Capturing Facial Images for Use with Facial Recognition Systems

WHAT IS AN AAFS STANDARD FACTSHEET?

The AAFS produces clear, concise, and easy to understand factsheets to summarize the contents of technical and professional forensic science standards on the OSAC Registry. They are not intended to provide an interpretation for any portion of a published standard.

WHAT IS THE PURPOSE OF THIS STANDARD?

This standard describes the characteristics that constitute an ideal capture environment for facial images that are intended to be submitted into automated facial recognition systems, noting that it is not always possible to capture images in an ideal environment. The amount of control at the point of capture can vary in different situations.

Specific recommendations on the capture environments, camera specifics, and facial positioning are presented.

These requirements and recommendations are intended to provide the user with guidance for making adjustments in non-ideal capture environments to maximize the potential to capture a high-quality facial image.

WHY IS THIS STANDARD IMPORTANT? WHAT ARE ITS BENEFITS?

The performance of a facial recognition system is heavily dependent on the quality of the submitted image (i.e., probe) and the database against which images are searched (i.e., gallery).

The controlled capture of images, either for law enforcement purpose (e.g., booking photo) or identification documents (e.g., passport or driver's license), provides an ideal opportunity to ensure the best possible image for facial recognition searching.

High-quality imagery also supports confidence in an opinion derived from a one-to-one image examination performed by a practitioner.

HOW IS THIS STANDARD USED AND WHAT ARE THE KEY ELEMENTS?

This guide is intended to be used by practitioners who are choosing, setting up, and operating photographic equipment for facial recognition purposes. For each image capture environment, the guide provides an ordered list of capture constraints (e.g., subject, background, lighting, focus, conversion to digital record), which should be prioritized in order to acquire a high-quality facial image.

Furthermore, the guide also addresses how to make adjustments in different environments (listed below) in order to maximize the quality of a captured facial image.

Controlled capture environments: This scenario is when all constraints can be controlled, including equipment, the photographic environment (camera position, lighting, distance, background, and resolution), and the pose and positioning of the subject. The subject can be directed or positioned, the environment can be arranged to provide ideal illumination, and suitable equipment is available.

Semi-controlled environments: This scenario refers to when some, but not all, constraints can be controlled. Examples of this include passport photos not taken in a controlled environment, law enforcement mobile capture, crime scenes, access control, or walk-through automated gates.

Uncontrolled environments: This scenario refers to when neither the environment nor the subject can be controlled, such as, surveillance, hand-held camera, body cameras, cell phones, etc. It is characterized by high variations in quality and content, and typically requires human review and specialized tools to identify and extract usable facial content.

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