Priority Action Report

Facial Identification Subcommittee

Digital Multimedia SAC

Lora S Sims

July 31, 2018

San Antonio, TX – IAI Annual Conference

Subcommittee Leadership

Position	Name	Organization	Term	Email
Chair	Lora S Sims	Ideal Innovations, Inc	2018	Lora.sims@idealinnovations.com
Vice Chair	Britt Toalson	Seattle Police Dept	2019	Britt.toalson@seattle.gov
Executive Secretary	Jane Wankmiller	University of Northern Michigan	2018	jwankmil@nmu.edu

Subcommittee Members

Name	Organization	Term	Email
Walt Bruehs	FBI	2019	webruehs@fbi.gov
Mark Dolfi	LA Co Sheriff Dept	2018	madolfi@lasd.org
Neal Gieselman	AWARE, Inc	2019	Neal.gieselman@gmail.com
Matthew Graves	US Army Criminal Investigation Lab	2017	mgraves9@gmail.com
Steven Lee	San Jose State University	2018	sblee999@gmail.com
Ping Ma	University of Georgia	2017	pingma@uga.edu
Trish Murphy	Dept of Defense	2018	patramu@nctc.gov
P. Jonathan Phillips	NIST	2017	jonathon@nist.gov
Todd Putorti	New York State Department of Motor Vehicles	2019	todd.putorti@dmv.ny.gov
Kirt Simmons	AR Children's Hospital	2018	simmonske@archildresn.org
Debra Tennant	Federal Bureau of Investigation	2017	dltennant@fbi.gov
Antonio Trindade	US Border Patrol	2017	Antonio.trindade@dhs.gov
Steve Wilkins	Pierce Co Sheriff's Dept	2019	swilkin@co.pierce.wa.us
Open spot			

U.S. Affiliates

Justin Cook	Federal Bureau of Investigation
Edward German	Macon County Sheriff's Office
Leslie Kelly	U.S. Government
Jodie Linger	Federal Bureau of Investigation
Michael Streed	Baltimore County Police Department

Foreign Affiliates

Carolyn Dutot	Canada Border Services Agency
Netta Lev Tov Chattah	Israel National Police
Michael Matheson	Department of Foreign Affairs
Campbell McGhee	INTERPOL
Reuben Moreton	Metropolitan Police Service
Johanna Morley	Metropolitan Police Service
Patricia Moss	Australian Passport Office
Ruth Phillips	Metropolitan Police Service
Jason Prince	Australian Federal Police
Arnout Ruifrok	Netherlands Forensic Institute
Geoff Whitaker	UK Home Office
Caroline Wilkinson	Liverpool School of Art and Design

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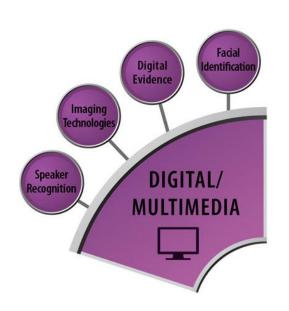
March 20-23, 2018 Chicago, IL

Discipline Description

The Mission of the OSAC Facial Identification Subcommittee is to develop consensus standards and guidelines for the image-based comparisons of human facial features and to provide recommendations for the research and development necessary to advance the state of the science.

Summary of Standards/Guidelines Priority Actions

Priority	Working Title of Document
1	Facial Image Comparison Feature List for Morphological Analysis
2	Capture And Equipment Assessment For Face Recognition Systems
3	Guidelines for Postmortem Facial Image Capture
4	Guidelines for Training Program in Facial Comparison
5	Overview of Facial Comparison Methods
6	Image Processing

Standards/Guidelines Development Priority 1 Document

Document Title: **Facial Image Comparison Feature List for Morphological Analysis**

Scope: To provide a standardized list to be considered when conducting morphological analysis

Objective/rationale: Aids in providing a systematic way of comparing features of the face/head

Issues/Concerns: Does not cover the entire comparison process

Task Group Name: One-to-one
Task Group Chair Name: Debra Tennant
Task Group Chair Contact Information: dltennant@fbi.gov
Date of Last Task Group Meeting: March 20-23, 2018

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Standards/Guidelines Development Priority 1 Document

Key Components of Standard:

- List of Facial Components (gross features considered in virtually all comparisons, e.g. Nose)

- List of Component Characteristics (details about the Facial Components, e.g. Root, Bridge, Tip, Nostrils, Columella, Alae)

