



OSAC Research Needs Assessment Form

Title of research need: Close Non-Match Assessment

Keywords: Close Non-Match, AFIS, Likelihood, Sufficiency, Suitability

Submitting subcommittee(s): Friction Ridge

Date Approved:

(If SAC review identifies additional subcommittees, add them to the box above.)

Background information:

1. Description of research need:

(1) Using large AFIS databases, conduct a study that measures the likelihood of finding close non-matches based upon the location within friction ridge impressions and specificity of these features and their arrangements (unit relationships). (2) Assess the ability of the examiner to discriminate these close non-matches with true mates. (3) Creation of a sanitized close non-match dataset for research and training.

2. Key bibliographic references relating to this research need:

It is believed that there is no structured research that directly addresses this need.

For a comprehensive and informative bibliography related to friction ridge examination please see Appendix "A": The 2011 SWGFAST response to the Research, Development, Testing & Evaluation Inter-Agency Working Group of the National Science and Technology Council, Committee on Science, Subcommittee on Forensic Science.

3a. In what ways would the research results improve current laboratory capabilities?

This type of research will provide examiners with empirical evidence of the risk associated with searching low minutiae count images against large AFIS databases. It will also provide data supporting potential thresholds of the minimum amount of features that should be used in AFIS searches as well as the ACE-V process (sufficiency).

3b. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

Research in this area will produce metrics and datasets valuable for sufficiency determination, examiner cognition study, and statistical modeling research.

3c. In what ways would the research results improve services to the criminal justice system?

Research will provide data to reduce AFIS erroneous decisions. The Brandon Mayfield error exposed the danger of close non-matches found in AFIS. To date there is little scientific data that quantifies the overall risk of close non-matches in AFIS databases. It is difficult to create standards regarding sufficiency for examination or AFIS search searching without this type of research.

4. Status assessment (I, II, III, or IV): I

	Major gap in current knowledge	Minor gap in current knowledge
No or limited current research is being conducted	I	III
Existing current research is being conducted	II	IV

This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.

Subcommittee

Approval date: 01/29/2016

(Approval is by majority vote of subcommittee. Once approved, forward to SAC.)

SA

1. Does the SAC agree with the research need? Yes

2. Does the SAC agree with the status assessment? Yes

If no, what is the status assessment of the SAC:

Approval date: 17-Mar-2016

(Approval is by majority vote of SAC. Once approved, forward to NIST for posting.)