

## ITL FOCUSES ON BIOMETRICS

ITL achieved significant advances in face and iris recognition performance in the Face Recognition Vendor Test (FRVT) 2006 and the Iris Challenge Evaluation (ICE) 2006 large-scale evaluations. The FRVT 2006 evaluation looks at recognition from high-resolution still images and three-dimensional (3D) face images, and measures performance for still images taken under controlled and uncontrolled illumination. This was the first time 3D face recognition was evaluated by the U.S. government and a performance baseline was established. The ICE 2006 was the first iris recognition independent evaluation and reports the first performance baseline on left and right iris images.

The FRVT 2006 and the ICE 2006 compared recognition performance from very high resolution still face images, 3D face images, and single-iris images. On the FRVT 2006 and the ICE 2006 datasets, recognition performance was comparable for all three biometrics. In an experiment comparing human and algorithm performance, the best-performing face recognition algorithms were more accurate than humans. The FRVT 2006 was the sixth in a series of face recognition evaluations and documents two orders-of-magnitude improvement since the first face recognition project in 1993. These advances in face and iris recognition technology continue to enhance our nation's security posture.

The research is contained in NISTIR 7408, *Face Recognition Vendor Test (FRVT) 2006 and the Iris Challenge Evaluation (ICE) 2006 Large-Scale Results*, authored by Jonathon Phillips (ITL), Kevin Bowyer and Patrick Flynn (both of the University of Notre Dame), Alice O'Toole (University of Texas at Dallas), W. Todd Scruggs

(SAIC), Cathy Schott (Schafer Corporation), and Matthew Sharpe (SAIC). Documenting a culmination of the evaluation results, the report is the first multi-biometric independent evaluation done by the U.S. government. Sponsors of the work include the Departments of Homeland Security and Justice, the Director of National Intelligence, and the multi-agency Technical Support Working Group. The report can be downloaded at

<http://face.nist.gov/frvt/frvt2006/frvt2006.htm> and <http://iris.nist.gov/ice/>.

## ITL Researchers Develop Healthcare Conformance Test Tools

At a recent healthcare interoperability conference, ITL researchers Lisa Carnahan, John Garguilo, Robert Snelick, Sandra Martinez, and Gavin O'Brien demonstrated prototypes of two conformance test tools, *Message Maker* and *ICSGenerator*. These tools facilitate the adoption of healthcare standards by automatically generating test messages for the Health Level 7 (HL7) message profile specifications and for communicating medical device data throughout the healthcare enterprise as well as integrating it into the electronic health record.

ITL is building a tool kit that supports the testing of HL7 message interfaces based on the concept of message profiles. The foundation of the tool kit is a set of Java application programming interfaces (APIs) that supports testing activities such as automated message generation and message validation. The APIs can be used to build tools, web services, or they can be incorporated into third-party applications and testing environments. Using the APIs, ITL developed *Message Maker*, a tool that creates a suite of test message instances for any given profile. ITL is

also developing a testing framework and a message validation tool to administer and analyze the results of the tests. Future plans include tools for profile validation and an HL7 data repository. The HL7 Testing Toolkit Project is a collaboration effort between NIST and the HL7 Standards Consortium.

The *ICSGenerator* tool captures implementer-specified details of a medical device implementation. Implementation conformance statements (ICSs) are created via the tool's graphical user interface that specifies which features are implemented according to the domain information model and in the nomenclature of the ISO/IEEE 11073 standard. *ICSGenerator* produces an XML file which may be used to generate reports for use in selecting tests that would be applicable to testing a particular device as well as in comparing devices, which is necessary when determining the scope of interoperability. The *ICSGenerator* project is a collaboration effort between NIST, the IEEE Medical Device Communications work group, and the Integrating the Healthcare Enterprise (IHE) Patient Care Device (PCD) project sponsored by IHE and the American College of Clinical Engineering. See <http://www.itl.nist.gov/div897/>.

## NEW ITL PUBLICATIONS

*Establishing Wireless Robust Security Networks: A Guide to IEEE 802.11i*  
By Sheila Frankel, Bernard Eydt, Les Owens, and Karen Scarfone  
NIST Special Publication 800-97  
February 2007  
<http://csrc.nist.gov/publications/nistpubs/800-97/SP800-97.pdf>

This report provides a detailed explanation of next-generation 802.11



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The Information Technology Laboratory (ITL) is a major research component of the National Institute of Standards and Technology (NIST) of the Technology Administration, U.S. Department of Commerce. We develop tests and measurement methods, reference data, proof-of-concept implementations, and technical analyses that help to advance the development and use of new information technology. We seek to overcome barriers to the efficient use of new information technology, and to make systems more interoperable, easily usable, scalable, and secure than they are today. Our website is <http://www.itl.nist.gov>.

