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Minimum Training Criteria for Assessors Using Facial Recognition Systems

Purpose

This document is intended to provide a minimum set of criteria for training of personnel who conduct facial assessment in a quick throughput environment using a facial recognition (FR) system to assist them with meeting their objective.

Introduction

The task of facial assessment is a quick comparison of facial image-to-image or image-to-person. The task of facial assessment includes but is not limited to a quick comparison of image-to-image or image-to-person typically carried out in screening and access control applications or field operations. Due to time constraints, assessment is the least rigorous of all facial comparison categories.

Automated facial recognition systems that provide a one-to-many search candidate list require a user to review and process the results. Assessors using an FR system should not use results from the system alone, however, results should be used in conjunction with additional resources.

Facial Assessors are not specialists in facial comparison, but the role requires an awareness of the major elements and limitations of the facial comparison discipline and training in the use of available tools.

The intended audience of this document includes agencies and individuals involved in facial comparison at the assessment level using FR systems.

Agency Considerations Related to Training

Agencies must document completion of training and the competency of their users.

Agencies must include competency testing as a component of training and quality assurance programs as a reliable means of measuring the quality of each user's ability to perform work. Competency testing measures individual performance and may help identify opportunities for continuing education and training.

The material provided below represents the minimum training criteria which may be tailored to meet the individual agency's operational needs. FISWG discourages the use of a facial recognition system by users who have not successfully completed the minimum training and strongly encourages further user training beyond the minimum criteria. Resources for additional training information include, but are not limited to, *FISWG Guidelines for Recommendations for Facial Comparison Training to Competency* and *FISWG Recommendations for a Training Program in Facial Comparison*.

Training Requirements

1. The user should be familiar with the history of facial comparisons in forensic science to include past methods, such as the Bertillon method, and their shortcomings.
2. The user must understand common terminology and should be able to define human face recognition (familiar/eyewitness) and automated facial recognition, as well as explain the differences, their distinction from holistic face processing and unfamiliar face matching, and the limitations of the applications.
3. The user must demonstrate an understanding of the basics of image science including, but not limited to:
 - 3.1. Vision (e.g., color, illumination, perception).
 - 3.2. Photography (e.g., distortions, pose, expression).
 - 3.3. Components of digital images and compression (e.g., pixels, resolution).
 - 3.4. Awareness of possible image alterations (intentional or unintentional).
 - 3.5. Properties of video (e.g., limitations, formats, extraction of stills).
4. The user should be familiar with the proper handling of media, write protection of that media, and generating working copies.
5. The user must understand the principles of comparison. These principles include:
 - 5.1. Process of Analysis, Comparison, Evaluation and Verification (ACE-V).
 - 5.2. Assessment of facial image quality to determine the value for comparison based on visibility of facial features.
 - 5.3. The differences between class and individual characteristics, as well as those of transient and stable characteristics.

- 5.4. Methods of Facial Comparisons
 - 5.4.1. Morphological Analysis (the FISWG-recommended technique).
 - 5.4.2. Superimposition (a technique which is only recommended by FISWG when used in conjunction with morphological analysis).
 - 5.4.3. Photo-anthropometry and its limitations (a technique which is not recommended by FISWG for facial review).
- 5.5. Conclusion Levels/Scale
- 5.6. Validation of Facial Comparison (i.e., ability to render proper conclusions).
- 5.7. Overview and effects of cognitive bias, to include confirmation bias.
- 5.8. Understanding of the necessity for verification.
- 6. The user should have a general knowledge of automated facial recognition systems, to include, but not limited to:
 - 6.1. User input and operation.
 - 6.2. System operation and output.
 - 6.3. Facial recognition algorithm limitations including, but not limited to:
 - 6.3.1. Imaging conditions (e.g., image quality, lighting, pose).
 - 6.3.2. Obstructions and accessories (e.g., eyeglasses, jewelry, masks, scarves, head coverings).
- 7. The user should be familiar with basic image processing operations (e.g., brightness and contrast adjustments, rotations, cropping).
- 8. The user should be familiar with the bones that comprise the skull and the overlying musculature.
- 9. The user must have a basic knowledge of the FISWG Facial Image Comparison Feature List for Morphological Analysis (see also, ASTM E3149-18 Standard Guide for Facial Image Comparison Feature List for Morphological Analysis), to include, but not limited to:
 - 9.1. Hair (e.g., hairline, baldness).

- 9.2. Eyes and eyebrows.
 - 9.3. Nose.
 - 9.4. Mouth.
 - 9.5. Ears.
 - 9.6. Facial lines, marks, and scars.
10. The user should be aware of the variable nature of the human face over time, the level of permanence of individual features, and understand the results of aging.
 11. The user should be aware of alterations of the face, both temporary and permanent.
 - 11.1. Examples of temporary changes are cosmetics, weight changes, hair color changes, wounds, and abrasions.
 - 11.2. Examples of permanent changes are scars, surgical alterations, tattoos, and piercings.
 12. Users of facial recognition systems should be prepared to testify, regardless of their specific job duties. Basic training for court testimony, including knowledge of individual agency policies and procedures is beyond the scope of this document and is the responsibility of the user's agency. However, users of facial recognition systems should be aware of the following:
 - 12.1. Their agency's authorities and policies regarding acceptable use and dissemination.
 - 12.2. Relevant judicial decisions that govern admittance of scientific evidence in court (e.g., Daubert).
 - 12.3. The perception(s) of facial recognition and facial identification in the legal community.
 - 12.4. Proper chain of custody, documentation and notes, reporting of results, and technical review.
 - 12.5. The possibility of digital manipulation or alteration of the image(s).
 - 12.6. Common misconceptions created by popular media to include fictional television shows, novels, and movies, cumulatively known as "The CSI Effect."

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