but rather the relative size of this dimension compared to the overall width or height of the face, if not otherwise specified.
Spoofing	n	In a biometric system, the process by which an imposter intentionally attempts to be recognized as another person or intentionally attempts to be missed as an existing identity in the gallery.	
sRGB	n	Standard default color space of red, green, blue used for the Internet and for displaying or printing images.	
Subject Acquisition Profile (SAP)	n	Facial image capture criteria described in ANSI/NIST-ITL 1-2007 (e.g., SAP Level 40 includes the requirement for 768 x 1024 pixels).	
Substrate	n	A substrate in printing terms is a form of media on which a printed image is produced.	A substrate, as referred to in this guideline includes gloss or matte paper, plastic, sensitized material, or polycarbonate.
Superimposition	n	The process of creating an overlay of two aligned imaged and comparing them visually.	
System Bias	n	(1) Errors repeatedly introduced through automation (e.g., errors in template generation or comparison). (2) Errors repeatedly introduced through operational practices in an organization or unit (e.g., improper lighting or camera position guidance).	
		T	
Template	n	A set of biometric measurement data prepared by an FR system from a facial image.	
Threshold	n	A numerical value, linked to the similarity score, at hwich a decision point exists.	In a facial recognition system, a threshold is usually implemented to set a balance between operational efficiency and risk.
Threshold Score	n	See Threshold	

FISWG Glossary

Term	Form of Speech	Definition	Discussion Points
Time-related changes	n	The natural variations to the face that occur as a function of time.	
		U	
Uncontrolled Image	n	An image not captured in accordance with FI/FR standards or guidelines (e.g., a surveillance image).	
Unfamiliar Faces	n	Faces of unknown or recently learned people.	Unfamiliar faces characterize almost all of face identification decisions, as the observer has no previous history with the person, they are required to identify.
		V	
Verification	n	(1) The final step of the ACE-V method; the review and independent analysis of the conclusion of another examiner. (2) In a biometric system, a task where the facial recognition system compares one facial image to another facial image, resulting in a computer-evaluated similarity score.	
Vignetting	n	A reduction in brightness and contrast towards the edges of an image.	
		W	
Working copy	n	A copy or duplicate of a recording or data that can be used for subsequent processing, analysis, or both.	

FISWG Acronym List		
Term	**Form of Speech**	**Definition**
1:1	*n*	One-to-One
1:N	*n*	One-to-Many
ACE-V	*n*	Analysis, Comparison, Evaluation - Verification
AFR	*n*	Automated Facial Recognition
AI	*n*	Artificial Intelligence
BMP	*n*	Bitmap
CCTV	*n*	Closed Circuit Television
CMC	*n*	Cumulative Match Characteristic
CMYK	*n*	Cyan, Magenta, Yellow, and Black
CODIS	*n*	Combined DNA Index System
CSI	*n*	Crime Scene Investigation
DET	*n*	Detection Error Tradeoff
DMV	*n*	Department of Motor Vehicles or Division of Motor Vehicles
DNA	*n*	Deoxyribonucleic acid
DPI	*n*	Dots per Inch
EXIF	*n*	Exchangeable Image File Format
FAR	*n*	False Acceptance Rate
FBI	*n*	Federal Bureau of Investigation
FI	*n*	Facial Identification
FMR	*n*	False Match Rate
FNMR	*n*	False Non-Match Rate
FR	*n*	Facial Recognition
FRR	*n*	False Reject Rate
FRS	*n*	Facial Recognition System
FRT	*n*	Facial Recognition Technology
FRTE	*n*	Facial Recognition Technology Evaluation
FRVT	*n*	Facial Recognition Vendor Tests
GPU	*n*	Graphics Processing Unit
GUI	*n*	Graphical User Interface
ICD	*n*	Intercanthal Distance
IPD	*n*	Interpupilary Distance

FISWG Acronym List		
Term	**Form of Speech**	**Definition**
LPI	*n*	Lines Per Inch
ME/C	*n*	Medical Examiner or Cororner
NIST	*n*	National Institute of Standards and Technology
PNG	*n*	Portable Network Graphics
PPI	*n*	Pixels Per Inch
RGB	*n*	Red, Green, and Blue
ROC	*n*	Receiver Operating Characteristic
ROI	*n*	Return on Investment
SAP	*n*	Subject Acquisition Profile
SDK	*n*	Software Development Kit
SMT	*n*	Scars, Marks, and Tattoos
SPI	*n*	Samples Per Inch
sRGB	*n*	standard Red, Green, and Blue