IAFIS INTERFACE EVALUATION TASK FORCE
(IIETF) MEETING
CHICAGO, ILLINOIS
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STAFF PAPER

TOPIC #12

Scar, Mark, and Tattoo (SMT) Canvass

PURPOSE

To provide a proposal for determining the law enforcement interest in expanding the use of Scars, Marks, and Tattoos (SMT) in accordance with the ANSI/NIST ITL 1-2007.

POINT OF CONTACT

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REQUEST OF THE IIETF

The IIETF is requested to discuss the methodology included in this paper and provide appropriate comments, suggestions, and recommendations regarding the operational use of SMTs.

BACKGROUND

The SMT portion of NIST Special Publication 500-271: Data Format for the Interchange of Fingerprint, Facial, & Other Biometric Information - Part 1 (ANSI/NIST-ITL 1-2007) has not been enhanced since 1997. Currently, there are 23 million text-based SMT's on subjects being fingerprinted that do not have a corresponding Type-10 SMT image. Departments need to be encouraged to submit SMT images if they are capable of doing so. The present SMT codes should be updated to reflect new law enforcement/intelligence data applications and to normalize the textual entries used to describe all SMTs. As Next Generation Identification (NGI) operational concepts are developing, particular interest in gang related-tattoos exists.

Ancillary information such as SMTs are being used more frequently by law-enforcement to identify criminal suspects and/or their victims. Unlike fingerprints, SMTs lack both the permanence and distinctiveness to positively identify an

individual. However, such uniquely descriptive and pictorial information may be utilized to differentiate, and thus narrow one's identity, much more effectively than physical descriptors (i.e., age, race, height, weight, hair and eye color, etc.). Due to variations of the pigment's embedded skin depths, tattoos may often still be observed after physical trauma such as severe skin burns. For recent examples, forensic tattoo identification was used to identify some victims of the 9/11 terrorist attacks and the 2004 tsunami in Asia.

Tattoos can indicate a person's social status, personality, religious affiliation, or criminal organization affiliation. Some overt and covert meanings within tattoos can include gang affiliation, criminal skills and specialties, crimes committed, convictions, etc. This information has potential intelligence value in gang intelligence units. Surveillance photos are likely to include images of tattoos on the neck, forearms, torso, etc. However, the current systems and standards are inadequate for full-scale use of these SMT images.

Tattoos are becoming increasingly prevalent - especially within the younger population. In 1936, Life magazine estimated that only 6 percent of the population had at least one tattoo as compared to an estimated 16 percent today. Among people within the age of most violent offenders, the incidence of tattoos is much higher than in the general population. A 2006 Pew Research Center survey found that approximately 36 percent of individuals between the ages of 18-25 and 40 percent of those between the ages of 26-40 have at least one tattoo. Of particular note, a large portion of the criminal element possesses tattoos, which could potentially be used for search and initial identification purposes across law enforcement databases. Approximately one-third of all IAFIS Criminal Master File records contain an entry within the SMT Type-2 field indicating the presence of at least one tattoo.

Tattoo searching/identification can be useful to law enforcement when other identification means (e.g., fingerprints) may be unavailable, or insufficient (e.g., fingerprint pattern area, fingerprint quality, etc.). The premise behind the FBI's NGI endeavor is the incorporation of additional biometric identification modalities to augment fingerprints. While not a biometric modality, tattoos present the opportunity for a new service in the NGI with the eventual goal of expanding upon the current text-based tattoo search capabilities and to incorporate image-based tattoo matching (i.e., such as those used for fingerprints) to improve system efficiency and accuracy.

In anticipation of the expanded SMT services with the NGI, the current ANSI/NIST-ITL standard regarding scars, marks, and tattoos should also be updated. The NGI will provide text-based tattoo search capabilities, but in the future, pattern-based tattoo search capabilities, via NGI technology refreshment,

may also be provided. When SMTs were added to the 1997 Addendum to the ANSI/NIST-ITL, the definitions were copied directly from the National Crime Information Center (NCIC) Code Book. While appropriate for NCIC applications, these SMT categories should be addressed for the image-based functions under consideration for NGI.