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wireless security. It describes the inherently flawed Wired Equivalent Privacy (WEP) and explains 802.11i's two-step approach to providing effective wireless security. It describes secure methods used to authenticate users in a wireless environment and presents sample case studies of wireless deployment.

### ***PIV Card / Reader Interoperability Guidelines***

By James F. Dray, April Giles, Michael Kelley, and Ramaswamy Chandramouli

NIST Special Publication 800-96  
September 2006

<http://csrc.nist.gov/publications/nistpubs/800-96/SP800-96-091106.pdf>

This document presents recommendations for Personal Identity Verification (PIV) card readers in the area of performance and communications characteristics to foster interoperability between any

card and any reader. It augments existing standards to enable agencies to achieve the interoperability goal of Homeland Security Presidential Directive 12.

### ***Guide to Intrusion Detection and Prevention Systems (IDPS)***

By Karen Scarfone and Peter Mell  
NIST Special Publication 800-94  
February 2007

<http://csrc.nist.gov/publications/nistpubs/800-94/SP800-94.pdf>

This publication assists organizations in understanding intrusion detection and prevention system (IDS) technologies and in designing, implementing, configuring, securing, monitoring, and maintaining these systems. It provides practical, real-world guidance for each of four classes of IDPS: network-based, wireless, network behavior analysis software, and host-based.

### ***Guide to Computer Security Log Management***

By Karen Kent and Murugiah Souppaya

NIST Special Publication 800-92  
September 2006

<http://csrc.nist.gov/publications/nistpubs/800-92/SP800-92.pdf>

This publication assists organizations in understanding the need for sound computer security log management. It provides practical, real-world guidance on developing, implementing, and maintaining effective log management practices throughout an enterprise.

### ***Recommendations for Obtaining Assurances for Digital Signature Applications***

By Elaine Barker  
NIST Special Publication 800-89  
November 2006

[http://csrc.nist.gov/publications/nistpubs/800-89/SP-800-89\\_November2006.pdf](http://csrc.nist.gov/publications/nistpubs/800-89/SP-800-89_November2006.pdf)

This document recommends methods for obtaining the assurances necessary

for valid digital signatures: assurance of domain parameter validity, assurance of public key validity, assurance that the key pair owner actually possesses the private key, and assurance of the identity of the key pair owner.

### ***Guide to Test, Training, and Exercise Programs for IT Plans and Capabilities***

By Tim Grance, Tamara Nolan, Kristin Burke, Rich Dudley, Gregory White, and Travis Good

NIST Special Publication 800-84  
September 2006

<http://csrc.nist.gov/publications/nistpubs/800-84/SP800-84.pdf>

This publication assists organizations in designing, developing, conducting, and evaluating test, training, and exercise events to aid personnel in preparing for adverse situations involving IT. The events are designed to train personnel, exercise IT plans, and test IT systems, so that an organization can maximize its ability to prepare for, respond to, manage, and recover from disasters.

### ***Program Review for Information Security Management Assistance (PRISMA)***

By Pauline Bowen and Richard Kissel  
NISTIR 7358

January 2007

<http://csrc.nist.gov/publications/nistir/ir7358/NISTIR-7358.pdf>

This report provides an overview of the NIST Program Review for Information Security Management Assistance (PRISMA) methodology. PRISMA is a tool for reviewing the complex information security requirements and posture of a federal program or agency. The report provides a framework for instructional purposes as well as assisting information security personnel, internal reviewers, auditors, and agency Inspectors General.

**Information Security for Executives**

By Pauline Bowen, Elizabeth Chew,  
and Joan Hash

NISTIR 7359

January 2007

<http://csrc.nist.gov/publications/nistir/ir7359/NISTIR-7359.pdf>

This guide provides a broad overview of information security program concepts to assist senior leaders and managers in understanding how to oversee and support the development and implementation of information security programs.

**Cell Phone Forensic Tools: An Overview and Analysis Update**

By Richard Ayers, Wayne Jansen,  
Aurelien Delaitre, and Ludovic Moenner

NISTIR 7382

March 2007

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When cell phones or other cellular devices are involved in a crime or other incident, forensic examiners require tools that allow the proper retrieval and speedy examination of information present on the device. This report provides an overview on current tools designed for acquisition, examination, and reporting of data discovered on cellular handheld devices, and an understanding of their capabilities and limitations.

