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# **Review of Major Testing Initiatives and Recent Technical Advances**

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## **TECHNICAL ADVANCES**

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- Lab
  - Iris
  - Face
  - Voice
  - Fingerprint
  - Hand Geometry

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## FACIAL RECOGNITION

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- A. Georghidades, P. Belhumeur, D. Kriegman, “From Few to Many: Illumination Cone Models for Face Recognition Under Variable Lighting and Pose”, to appear Trans. PAMI
- G. Pike, R. Kemp, and N. Brace, “The Psychology of Human Face Recognition”, IEE Conf. on Vis. Biomet., 02/02/'00, Savoy Place, London
- **Same Day FAA = 34% FRR = 7%**

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## VOICE

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- G. Doddington, “Some Experiments on Idiolectal Differences Among Speakers”, [www.nist.gov/speech/tests/spk/2001/doc/](http://www.nist.gov/speech/tests/spk/2001/doc/)
- G. Doddington, “Speaker Recognition Based on Ideolectal Differences Among Speakers”, and
- W. Andrews, M. Kohler, J. Campbell, “Phonetic Speaker Recognition”, Proc. Eurospeech 2001, Aalborg, Denmark, Sept. 3-7, 2001

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## FINGERPRINT



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S. Pankati, S. Prabhakar, and A. Jain,  
“On the Individuality of Fingerprints”,  
IEEE Conference on Computer Vision  
and Pattern Recognition, Hawaii,  
December 11-13, 2001  
<http://biometrics.cse.msu.edu/cvpr230.pdf>

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## HAND GEOMETRY: INSPASS



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## TESTING



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**“Testing is the basis of all  
technical progress”**

-- George Doddington

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## TYPES OF TESTS



- 
- Technical
    - Technology
    - Scenario
    - Operational
  - Vulnerability
  - Security (Common Criteria)

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## **WE AREN'T TESTING (yet)**

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- Business Case
  - Costs
  - Savings
- User attitudes
- Public perception
- Privacy safeguards

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## **GOVERNMENT TESTS (PUBLISHED RESULTS)**

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- NIST Speaker Verification Competition  
[www.nist.gov/speech/tests/spk/2001/index.htm](http://www.nist.gov/speech/tests/spk/2001/index.htm)
- Linguistics Data Consortium at U of Penn.  
[www ldc.upenn.edu](http://www ldc.upenn.edu)
- FERET/Facial Recog. Vendor Test 2000  
[www.dodcounterdrug.com/facialrecognition/FRVT2000/documents.htm](http://www.dodcounterdrug.com/facialrecognition/FRVT2000/documents.htm)
- Fingerprint Verification Competition  
<http://bias.csr.unibo.it/fvc2000>

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## **GOVERNMENT TESTS (PUBLISHED RESULTS)**



- 
- Communications Electronic Security Group/Office of E-envoy
    - U.K. Biometrics Working Group  
[www.cesg.gov.uk/biometrics](http://www.cesg.gov.uk/biometrics)
    - “Best Practices for Testing and Reporting Biometric Device Performance”
    - National Physical Lab Test

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## **GOVERNMENT TESTS (NO PUBS YET)**



- 
- Korean Information Security Agency
    - [www.kisa.or.kr/en-kisa/team/evaluation/index.html](http://www.kisa.or.kr/en-kisa/team/evaluation/index.html)
  - Other US
    - Capitol Police
    - State Department
    - Army Research Lab

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## JAPANESE TESTS



- 
- Information Technology Research and Standardization Center/Japan Standards Agency
    - “Standardization of test and evaluation of biometric devices and systems for electronic commerce applications”
  - Automatic Identification Manufacturers Association of Japan
    - “Research biometrics technologies and their market”

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## GERMAN TESTS



- 
- GISA [www.bsi.bund.de](http://www.bsi.bund.de)
  - TeleTrusT [www.teletrust.de](http://www.teletrust.de)
    - Funding:
      - Ministry of Technology
      - Banking Industry
    - BW6 (Biometric Identification Systems)
      - BioTrusT

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## EUROPEAN UNION 5<sup>th</sup> Framework



- 
- 4 biometrics projects
  - Bee: Business environment of biometrics involved in electronic commerce
    - [www.beeometrics.org](http://www.beeometrics.org)
    - Business case/privacy development

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## OTHER PROJECTS



- 
- Australian Biometrics Testing Org.
    - [www.biomet.org/testing.html](http://www.biomet.org/testing.html)
  - National Safe Skies Alliance
    - [www.nssa-safeskies.org](http://www.nssa-safeskies.org)
  - International Biometrics Group
    - “Comparative Biometric Testing”
    - [www.biometricsgroup.com](http://www.biometricsgroup.com)

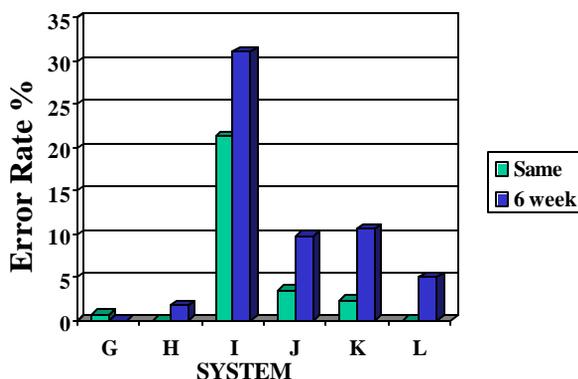
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## IBG FP False Non-Match Rate Testing



Low Threshold

Same day/6 week Testing



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## VULNERABILITY TESTING



- U.K Biometric Working Group  
“Principles of Biometric Security System Vulnerability Assessment”
- von der Putte and Keuning, “Don’t Let Your Fingers Get Burned”
- West Virginia University/Center for Identification Technology Research [www.csee.wvu.edu/citer](http://www.csee.wvu.edu/citer)
- T. Matsumoto, et al, “Gummy Fingers”, Proc. SPIE, Vol. 4677, Jan. 2002
- FRVT2000

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## COMMON CRITERIA TESTING



- 
- [www.commoncriteria.org](http://www.commoncriteria.org)
  - History
    - U.S. TCSEC Orange Book (1985)
    - Canada Criteria (1993)
    - European ITSEC (1991)
  - ISO 15408 (1996)
  - 12 National Signatories
    - US = NIST and NSA

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# THE END

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