Priority 1: Facial Image Comparison Feature List for Morphological Analysis
Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Seek approval from DM SAC to send to SDO (ASTM)	SDO 400	Matthew Graves	Complete
Send to SDO (ASTM)	SDO 500	Lora Sims	Complete
ASTM process	SDO 700	Lora Sims	Complete
Registry Approval process	RA-30	Lora Sims	Sept 1, 2018

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Standards/Guidelines Development Priority 2 Document

Document Title: **Capture And Equipment Assessment For Face Recognition Systems**

Scope: Provide best practices for collection to ensure the images captured are suitable for Face Recognition (FR) system use

Objective/rationale: Provides an overview of the considerations a practitioner should take when making decisions for the capture of facial images.

Issues/Concerns: none

Task Group Name: Systems & Capture
Task Group Chair Name: Neal Gieselman
Task Group Chair Contact Information:
Neal.gieselman@gmail.com
Date of Last Task Group Meeting: March 20-23, 2018

Standards/Guidelines Development Priority 2 Document

Key Components of Standard:

- Image capture process as it relates to the following:
  - Controlled acquisition (when all imaging parameters can be adjusted as needed to optimize the resulting image, e.g. passport offices)
  - Semi-controlled acquisition (when some aspects of the environment or subject can be controlled, but not all aspects of both)
  - Ad-hoc acquisition (when neither the environment nor the subject can be controlled, e.g. surveillance, cell phones, and third party imagery).

Priority 2: Capture And Equipment Assessment For Face Recognition Systems
Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Seek approval from DM SAC to send to SDO (ASTM)	SDO 400	Neal Gieselman	Complete
Send to SDO (ASTM)	SDO 500	Neal Gieselman	Complete
Processing through ASTM	SDO 700	Neal Gieselman	Complete
Published at SDO (ASTM E3115-17)	SDO 1100	Neal Gieselman	Complete
Starting the Registry Approval Process	RA 30	Neal Gieselman	Aug 31, 2018

Standards/Guidelines Development Priority 3 Document

Document Title: **Guidelines for Post Mortem Facial Image Capture**

Scope: Provide guidelines for capturing postmortem facial images of unidentified human remains in a controlled (morgue) and semi-controlled (field) settings to facilitate Facial Recognition (FR) searches or facial comparison that may contribute to determining the identity of the unidentified person.

Objective/rationale: Provides an overview of the optimal processes and techniques for the capture of postmortem facial images of human remains in order to maximize their utility in FR searches and facial image comparisons.

Issues/Concerns: May have some time and financial implications on morgues.

Task Group Name: Systems & Capture
Task Group Chair Name: Neal Gieselman
Task Group Chair Contact Information:
Neal.gieselman@gmail.com
Date of Last Task Group Meeting: March 20-23, 2018

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Standards/Guidelines Development Priority 3 Document

Key Components of Standard:

- Image capture environment (lighting, camera position, and background)

- Preparation of the subject body (head position, head coverings and accessories, shoulder position)

- Preparation of the subject face (obscuring matter, hair, wounds or fragments, mouth, eyes, eyeglasses, prosthetics)

- Use of video

- Documenting scars, marks, tattoos (SMT).

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Priority 3: Guidelines for Post Mortem Facial Image Capture
Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Seek approval from DM SAC to send to SDO (ASTM)	SDO 400	Neal Gieselman	Complete
Send to SDO (ASTM)	SDO 500	Neal Gieselman	Completed
Processing through ASTM	SDO 700	Neal Gieselman	In process
Published at SDO (ASTM E3148–18)	SDO 1100	Neal Gieselman	Complete
Starting the Registry Approval Process	RA 30	Neal Gieselman	Aug 31, 2018

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Standards/Guidelines Development Priority 4 Document

Document Title: **Guide for Role Based Training in Facial Comparison**

Scope: Provides the recommendations for a role based training to achieve competency in facial comparison tasks

Objective/rationale: Providing guidelines for training programs specific subject matter, relevant to facial reviewers and facial examiners required to conduct comparisons from the basic to the advanced level

Issues/Concerns: Does not address the specific content of agencies training program but instead provides an overview of recommended topics and levels of training.

