

NIST FSRP Data Initiatives: Biometrics Catalog and Reference Data Inventory

Trace Evidence Data Workshop
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Forensic Database & Reference Material Collection Inventory

In 2011, NIJ sponsored NIST to:

- To develop a comprehensive list of databases, reference materials, and standard reference collections used by forensic scientists in laboratories at the state and local level
- Survey conducted utilizing federal contract support

Forensic Database & Reference Material Collection Inventory

- Survey sample included crime laboratories at federal and state level
- Information was obtained on collections or databases that were:
 - a) maintain internally, or
 - b) accessed externally to conduct forensic investigations.

Forensic Database & Reference Material Collection Inventory

Contact Source

- 78 SOFS Contacts
- 87 Contacts Referred by Others

Status	Contacts
Responded but did not provide direct input.	100
Provided direct input.	40
Did not respond to the survey.	25
Total	165

- Approx. 85% response rate, but only 24% of total provided useful input to the inventory list.

Major Agencies

- 33 FBI Contacts
- 21 NOAA Contacts
- 17 ATF Contacts
- 9 NIST Contacts
- 8 DEA Contacts
- 8 NIJ Contacts
- 7 US Army Contacts
- 6 USSS Contacts
- 6 ICE Contacts
- 5 EPA Contacts
- 5 DoE Contacts

** Other agencies contacted include (but not limited to) : TIGTA, FDA, Joint POW/MIA Accounting Command, USPS, DC3.

Forensic Database & Reference Material Collection Inventory

Total 228 items in the inventory are available to view at:

<http://www.nist.gov/oles/forensics/forensic-database.cfm>

Area/Discipline	# of Entries
Biological	33
Biometric	8
Chemical/Toxicological	34
Environmental	26
Fire - Explosives	7
Firearms Toolmarks	5
Questioned Documents	14
Tech-Digital	7
Trace	26
Federal	130
Commercial	33

Forensic Database & Reference Material Collection Inventory

Name	Sub-discipline	Maintained By	Overview & Contents	Access & Fees	Collection Methods	Evidence Type	POC
ARBIDAR Company-Natural Fiber Collection	Fibers	ARBIDAR Company (commercial)	Reference collection of natural fibers and products manufactured from them. A kit of over 120 samples of natural fibers and products manufactured from them. A supplement to this kit was released recently.	Standards can be purchased for use in the laboratory.		Physical samples.	Susan Gross Minnesota BCA Chemistry Supervisor 651.793.2900 sue.t.gross@state.mn.us
ATF Trace Evidence Unit Reference Collections		Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF)	Collections of various trace evidence samples; automotive paint pigments, human hair, animal hair, fibers, black spray paint, silicone adhesive, electrical tape, and duct tape. Collections include various automotive paint pigments, human hair, animal hair, fibers (hundreds), black spray paints (~10), silicone adhesives (30-50), electrical tape (30-40), and duct tape (20-30).	Collection can be accessed by emailing POC.	Some samples (i.e. human and animal hair) are steadily accumulated. Others (i.e. black spray paint, silicone adhesives) are collected for a specific case. Samples are collected from various sources, including volunteers, casework, and commercial vendors.	Physical samples.	Leonora Bender Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) 202.648.6146
Cargille Laboratories - Optical Glass Standards	Glass	Cargille Laboratories (commercial)	Glass standards for refractive index measurements. A collection of selective, comminuted optical glasses supplemented by purified minerals to provide a reasonable range of refractive	Standards can be purchased through the URL. Four products available for purchase ranging from \$240.00 to \$531.00.		Physical samples purchased from an online catalogue.	Susan Gross Minnesota BCA Chemistry Supervisor 651.793.2900 sue.t.gross@state.mn.us

Areas for Improvement

- List is not comprehensive
- Contains information about collections not available to public
- Some entries are outdated/no longer in use

Forensic Database & Reference Material Collection Inventory

Next steps:

- Remove entries that contain information about databases not available to public or law enforcement
- Reconsider site location and interface
- Add additional data obtained on existing collections from this workshop
- Consider utilizing Microsoft Access Data Entry program developed for updates

The Biometric and Forensic Dataset Project

In 2015, NIJ sponsored NIST to:

- Create a **comprehensive catalog** of publicly available biometric and forensic datasets for the following modalities: finger/palmprints, iris, face, person at a distance, voice, and handwriting; and
- Host a symposium to discuss the adequacy of existing existing publicly-available datasets and the future needs in these areas.



