Multiple Biometric Grand Challenge Workshop: Welcome

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NIST Mission

To promote U.S. innovation and industrial competitiveness by advancing

measurement science, standards, and technology

in ways that enhance economic security and improve our quality of life

NIST technical infrastructure paves the way to innovation

The equivalent of research "roads and bridges" the industrial and scientific communities need to develop and commercialize new technologies

- Groundbreaking research tools that foster new fields — quantum information, nanotechnology, bioscience
- Better measurement methods to ensure quality
- Performance measures for accurate technology comparisons
- Standards to assure fairness in trade

NIST biometrics work focuses on

- Needs of industry, government, and academia in R&D for enhancing biometrics technologies
- Needs from *USA Patriot Act* and *Enhanced Border Security and Visa Entry Reform Act*
  - NIST works very closely with DHS and supports US-VISIT (entry/exit system for foreign visitors)
- Needs for law enforcement & Intelligence Community
  - NIST works very closely with the FBI
    - Integrated Automated Fingerprint Identification System (IAFIS) – largest biometrics database in the world; Next Generation Identification (NGI)
  - NIST works closely with National Institute of Justice on DNA
  - NIST works closely with the R&D components of the Intelligence Community
- Needs for Homeland Security Presidential Directive-12
  - Personal Identity Verification (PIV) ID card for federal employees and contractors
- Needs defined by White House National Science & Technology Council (NSTC) Subcommittee on Biometrics and Identity Management
  - "National Biometrics Challenge"

What NIST does in biometrics

- Standards Development
  - Work with others to accelerate the development of consensus-based standards which are closely coupled to the stated needs of private industry
- Development of test and evaluation methods
  - Develop metrics, testing design, evaluation methodology, performance & conformance testing, data collection and formatting
- Perform tests and evaluations
  - On both research systems and vendor products
- Develop and transfer technology

NIST biometrics technical focus

- Fingerprints
  (Includes Latent Fingerprints)
- Face
- Iris
- Voice
- DNA
- Multimodal

NIST biometric standards activities

- NIST Standards
  - ANSI/NIST ITL 1-2007 - Data Format for the Interchange of Fingerprint, Facial, & Other Biometric Information – used in law enforcement and interagency biometric data exchange
  - NIST Special Publication 800-76-1 -- Biometric Specification for Personal Identity Verification – as part of FIPS for PIV cards
- American National Standards
  - International Committee for Information Technology Standards (INCITS)
- International Standards
  - International Organization for Standardization/International Electrotechnical Commission (ISO/IEC)

Finger Projects

- [ELFT] Evaluation of Latent Fingerprint Technologies
  - Evaluate and advance latent fingerprint matching technologies
- Fast Fingerprint Capture Evaluation
  - Develop methods and standards for evaluating next generation fingerprint acquisition systems; e.g. contactless and 3D
- [MINEX] Minutiae Exchange Tests
  - MINEX04 -- Interoperability of INCITS 378 fingerprint template
  - Ongoing MINEX -- Supports compliance for Personal Identity Verification (PIV) program
  - MINEXII -- Fingerprint template interoperability with Match-on-Card technologies
- [PFT] Proprietary Fingerprint Testing
  - SDK fingerprint matcher tests
- [SlapSeg] Slap Segmentation Tests
  - Evaluate the performance of slap fingerprint segmentors
- Usability
  - Study efficiency, effectiveness, & acceptability of biometric systems from perspective of human interaction

Face Projects

- [FRGC] Face Recognition Grand Challenge
  - Advance state of the possible with face recognition
- [FRVT] Face Recognition Vendor Tests
  - Evaluate state of the possible with face recognition

Iris Projects

- [ICE] Iris Challenge Evaluation
  - Evaluate the accuracy of iris matching technologies
- [IREX08] Iris Exchange Test
  - Study and compare accuracy as related to iris compression levels and alternative image formats

Voice Projects

- Speaker Recognition Tests
  - Evaluation of speaker identification technologies
- Speech Biometrics
  - Develop methods for standardized speech enrollment followed later by 1-to-many speaker identification

DNA Projects

- Develop standards and methods for processing and matching DNA

Multiple Biometrics

- Large-Scale USG Systems (e.g. FBI IAFIS/NGI & DHS US-VISIT)
  - Conduct benchmarking & performance evaluations
  - Develop and evaluate next generation biometrics capabilities & integration of standards
  - Evaluate system interoperability
- [MBARK] Multimodal Biometric Application Resource Kit
  - Develop client-side technologies and standards for multimodal biometric acquisition
- [MBGC] Multiple Biometric Grand Challenge
  - Evaluate the performance with multimodal use of face and iris
- Quality
  - Develop standards and methods for evaluating and utilizing biometric sample quality