E71 Objective and Quantifiable Metrics for the Determination of Latent Print "Suitability"

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After attending this presentation, attendees will: (1) be introduced to a novel technology, developed by the Defense Forensic Science Center, capable of measuring relevant image quality metrics of fingerprints; (2) understand the association of fingerprint image quality metrics and examiner performance during comparison exercises; and, (3) understand how this approach can be utilized to standardize "suitability" decisions and enhance quality assurance systems in fingerprint units nationwide.

This presentation will impact the forensic science community by introducing a more objective approach for determining "value" or "suitability" of latent fingerprint images.

Latent print examiners are routinely faced with the challenge of making determinations of "value" or "suitability" during the analysis phase of latent print examination. In the United States, there is no formal criterion for basing "suitability" determinations other than the subjective opinion of the examiner. Analyses of latent print images and the determinations of "suitability" consist of two major process steps, both of which are undertaken by the analyst without advanced instrumentation: (1) the visual analysis of the fingerprint image, assessing clarity, contrast, acutance, and other relevant image quality metrics associated with friction skin impressions in an effort to visually detect relevant features which may be used for comparison; and, (2) the consideration of the significance and reliability of that data detected for subsequent comparison and determination of "identification" or "exclusion" to a particular source.

Being a subjective process, determinations of "suitability" are susceptible to intra- and inter-analyst variations — especially for those "borderline" impressions having limited or lower quality detail. In an effort to minimize such variations and provide objective, quantifiable criterion upon which to base suitability determinations, novel fingerprint image quality assessment software has been developed to analyze the quality of fingerprint images and associate quality scores to analyst performance during comparison exercises. Such information will provide a more robust and standardized framework for dealing with "suitability" determinations, which is rooted in empirically derived data versus the vaguely defined and subjective approach of examiner opinion. Having such capability not only provides objective metrics to support analysts' "suitability" decisions, but also provides a means by which laboratories may monitor training progress and assess performance of latent print personnel. The results of preliminary evaluations and policy guidelines which may be developed from these data will be presented along with the potential for transferring this type of technology approach to other pattern evidence disciplines.

The opinions or assertions contained herein are the private views of the authors and are not to be construed as official or as reflecting the views of the United States Department of the Army, United States Department of Defense, or United States Department of Justice.

Latent Prints, Suitability, Sufficiency