**User's Guide to Export Controlled Distribution of NIST Biometric Image Software (NBIS-EC)**

By Kenneth Ko

NISTIR 7391

January 2007

[http://fingerprint.nist.gov/NBIS/request\\_ecc\\_cd.html](http://fingerprint.nist.gov/NBIS/request_ecc_cd.html)

This report documents the export controlled distribution of biometric image software (NBIS-EC). It is an update of the User's Guide to NIST Fingerprint Image Software 2 (NFIS2), published as NISTIR 6813 in November 2001.

**User's Guide to NIST Biometric Image Software (NBIS)**

By Kenneth Ko

NISTIR 7392

January 2007

[http://fingerprint.nist.gov/NBIS/nbis\\_n\\_on\\_export\\_control.pdf](http://fingerprint.nist.gov/NBIS/nbis_n_on_export_control.pdf)

This document is renamed from the User's Guide to NIST Fingerprint Image Software (NFIS), issued as NISTIR 6813 in November 2001. The majority of the contents in the NBIS document remain unchanged from the NFIS document.

**Dissemination of 3D visualizations of Complex Function Data for the NIST Digital Library of Mathematical functions**

By Qiming Wang, Bonita Saunders,  
and Sandy Ressler

NISTIR 7397

February 2007

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The NIST Digital Library of Mathematical Functions (DLMF) includes formulas, methods of computation, references, and links to software for over 40 functions. This paper focuses on the development and accessibility of the 3D visualizations for the library.

**Computer Security Division 2006 Annual Report**

Tanya Brewer and Kevin Stine,  
Editors

NISTIR 7399

April 2007

[http://csrc.nist.gov/publications/nistir/ir7399/NISTIR7399\\_CSDAnnualReport2006.pdf](http://csrc.nist.gov/publications/nistir/ir7399/NISTIR7399_CSDAnnualReport2006.pdf)

This report covers the work conducted within ITL's Computer Security Division during fiscal year 2006.

**From B-Spline Mesh Generation to Effective Visualizations for the NIST Digital Library of Mathematical Functions**

By Bonita Saunders and Qiming Wang

NISTIR 7402

March 2007

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This report discusses the use of tensor product B-splines to generate grids, or meshes, to facilitate the plotting of high-level mathematical functions for the NIST Digital Library of Mathematical Functions. The plot data is placed inside a web-based format such as VRML (Virtual Reality Modeling Language) to create interactive visualizations that allow users to carefully examine complicated function features such as zeros, branch cuts, poles, and other singularities.

**Usability Testing of Ten-Print Fingerprint Capture**

By Mary Theofanos, Brian Stanton,  
Shahram Orandi, Ross Micheals, and  
Nien-Fan Zhang

NISTIR 7403

March 2007

<http://zing.ncsl.nist.gov/biousa/docs/NISTIR-7403-Ten-Print-Study-03052007.pdf>

The Department of Homeland Security and the U.S. Visitor and Immigrant Status Indicator Technology (US-VISIT) program are migrating from a two-print capture process (left and right index fingers) to a ten-print slap fingerprint capture process (all fingers on both hands). This report presents the results of a study that examined the ten-print collection process.

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## MARK YOUR CALENDAR

### Plenary Meeting Technical Guidelines Development Committee (TGDC) – Voting System Guidelines

Dates: May 21-22, 2007

Place: NIST, Gaithersburg, Maryland

Sponsors: NIST and U.S. Election Assistance Commission (EAC)

The purpose of the ninth meeting of the TGDC will be to review and approve a revised draft of TGDC recommendations for future voluntary voting system guidelines to the EAC. The draft recommendations respond to tasks defined in resolutions passed at the previous TGDC meetings as well as a review of an initial draft of recommendations presented at the March 2007 plenary meeting. See <http://vote.nist.gov>.

NIST contact: Allan Eustis,  
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Conference website:  
[http://www.nist.gov/public\\_affairs/conference/070521.htm](http://www.nist.gov/public_affairs/conference/070521.htm)

### Biometric Consortium Conference 2007 (BC2007)

Dates: September 11-13, 2007

Place: Baltimore Convention Center, Baltimore, Maryland

Sponsors: NIST, National Security Agency, U.S. Army Biometrics Task Force, Department of Homeland Security, and National Institute of Justice

BC2007 will address the important role that biometrics can play in the identification and verification of individuals in this age of heightened security and privacy by examining biometric-based solutions for homeland security as well as the utilization of biometrics in other government and commercial applications. The multi-track conference will provide a forum to address biometric research, recent technology advancements, government initiatives and commercial applications, adoption of biometric standards, and biometrics and security.

The Biometrics Research Symposium will be held again this year as part of the BC2007 program. The scheduled keynote speaker is Dr. Marburger, Science Adviser to the President and Director of the Office of Science and Technology Policy.

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Conference website:

<http://www.nist.gov/bc2007/>

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