Biometric Match on Card – An Overview

Smart Card Alliance – SmartCards in Gov’t

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Biometrics

An Effective and Secure Tool to accomplish authentication of the individual for Physical or Logical Access
Typical Physical Access Environment

- Door
- Reader
- Controller
- Back-end Server
- Central Database
- Smart Card
Typical Desktop Environment

Reader & Desktop Machine

Smart Card

Servers

Databases
Biometrics Matching

**Template Extraction Algorithm**
Proprietary scheme for distilling a raw image (fingerprint, iris, face, hand) down to the template

**Template Matching Algorithm**
Compare 2 templates and determine a matching score

**Client Software**
Biometrics

Three methods of Biometric usage with Smart ID cards

Off-Card (contact or contactless)
- 1. Enrolled Biometric template sent off card – matched on remote system (one to one or one to many)
- 2. Enrolled Biometric template sent off card – matched on local terminal device (one to one)

On-Card (contact)
- 3. Enrolled Biometric template loaded into card – live captured processed templates presented to card for match (one to one).
  - Secure result communicated to trusted terminal.
On card match

**Enrollment**

**Verification**
Match-On-Card

Part of O/S:
- Match <0.5s
- FRR, FAR same as off-card match

Applet:
- Match 2-3s
- FRR, FAR same as off-card match
Match on card Biometric Verification

Biometric Smart Card

X.509 BIO certificate Storage

X.509 Parsing & Verification

Processing Parameters

Matching Parameters

“Stored” Biometric Template

Biometric Capture

image

Biometric Processing

“Live scan” Biometric Template

Biometric Matching

Matching Score

Biometric Terminal
Reference Biometrics
On-Card-Match

- Ideally on-card-match using templates.
- Loaded at Enrollment via secure channel
- Privacy ensured as template is not retrievable
- Raw image can be discarded.
- Reduced need to maintain biometric DB.
- Off-line one-to-one card holder verification
- Template can’t be reverse engineered
- Templates can be refreshed as needed.
Questions??

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