Scientific Working Group on Digital Evidence

SWGDE Position on Facial Recognition and Facial Comparison

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1. Purpose and Scope

The purpose of this document is to provide information on the differences between facial recognition and facial comparison to imaging examiners and their agencies, as well as the SWGDE position on the use of the results. This document is not meant to be a step-by-step guide to either automated facial recognition procedures or facial comparison. For further information on these subjects; please refer to the Facial Identification Scientific Working Group (FISWG) documents at www.FISWG.org or additional SWGDE referenced documents. [1][2][3]

2. Introduction

Both automated facial recognition and facial comparison have prolific uses. These can include both non-law enforcement (e.g., asset protection, access control and marketing) and law enforcement activity. Within the field of law enforcement, automated facial recognition is used extensively within investigations to narrow the field of persons of interest to a small candidate list, while facial comparison is completed by a trained human to review the images for similarities and dissimilarities.

3. Definitions

- Automated Facial Recognition System (FRS)

  - Automated FRS algorithms compare patterns within the field of computer vision. Such approaches may not rely upon intrinsic models of what a face is, how it should appear, or what it may represent. In other words, the matching is not based on biological or anatomical models of what a face (or the features that make up a face) look like. Instead, the algorithm performance is entirely dependent upon the patterns which the algorithm developer finds to be the most useful for finding similarities. The patterns used in FRS algorithms do not correlate to obvious anatomical features, such as the eyes, nose, or mouth in a one-to-one manner, although they are affected by these features.

- Facial Comparison

  - The manual examination of the differences and similarities between two facial images or a live subject and a facial image (one-to-one) for the purpose of attributing features to the same or different persons.

4. SWGDE Position on Interpretation of Results

Despite their widespread use, facial recognition and facial comparison are often misunderstood as to the relative strength of conclusions offered in each use case.

In 2017, the Bureau of Justice Assistance released a document entitled "Face Recognition Policy Development Template for Use in Criminal Intelligence and Investigative Activities" [4], which

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extensively describes the methods used for facial recognition, as well as highlighting the use of facial comparison.

Of particular importance, the reference document specifies that facial recognition candidate returns are not considered a positive identification. Instead, facial recognition searches are completed to narrow a list of candidates to a small sub-set, for further investigatory activity, through trained human adjudication.

Like facial recognition, facial comparison does not provide positive identifications. Rather, facial comparison examinations are meant to describe the correspondence of facial features between images, or between a human subject and imagery, providing an interpretation of the similarities and differences. As in any photographic comparison, examiners provide a clear indication as to the strength of comparison results, incorporating a descriptive statement with a standardized scale. Such scales include the observations or features that correspond to the results obtained.

In each use case, whether facial recognition or facial comparison, results must be reviewed by trained personnel following specific guidelines, recommendations, standard operating procedures and all applicable agency-specific policies. One such policy must be regarding the use of either candidate returns or comparison results as investigative leads only. Contributors should not rely solely on forensic science service provider responses as the only basis for law enforcement action. Other investigatory activity must be completed and taken into consideration prior to arrest.

5.   References

[1] 2017-07-18 SWGDE Best Practices for Photographic Comparison for All Disciplines_v1-1

[2] 2019-07-16 SWGDE Technical Overview for Forensic Image Comparison

[3] 2016-06-23 SWGDE Digital and Multimedia Evidence Glossary v3

[4] "Face Recognition Policy Development Template for Use in Criminal Intelligence and Investigative Activities." *Bureau of Justice Assistance*, bja.ojp.gov/library/publications/face-recognition-policy-development-template-use-criminal-intelligence-and. Accessed 14 June 2021.

[5] Phillips, P. , White, D. , O'Toole, A. , Hahn, C. and Hill, M. (2015), Perceptual expertise in forensic facial image comparison, Proceedings of the Royal Society B-Biological Sciences, [online], https://tsapps.nist.gov/publication/get_pdf.cfm?pub_id=917560. Accessed 8 June, 2022.

[6] Hahn, C. , Tang, L. , Yates, A. and Phillips, P. (2021), Forensic facial examiners vs. super-recognizers: Evaluating behavior beyond accuracy, [online] https://tsapps.nist.gov/publication/get_pdf.cfm?pub_id=932786. Accessed 8 June, 2022.

[7] Phillips, P. Jonathon, et al. "Face Recognition Accuracy of Forensic Examiners, Superrecognizers, and Face Recognition Algorithms." *Proceedings of the National Academy of*

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[8] FISWG Glossary v.2.0 https://fiswg.org/fiswg_glossary_v2.0_20191025.pdf

6. History

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1.0 DRAFT	2021-06-14	Imaging	Draft for Public Comment
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