Improving Biometric and Forensic Technology: The Future of Research Datasets

National Institute of Standards and Technology
January 26-27, 2015
Green Auditorium
Gaithersburg, MD

- Symposium held on January 26-27 brought together experts in biometrics and forensics to discuss current gaps in existing datasets
- Discussions will be used to direct future efforts in creating a **roadmap for expanding publicly available datasets** and a **best practices guide for collection and use**
- **Event summarized in a report** publicly available next month

The Biometric and Forensic Database Cataloging Effort

Goals

- To provide a pointer to publicly available datasets for *biometric/forensic* researchers
- To provide baseline data on existing publicly available *biometric/forensic* datasets to determine gaps for future collections
- To use lessons learned to establish best practices in developing *biometric/forensic* databases

The Biometric and Forensic Database Cataloging Effort

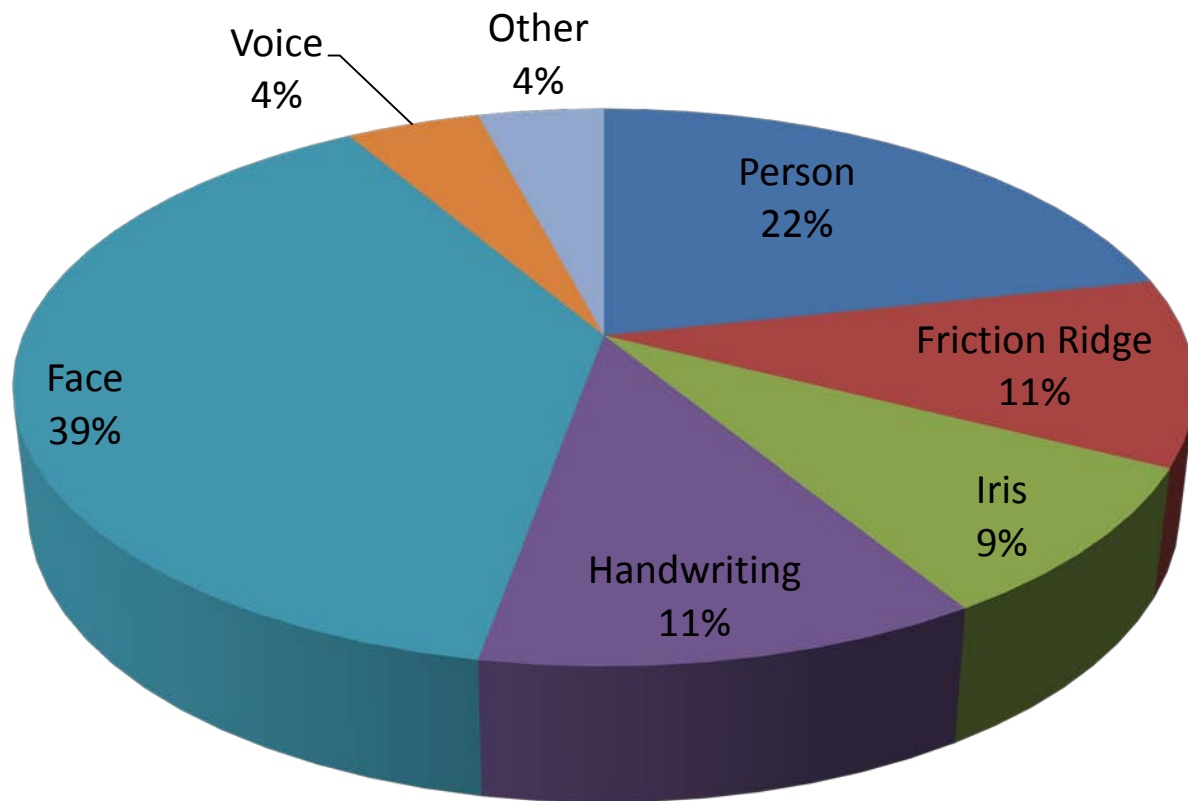
Where did we look?

