

Multi-biometrics and Fusion Panel Session

Biometrics Consortium 2004
September 22, 2004



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Panel Overview - Participants

Panelist from Government, Academia and Industry

Government - Rick Lazarick (DHS)

- Patrick Grother (NIST)

Academia - Anil Jain (Michigan State Univ.)

- Arun Ross (West Virginia Univ.)

Industry - Paul Griffin (Identix)

- Wayne Kyle (BioCom)



Panel Overview - Approach

Panelist each provide brief summary of their activity in multi-biometrics

Interactive Q/A session with audience participation

Break scheduled 10:30 – 11:00, finish by 11:30



Multi-biometrics Activities – Rick Lazarick, DHS, TSA

- Sponsor of CTeR
- “Champion” for Multi-biometrics – National Science & Technology Council Interagency Working Group on Biometrics
- **Standards Committees – M1 and SC37**
 - Chairman of the Ad Hoc Group for Evaluating Multi-biometric Systems (within M1) - AHGEMS
 - Editor – US Technical Contribution to SC37 WG2 Technical Report on Multi-modal Biometric Fusion



SC37 Technical Contribution

1. **Terminology**
 - a. **“Working definitions”**
 - b. **Table of different modalities**
2. **Applications**
 - a. **Summary of findings regarding multi-biometric applications, including pilots and planned pilots**
3. **Bibliography**
 - a. **Latest version of list of significant publications**
 - b. **References to AHGEMS document in M1 registry**
4. **Presentations**
 - a. **Griffin – “Scope of Multi-biometric Standards Activities”**
 - b. **Grother - “Notes on the evaluation of performance of multi-biometric systems”**
 - c. **Lazarick – “Normalization and Fusion Methods – Overview”**



Vocabulary – Proposed Definitions

AHGEMS developed definitions to help in the precise reference to usage of multiple biometrics

Terms Defined:

MULTI-BIOMETRIC

MULTI-MODAL

MULTI-ALGORITHMIC

MULTI-INSTANCE

REPEATED SAMPLE



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Proposed Definitions

MULTI-BIOMETRIC - having the ability to utilize multiple biometric modalities, instances within a modality and/or algorithms prior to making a specific verification / identification or enrollment decision. Multi-biometric has three distinct sub-categories: Multi-modal, multi-algorithmic, and multi-instance.



Proposed Definitions (cont.)

MULTI-MODAL - having the ability to use multiple different biometric modalities such as fingerprint, face, iris, etc.

MULTI-ALGORITHMIC - having the ability to use two or more distinct algorithms for processing the same biometric sample.

MULTI-INSTANCE* - having the ability to use two or more instances within one modality for an individual, e.g. two irises, two or more fingerprints, etc.



Proposed Definitions (cont.)

REPEATED SAMPLE - having the ability to utilize either multiple presentations of the same biometric characteristic or a single presentation that results in the capture of multiple samples.

[note: this is not considered a multi-biometric.]



Defining “Modality”

As used in these definitions, we attempt to enumerate what we believe are different modalities

•Fingerprint

Face – texture (or 2D)

•Iris

Face – depth (or 3D)

•Voice

Face – IR emission (thermography)

•Hand Geometry

•Palm Print

•Finger Geometry

•Hand Vein

•Signature

•Retina



AHGEMS – moving forward

Major focus on defining needs for new or revised standards to support multi-biometrics

Technical reporting and editorial support to SC37 WG2 report



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