Task Group Name: Training
Task Group Chair Name: Steve Wilkins
Task Group Chair Contact Information:
swilkin@co.pierce.wa.us
Date of Last Task Group Meeting: March 20-23, 2018

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Standards/Guidelines Development Priority 4 Document

Key Components of Standard:

- Overview of different roles and what training should be achieved at each role (e.g. manager should have an awareness of all things, facial examiner should be proficient in the majority of subjects)

- Categories of Training (e.g. overview, skills & techniques, knowledge of processes, court preparation & presentation)

Priority 4: Guide for Role Based Training in Facial Comparison

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Combine "Recommendations for a Training Program in Facial Comparison & Guidelines" and "Recommendations for Facial Comparison Training to Competency"	SDO 200	Steve Wilkins	completed
Subcommittee, DM SAC, & RC review for sending to SDO		Steve Wilkins	August 31, 2018
Send to DM SAC for approval to send to SDO	SDO 400	Steve Wilkins	September 2018

Standards/Guidelines Development Priority 5 Document

Document Title: **Overview of Facial Comparison Methods**

Scope: Describes current methods for facial comparison and to provide guidelines for their appropriate use. Provides Overview of how facial comparisons are used in the security, intelligence, law enforcement, and forensic communities.

Objective/rationale: Selection of the appropriate method to use for a facial comparison depends on the image quality, the training and experience of the practitioner, and the purpose of the examination. The methods used to compare faces will often depend on the purpose of the comparison.

Issues/Concerns: The best method to utilize based on operational conditions must be understood and if the time or effort to do a full examination cannot be conducted, there are associated risks (i.e., greater chance of error).

Task Group Name: One-to-one
Task Group Chair Name: Debra Tennant
Task Group Chair Contact Information: dltennant@fbi.gov
Date of Last Task Group Meeting: March 20-23, 2018

Standards/Guidelines Development Priority 5 Document

Key Components of Standard:

- Pros and cons of each type of facial comparison methodology (holistic comparison, morphological analysis, photo-anthropometry, and superimposition)

- Recommended practice to address different type of comparisons (facial review versus facial examination).

- Overview of applications (intelligence gathering for identity management, screening and access control, investigative and operational tool, and forensic identification)

- General procedures for assessment, examination, evaluation, conclusions, and quality management

- Current methods (holistic comparison, morphological analysis, photo-anthropometry, and superimposition) for facial image comparison.

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Combine "Facial Comparison Overview" with "Guideline for Facial Comparison Methods"	SDO 200	Jane Wankmiller	September 1, 2018
Subcommittee review	SDO 200	Jane Wankmiller	December 2018

Standards/Guidelines Development Priority 6 Document

Document Title: **Image Processing to Improve Automated Facial Recognition Search Performance**

Scope: Provide facial examiner guidelines for processing a probe image in order to maximize the potential that an investigative lead will be included among the candidates returned following a facial recognition system (FRS) search.

Objective/rationale: Images that meet agreed upon international standards (such as ISO/IEC 19794-5: Face Image Data) can normally be submitted to an FRS for searching with little or no operator intervention. Many FRS also include intrinsic mechanisms for correcting minor deviations in subject pose, image size or vendor specific adjustments to the image. Manual processing by a trained facial examiner may be beneficial for sub-optimal images (e.g. low resolution, heavily compressed or where the subject's pose, illumination, and/or expression are non-neutral).

Issues/Concerns: none

Task Group Name: Systems & Capture
Task Group Chair Name: Neal Gieselman
Task Group Chair Contact Information:
Neal.gieselman@gmail.com
Date of Last Task Group Meeting: March 20-23, 2018

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Standards/Guidelines Development Priority 6 Document

Key Components of Standard:

- Generalized and sequential search process.
- Adherence to standard workflows

Priority 6: Image Processing to Improve Automated Facial Recognition Search Performance
Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Send to RC/STG/VITAL for review/comments		Neal Gieselman	Complete
Seek approval from DM SAC to send to SDO (ASTM)	SDO 400	Neal Gieselman	August 15, 2018
Send to SDO (ASTM)	SDO 500	Neal Gieselman	Sept 1, 2018

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Additional Documents for OSAC Publication

- **Frequently Asked Questions about Facial Identification**
  - 12 questions (e.g., How reliable is facial comparison? What is automated facial recognition? Is there a certification for facial image comparison?)
  - Living document - additional and/or updating of questions
    - New questions will be added as necessary
    - When issues arise that may cause removal or rewording
  - Status of document
    - Posted to FI Subcommittee page on OSAC website