The FBI's Electronic Biometric Transmission Specification (EBTS) v 8.002 standard supports tattoos in two ways and also should be updated in concert with any changes to the ANSI/NIST-ITL standard. The first is as textual references in the Type-2 descriptor fields where the presence of SMTs can be noted in Field 2.026. This Type-2 SMT field should be expanded to indicate if there is a related Type-10 SMT photographic image. Furthermore, criminal history record information should also be modified to explicitly call out when SMT images are available. The entry in the EBTS reads:

> **SMT 2.026 - Scars, Marks and Tattoos.** For each scar, mark, or tattoo present on the subject, the appropriate NCIC code shall be used in this information item. Blanks are allowed as special characters.

Secondly, they can be included as Type-10 image files. The definitions are provided in the overarching ANSI/NIST-ITL field 10.042. The entry in the ANSI/NIST-ITL reads:

> **Field 10.042 - SMT descriptors.** The first information item of each subfield shall identify the source of the image as being a scar, a mark, or a tattoo.

The standard goes on to define four information items for Field 10.042:

- The first information item identified the Type-10 image as being a scar, a mark, or a tattoo.

- The second information item, in the case of tattoos, contains eight class descriptions (i.e., human forms and features, animals and animal features, plants, flags, objects, abstractions, insignias and symbols, and "other"). The class description of "Insignias & Symbols" is the appropriate category for gang tattoos.

- The third information item is an appropriate subclass. Given an entry such as "Insignias & Symbols" in the second information item, the third information item choice would be "Gang".

- The fourth information item is a free text ASCII string that can in fact contain multiple entries. These entries could include the name of a gang, an NCIC body part identifier, or other NCIC entries since there is no standard guidance that supports interoperable searches at the text level.

Many tattoos incorporate multiple subjects and colors within their designs, which lends itself to human-assigned categorization subjectivity and variability even before reaching the fourth subfield - free text. At the present time, most law enforcement agencies, including the FBI, can only perform textual or key-word based tattoo searches. A less subjective and more accurate future tattoo search process might also incorporate image-based searching which can easily leverage the research already performed in the area of automated image matching.

DISCUSSION AND ANALYSIS

Due to the increasing popularity and variability of tattoo designs within society, law enforcement should make the most of these additional identity markings. Consequently, the present tattoo class/subclass definitions in the current ANSI/NIST-ITL standard and the FBI-EBTS are inadequate for uniquely describing and thus permitting more accurate searches than possible today. For example, there is no agreement on fourth level textual descriptors for tattoos in Type-10 records. The Booking Officer may select Tattoo, then Symbol, then Gang, but the final field is free text. In addition, there is no indicator in the Type-2 field to reflect the presence of a Type-10 record or for full alignment with the four information elements in Field 10.042.

There is a need to have a common vocabulary for descriptors for both human and machine classification descriptors. The CJIS Division is canvassing users to provide information utilized to develop a concept of operations for using SMTs in NGI and for updating the ANSI/NIST-ITL and FBI-EBTS SMT field entries and correcting some minor pre-existing errors. The CJIS Division is aware that certain states have mandatory sentencing enhancements for gang members and that defendants might challenge the assignment of the subclass field "Gang" for an imaged tattoo. The CJIS Division will address that issue in the surveys and findings.

Comments and additions regarding this initiative can be submitted via the FBI biometric specifications website at www.fbibiospecs.org. This website will also reflect the current status of this SMT initiative as changes and updates are made.

Many tattoos have widespread or universal meanings. The CJIS Division wishes to canvass the law-enforcement community, including FBI's National Gang Intelligence Center and MS-13 National Gang Task Force, as well as FBI Field

Offices and LEGATS, state and local law-enforcement officials, and gang task forces to determine current and desired operational use of tattoos in law-enforcement. This technique may also be used to collect sample tattoos and their known street meanings. All responses to the canvass may be incorporated into the recommended future updates to the current ANSI/NIST-ITL and FBI-EBTS codes for Fields 2.026 and 10.042.

RECOMMENDATION

The FBI's Criminal Justice Information Services (CJIS) Division requests the IIETF to discuss the methodology included in this paper and provide appropriate comments and suggestions, and make recommendations regarding the operational use of SMTs by the law-enforcement community including categorizing samples of common universally recognized tattoos and their associated values and/or meanings.