1. Web searches
2. Journal articles
3. Universities with well known programs in biometrics
 - WVU, Michigan State, Notre Dame, Carnegie Mellon, etc.

*So far we've found **319 datasets**....*

The Biometric and Forensic Database Cataloging Effort

Datasets by Modality



*Last updated after initial collection in 2015 –
Figures are approximate*

The Biometric and Forensic Database Cataloging Effort

Current Site Development

- Site created with in-house NIST Office of System Information Management (OISM) developers
- Can be used internally for data entry and externally to conduct searches
- Users are capable of conducting two types of searches: via text or via taxonomy
- 299 databases currently entered on site (20 new identified but only on revised site)

<https://tsapps.nist.gov/BDbC/>

Catalog Homepage

NIST | [NIST Time](#) | [NIST Home](#) | [About NIST](#)

Biometric and Forensic Research Database Catalog

[Home](#) [Search](#)

The **Biometric and Forensic Research Database Catalog**, developed by NIST in collaboration with National Institute of Justice (NIJ), is a compendium of publicly available biometric datasets, and is still under development.

A symposium to discuss the results of this data collection effort and future database needs in the biometric community will take place on January 26-27, 2014 at NIST in Gaithersburg, MD. Information on the event will be available at: http://www.nist.gov/forensics/conferences_and_events.cfm.

The site is currently under construction and dataset information is populated weekly. If you have any questions, feedback, or suggestions, please email us at: BDBC@nist.gov.

Disclaimer

Within this application, NIST provides links to external web sites containing information that may be of interest to you. NIST does not endorse the views expressed or the facts presented on these external sites. Further, NIST does not endorse any commercial products or services advertised or offered on or through these sites.

Search Options

- [Search using a taxonomy](#)
- [Search using free text](#)

Other Resources

- [NIST Forensic Sciences](#)
- [NIST Biometrics](#)
- [NIST Biometric Standard Reference Databases \(SRDs\)](#)

Options to search via taxonomy or text

Related NIST pages

Search by taxonomy

SearchByTaxonomy

Please select the method of joining your selections.

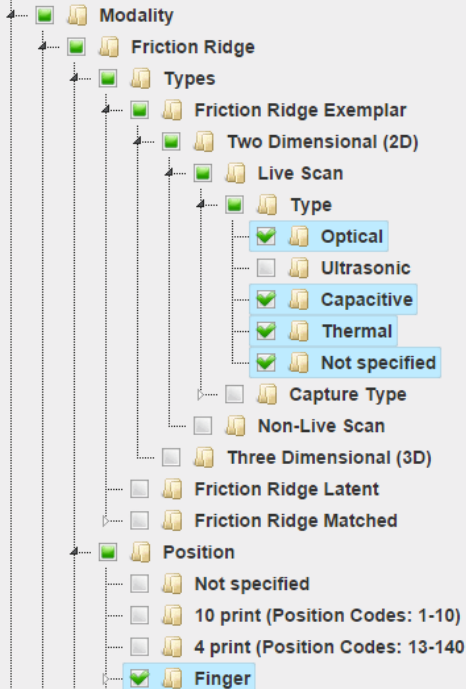
And = Results must match all selected criteria.

Or = Results can match any selected criteria.

And

Or

Expand selections by clicking on the arrows.