- **Courtroom Testimony for Facial Identification**
  - Approx. 17-20 questions
    - 4-5 relating to research, organizations, publications
    - 6-7 relating to training, terminology, comparison methods
    - 7-8 relating to analysis of images, processing images, and technical skills
  - Status of document
    - Task group development
    - Case law research
    - Courtroom testimony research

Task Group Name: Public Communication
Task Group Chair Name: Mark Dolfi
Task Group Chair Contact Information: madolfi@lasd.org
Date of Last Task Group Meeting: Mar 20-23, 2018

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Standards/Guidelines Reviewed For Technical Merit

Title	Developing Organization	Status*	OSAC Process Stage (e.g., RA 100)
Physical Stability of Facial Features of Adults	FISWG	Review of comments	At SWG
Factors To Consider in Facial Image Assessment	FISWG	In draft	At SWG
Metadata Usage	FISWG	Reformatting	SDO 200
Facial Recognition System Methods and Techniques	FISWG	Reformatting	SDO 200
Facial Recognition System Bulk Data Transfer	FISWG	Reformatting	SDO 200

Research Gaps Identified

- Validation of Physical Stability
  - Literature review of relevant studies [scientific, medical, academic, and professional] regarding the physical stability of the facial features of adults detailed within the current Physical Stability of Facial Features of Adults document.
  - In addition to the literature review, the conclusions reached based on relevant research should be presented to the subcommittee in layman's terms for incorporation into the document.

- Post Capture Imaging Processing
  - Best practices and scientifically validated techniques to improve facial image quality for biometrics and forensics

- Human Factors in Facial Image Comparison
  - Research to determine effective strategies for training in facial comparison and to develop testing material.
  - Research to validate the methods used by trained examiners to compare faces and establish effective case management and bias mitigation strategies.

- Assessment of the accuracy of getting Facial Images from DNA
  - Research to perform an objective evaluation of the performance of claimed techniques by vendor(s) who are selling technology that purports to create an accurate adolescent facial image from DNA.

- Evaluation into the Validity of Facial Comparison Training Methods *new*
  - conduct empirical validation of current facial comparison training courses for operational personnel to determine what aspects of training are required to improve facial comparison ability

Additional Items of Interest

- Additional standards/guidelines currently being worked on by FI Subcommittee (all in draft format)
  - Guideline on the Effects of a Printed Image for Facial Image Comparison
  - Physical Stability of Facial Features of Adults
  - Conclusion Scale
  - Guide for facial comparison training to competency

- Future standards/guidelines by Facial Identification Subcommittee
  - Guidelines for Post Capture Analysis and Processing of Facial Images
  - Presenting Facial Identification Results in Court
  - 3D Pose Correction to Improve Automated Facial Recognition Search Performance
  - Using imagery from Body Worn Cameras
  - Guide for proficiency testing in role based facial comparison
  - Guide for competency frameworks for role based facial comparisons

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Additional Items of Interest

- Current multi-subcommittee standards/guidelines
  - Virtual Subcommittee #1: ISO 17020/17025
  - Virtual Subcommittee #2: ANSI/NIST-ITL 1-2011
  - Virtual Subcommittee #3: ACE Process Map
  - Virtual Subcommittee #4: Training, Continuing Education & Professional Development
  - Virtual Subcommittee #5: Source Conclusions
- Future multi-subcommittee standards/guidelines
  - Presenting Evidence in Court (e.g. how to use visual aids)
  - Reporting findings
- Leverage those already on the affiliate list and encourage others within the community to join OSAC to assist with document development, research, etc.
  - Complete the OSAC membership application form found at: https://www.nist.gov/forensics/osac-application.cfm
  - Please be sure to specify your interest in the Facial Identification Subcommittee

Additional Items of Interest

- Work with FISWG on development of additional standards & guidelines
  - Next FISWG meeting scheduled for September 10-14, 2018 at Michigan State Police campus in Lansing, MI.
  - Currently accepting membership applications to FISWG
    - Application information can be found at www.FISWG.org

- Questions regarding FISWG can be sent to: FISWG1@gmail.com

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Questions

- Lora Sims can be contacted at:

  facial_id-chair@workspace.forensicosac.org

- For more information about OSAC or becoming a member:
  - https://www.nist.gov/forensics/organization-scientific-area-committees-forensic-science
  - https://www.nist.gov/osac-application-form

**Be sure to specify your interest in the
Facial Identification Subcommittee**