Biometrics: Current Challenges and Future Trends

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Homeland Security
DHS Biometrics Development Communications and Outreach Goals

- We will share publicly available DHS collaboration work products
- Highlight that all DHS Components have insight into biometrics across DHS*
- Identify opportunities to prevent duplication of effort*
- Identify up and coming new capabilities from academia and industry
Goals of the DHS Biometrics Strategic Framework

• **Goal 1: Enhance effectiveness of subject identification**
  - Objective 1.1: Refresh outdated biometric collection systems
  - Objective 1.2: Centralize access to federal and international biometric databases
  - Objective 1.3: Improve real-time access from field locations
  - Objective 1.4: Expand use of multi-modal biometrics to identify threats

• **Goal 2: Transform identity operations to optimize performance**
  - Objective 2.1: Automate resource intensive identity processes
  - Objective 2.2: Implement person-centric biometric processing

• **Goal 3: Refine processes and policies to promote innovation**
  - Objective 3.1: Institutionalize joint requirements efforts
  - Objective 3.2: Establish DHS-wide biometrics authorities
  - Objective 3.3: Develop privacy policies and processes
  - Objective 3.4: Enhance stakeholder communications
  - Objective 3.5: Implement standardized solutions
  - Objective 3.6: Establish governance and ensure appropriate oversight
Biometrics in Investigations

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Biometrics Today

- Search and Identification
- Booking and Arrest
- Forensic Case work
- State and Local Support
Applications

Make the Small Screen Work with the Big Screen

• EAGLE is used on our Tier 1 and 2 level devices.
• Allows for full identification and booking.
• Works offline to collect data.

• EDDIE is used on our Tier 3 devices.
• Allows for identification.
• Information collected and searched can be used to for decentralized bookings
Types of Equipment

3 Tiered System of Biometric Equipment
Types of Equipment

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Evaluation Criteria

- Reliability
- Availability
- Usability
Future Biometric Needs

LIVENESS

- In August 2016 wanted subject Shaun “Shizz” Miller was arrested in Boston area.
- Subject paid about $2000 for the mask.

Future Biometric Needs
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- IRIS at a Distance for Investigations
- DNA comparison for Identical twins at a low cost (4 per 1000 births or estimated 29-38 million people worldwide may share similar DNA)
- Algorithms for white light IRIS that work backwards to traditional IRIS
- Contactless Fingerprints
- Increase the reliability of DNA Phenotyping for face recognition
Key Takeaways

• Biometrics and the IOT
• Liveness Detection
• Multimodal Devices at a Distance
• DHS Standard for Software/Hardware
• Small Screen and Big Screen Working Together
• All Operating Systems (Windows, iOS, Android)
• Robust SDK
“The truth is, that a life of dishonesty may pay at first when you are not known to the police, but when an offender once falls into the hands of the ever-watchful police he begins to be a well-known customer.”

Harry Houdini


Questions?

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