

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
 - MINEX11 -- 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