D38 How to Train a Facial Recognition Examiner

Nicole A. Spaun, PhD, Federal Bureau of Investigation, Forensic Audio, Video and Image Analysis Unit, Building 27958A, Pod E, Quantico, VA 22135*

After attending this presentation, attendees will have an understanding of biometric facial recognition and the disciplines that a forensic examiner should know to perform facial comparisons.

This presentation will impact the forensic community by giving a brief overview of biometrics and the state of the art in facial recognition. In addition, the work will outline the important topics used in training forensic examiners to perform facial comparison examinations.

The recent increased availability of automated facial recognition systems appears, on the surface, to be a boon to law enforcement. However, the accuracy of these systems varies greatly, particularly when dealing with real-world surveillance images. Therefore law enforcement must be careful that facial recognition systems do not lull the community into false security. No facial recognition system, for private or government use, is ready to be run 'lights out' and provide accuracy rates acceptable for the judicial system. Thus the output of any facial recognition system must be verified by a human examiner. This can be accomplished in the field, e.g., by a police officer comparing the output of an automated system searching a database of arrest photos to the subject the officer has just pulled over. This verification can also be accomplished in a forensic lab, e.g., by an image analyst performing the one-to-one comparison of the output of a facial recognition system to the subject observed in a surveillance video. These practices are akin to using the IAFIS system, where latent print matches from the system are generally checked by forensic examiners. However, unlike in the fingerprint community where there were already numerous fingerprint examiners working, such that automation decreased the number of examiners needed, the facial identification community is exceptionally small, where most forensic labs do not have image analysts trained to perform these comparisons. Therefore, automated facial recognition will actually increase the number of facial identification examiners needed. These forensic examiners will need sufficient training to compare human faces and have the results accepted in a court of law.

Facial comparison examinations have been performed at the Federal Bureau of Investigation for at least 40 years; FBI examiners have testified in court to such comparisons nearly as long. The training that goes into forensic facial comparison examinations is robust. The training curriculum used by the FBI includes the following key topics: the anatomy of the human head, the nature of aging and alteration, the principles of imaging science, the scientific principles of comparison, and the methods of comparison. Each of these topics can be further subdivided into critical areas. For example, anatomy of the head includes learning the bones of the skull, muscles of the head, dermatology of the head, and properties of the ear. Image science is a necessary component that includes areas such as understanding image processing, compression, and resolution, and also awareness of perspective, illumination, and optics. The combination of these topics allows the examiner to have a broad knowledge base, to assist in performing the comparisons. The curriculum also includes the history and legal basis for such comparisons, to assist the examiner in testifying in court.

This work will present a brief overview of biometrics and the state of the art in facial recognition. In addition, the work will outline the important topics used in training forensic examiners to perform facial comparison examinations.

Biometrics, Image Analysis, Facial Comparison

 ** Presenting Author*