SearchResults

Number of Biometric Databases: 5

Title	Website	
ATVS FakeFingerprint Database (ATVS-FFp DB)	Link	Details
BIOSECUR-ID Multimodal Biometric Database	Link	Details
CASIA Multi-Spectral Palmprint Database	Link	Details
CASIA Palmprint Database	Link	Details
FVC2006 Fingerprint Database - BioSec Baseline Corpus	Link	Details

Details

Biometric Database

Title: ATVS FakeFingerprint Database (ATVS-FFp DB)
Website: http://atvs.ii.uam.es/ffp_db.html
Managing Organization: Universidad Autonoma de Madrid
Contributing Organizations:
Country: Spain
Description: Two datasets containing real and fake fingerprint images specifically thought to assess the vulnerability of fingerprint-based recognition systems to direct attacks and to evaluate the performance of liveness detection methods. Fake samples were captured from gummy fingers generated both with and without the cooperation of the user. Three different sensors were used to acquire the database: flat-optical, flat-capacitive, and sweeping-thermal.
SubjectsDescription: Over 4,500 real and fake fingerprint images
SpecialNotes: None.
Status: Active
Access Requirements: Publicly available; Instructions can be found on website; License agreement can be found at: http://atvs.ii.uam.es/licenses/ATVS-FFp_License.pdf
Related Publication: J. Galbally, F. Alonso-Fernandez, J. Fierrez and J. Ortega-Garcia, "A High Performance Fingerprint Liveness Detection Method Based on Quality Related Features", Future Generation Computer Systems, Vol. 28, pp. 311-321, 2012.

Linked Taxonomies

- Not specified
- Right Index (Position Code: 2)
- Left Index (Position Code: 7)
- Plain
- Not specified
- Cooperative
- Non-cooperative
- Spoof
- Right Middle (Position Code: 3)
- Left Middle (Position Code: 8)
- Capture Type
- Optical
- Capacitive

Details about each database record are included in catalog

The Biometric and Forensic Database Cataloging Effort

Data Collection – Entry Details

- Title
- Website
- Managing Organization
- Contributing Organization
- Country
- Description
- Subjects Descriptions
- Special Notes
- Status
- Access Requirements
- Related Publications

The Biometric and Forensic Database Cataloging Effort

Data Collection

Taxonomy Categories

- **212 categories**
- Major categories include: modality, data type, quality, method of associating mated subjects, data capture, and misc. data characteristics

<https://tsapps.nist.gov/BDbC/Search/SearchByTaxonomy>

BETA Testing of Catalog Updates

Newer version being disseminated with:

- More user friendly interface
- More refined taxonomy
- Datasets vetted for inclusion/removal
- Function added that allows user to request an edit while viewing the dataset record

BETA Testing of Catalog Updates

Biometric and Forensic Research Dataset Catalog

Search

Text: **Search Against:** All Fields Title Only Organization Only

Taxonomy:

Results : 319

Title	Organization	Modality
10k US Adult Faces Database	Massachusetts Institute of Technology	Face
3D Basel Face Model (BFM)	University of Basel	Face
3D Mask Attack Dataset (3DMAD)	Idiap Research Institute	Face
3D PeS (3D People Surveillance Dataset)	Video Surveillance Online Repository	Person at a Distance
3D Twins Expression Challenge (3D-TEC) Data Set	University of Notre Dame	Face
3D_RMA: 3D Database	Royal Military Academy of Belgium	Face
Actions as Space-Time Shapes	Weizmann Institute of Science	Person at a Distance
Affectiva-MIT Facial Expression Dataset (AM-FED)	Massachusetts Institute of Technology	Face
Ahumada Biometric Dataset (Ahumada-25)	Autonomous University of Madrid	Voice
AlexU-Word Dataset	Alexandria University	Handwriting
AMI Ear Database	University of Las Palmas de Gran Canaria	Face, Ear

Want to add a dataset to the biometric forensic research database? [Click Here](#)
For other questions please send an email to: bfrc@noblis.org

Other Resources:

NIST Forensic Sciences
NIST Biometrics
NIST Biometric Standard Reference Databases (SRDs)
NIST Ballistics Toolmark Research Database

Video Displaying New Website Functionality

<http://screencast.com/t/A919qpui4>

Why is this relevant to you?

FSRP is always actively looking for better ways to make information more available to forensic practitioners to support their work....

We need your help to:

- Continue disseminating accurate, reliable, and useful information
- Continue exchanging information on where needs exist

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