

Issues in Biometrics Research

September 20, 2004



Approved for public release; distribution unlimited. #04-0914.

MITRE

Some Needed Biometrics Systems Research

Accuracy:


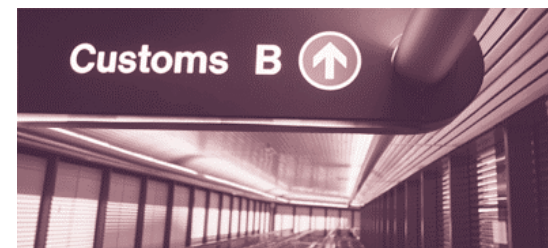
- What are process accuracies?
(No need to be better than them.)
- What are the representative populations?
(Where accuracy is critical.)
- What are the best sample ages for subjects?
(How stable are biometrics?)
- How can enrollment be standardized?
(Ease of capture, background, ...)
- Resolution of multiple biometric indicators
(e.g. 2 index vs. 8 flat)

Vulnerabilities

- System attack vulnerabilities
(e.g. denial of service)
- Insider threat
- Hacking
- Spoofing
- Operational vulnerabilities
(e.g. distraction and vigilance)

Legacy Issues

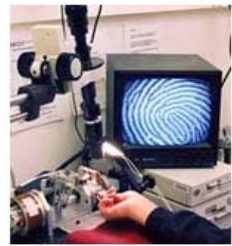
- Forensics needs
 - latency of fingerprints,
 - mug shots,
 - profiles and 3/4 pose views (INS legacy)
- Interpretability by humans
 - is expert interpretation needed? Or wanted?



Gelatin vs. Biometrics

Posted Jul 19, 2004, 7:07 AM ET by Simon Spagnoletti
Related entries: [Misc. Gadgets](#)

Those not satisfied with the current methods for bypassing fingerprint scanners rejoice! Marie Sandström, a student from Linköping University in Sweden has discovered that artificial fingerprints in gelatin also fool the pesky devices. She tested nine different devices and managed to fool all nine. Then she did more extensive tests on three other systems and fooled them all as well, but "with varying results." Whatever. It's enough that they were fooled. Remind us again why governments the world over are rushing to this technology if *Jello* can kick its ass?



New Issues in Biometrics Research

New biometrics

Face

- Skin texture and reflectance
- 3D Face

Speaker ID

Template aging

Simulation, e.g., synthetic aging

Other:

Thz scanning

fingerprint @ distance

multi-biometrics

Biometrics interoperability

Ability to use alternative documents

Virtual national ID's (or not)

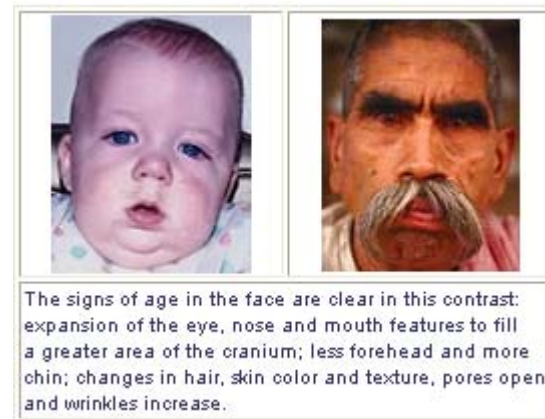
Chain of identity evidence (bona fides)

Alternate biometrics



New face recognition software also checks skin texture characteristics.

Technology Review, June 2004, P. 21



The signs of age in the face are clear in this contrast: expansion of the eye, nose and mouth features to fill a greater area of the cranium; less forehead and more chin; changes in hair, skin color and texture, pores open and wrinkles increase.

Dataface, <http://face-and-emotion.com/dataface/facets/aging.jsp>

Public Concerns about Biometrics

Resolution of false positives

Resolution of database errors

Function creep

Data protection and privacy

CRS Report for Congress

Received through the [CRS Web](#)

**The Multi-State Anti-Terrorism Information
Exchange (MATRIX) Pilot Project**



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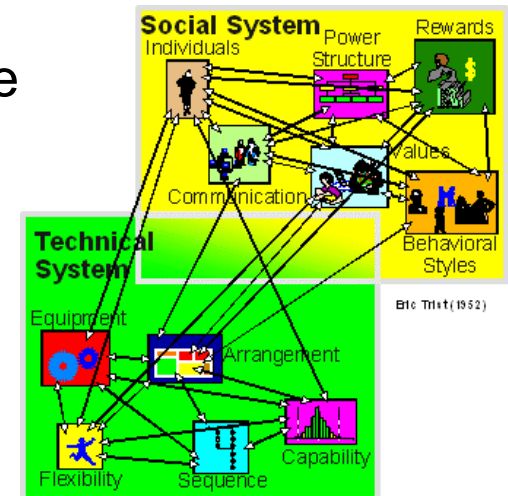
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Summary: New Directions for Biometrics Research

Evaluation

- Need for system evaluations as well as technology evaluations
- Scenario Tests
- Evaluation Standards, common to reporting

Design of hardened systems
Socio-technical considerations



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