Biometrics in Law Enforcement and Corrections

Presenters: Orlando Martinez & Lt. Pat McCosh
Presentation Overview

• Introduction
  – Orlando Martinez – VP Global Sales, L1 Identity Solutions Biometrics Division
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• Quick Technology Demo

• Biometrics in Law Enforcement and Corrections
  – Fingerprint
  – Facial Recognition
  – Iris Identification

• World Biometric Deployments
  – International Gov
  – U.S. Federal
  – U.S. State
  – U.S. Local

• Larimer County Case Study
Technology Demo

- HIIDE Series 4
  - HIIDE U-Tube Video

- PIER 2.4
Biometrics in Law Enforcement and Corrections

• **Fingerprint**
  – AFIS
    ▪ Local AFIS
    ▪ State / Federal AFIS
    ▪ Latent Finger Examiner Technology

• **Facial Recognition**
  – Facial Recognition Mug Shot Systems
    ▪ CC TV Footage to solve crimes
    ▪ Technology significantly improved over last 5 years

• **Iris Recognition**
  – Fastest and most accurate biometric
  – Pushed to the front of the ID process
  – Time and money saving technology
Iris Recognition – A Closer Look
Iris Identification is NOT Retinal Scanning

- Retinal is an older technology
- Subject must stare at a target
- Mapping pattern of blood vessels in the back of the eye.
- Uses a bright light or laser
- One of the most intrusive and uncomfortable capture methods
- Retinal is not as stable or accurate as iris (diseases, blood pressure, etc.)
Step 1 Capture

- Video of the iris is taken under Infra Red illumination
- IR is invisible to the human eye
- Cameras capture images at 15+ FPS
Iris features are digitized into a 512-byte iris template (256 for features, 256 for control)

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```
Step 3 – Comparison

During recognition, this template is compared to all template records in the database.

During enrollment, the iris template record is added to the database after a search is done on the existing database to prevent duplicate enrollments.

After enrollment is completed, all records are tied using a unique ID number to a subject’s Iris Template.
Step 4 – Result Returned

During recognition/verification, the L1 software makes the decision:

Subject in the database? – Yes or No
Why Iris Recognition Technology?

- Speed
- Accuracy
- Scalability
- Stable
- Non-Invasive / Hygienic
Why Iris Recognition?

- **Speed**
  - Iris recognition is recognized as the fastest of all biometric technologies
  - Search speed is processor dependant so the faster the processor (and the more processors you have) the faster the search speed
  - Every 2.4 GHz CPU Core utilized produces roughly 1.5 million matches per second (assuming one match request per second)
  - SIRIS blade server has produced search speeds of 100,000,000+ records/second
Why Iris Recognition?

• **Accuracy**
  
  – As with all biometrics accuracy ratings depend on quality of enrollment image versus the quality of identification image being presented.

  – With minimum quality standards being met (percentage iris, focus quality, number of bits captured, etc) the chance of a false identification is 1 in 1.2 million using one iris and 1 in 1.44 trillion using both eyes.
Why Iris Recognition?

• Scalability
  – Iris template size is 512 bytes of data
  – Small template size allows for the fast search speeds and low network storage and transmission bandwidth requirements
  – Speed and accuracy allow for searches of large databases producing accurate matches in real time
Why Iris Recognition?

- Stable
  - Iris is formed by a process called Chaotic Morphogenesis
    - Tearing outwards of the membrane from the center of the eye forming the detail found in the iris
  - Process complete by the time a person is 12-18 months of age and stays the same over the life of an individual
    - One time enrollment biometric
Biometric Deployment Overview

- **International**
  - Pakistan / Afghanistan Border Project

- **US Federal**
  - US Military BAT System

- **US State**
  - Dept of State Facial recognition system (65M+ face database)
  - Working on state level iris initiatives

- **US Local**
  - 10 County jails across US using L1 iris
    - From 150 beds to 4000+ beds
Case Study: Larimer County

- One of 3 counties in CO deploying L1 iris solutions
- Used at booking, release, and work release for inmate ID
- Saves significant time for front end booking officers who don’t have to do exhaustive name searches
- Quickly and accurately identifies subject to ensure a correct release