



RECOMMENDATIONS FOR RESEARCH

Preamble

SWGFAST recognizes the importance of research in the science of friction ridge examination and endorses the development of new, additional, or improved research initiatives regarding topics listed in this document.

Funding to conduct this research is the responsibility of the researcher.

Research intended for operational application in friction ridge examination recommended in this document must include friction ridge examiners as subject matter experts in the research design, testing, and evaluation.

Prior to the operational application of research recommended in this document, independent validation must be conducted and comply with generally accepted scientific validation practices.

Accreditation

Compare the performance of accredited and non-accredited friction ridge examination service providers. This assessment may include quality assurance measures such as accuracy of conclusions, competency and proficiency testing, existence of standard operation procedures, and adherence to those procedures. It may also take into consideration factors such as hiring qualifications for practitioners, training and continuing education, workloads, and compensation.

Accuracy of Reported Conclusions

Determine the accuracy of friction ridge comparison conclusions in adjudicated cases.

AFIS Study

Using large AFIS databases, conduct a study that measures the likelihood of finding close non-matches based upon the location within a fingerprint and specificity of these features and their arrangements. Furthermore, assess the ability of the examiner to discriminate these close non-matches.

Age of Friction Ridge Impressions

Conduct additional research to determine if there is a reliable and accurate process to measure the age of friction ridge impressions.

Automated Distortion Recognition and Compensation in Automated Fingerprint Identification Systems (AFIS)

Develop additional or refine existing distortion recognition and compensation tools for use in automated fingerprint identification systems that increase reliability and accuracy.

Bias

Develop studies to measure and understand the influence of bias during the application of the ACE-V method.

Blind Verification

Determine if or when blind verification is an effective quality assurance measure.

Certification

Compare the performance of certified and non-certified friction ridge examiners. This assessment may include quality assurance measures such as accuracy of conclusions, competency and proficiency testing, existence of standard operation procedures, and adherence to those procedures. It may also take into consideration factors such as hiring qualifications for practitioners, training and continuing education, workloads, and compensation.

Effects of Chemical, Biological, Radiological, and Nuclear Exposure on Latent Print Residues

Develop additional or refine existing studies regarding the effects of chemical, biological, radiological and nuclear exposure events on latent print residues.

Examiner Consistency

Develop additional or refine existing tools to improve consistency in the interpretation of friction ridge images, feature selection, and decisions in ACE among examiners.

Develop tools to assist the examiner measure the quality of friction ridge impressions during the analysis stage.

Friction Ridge Examination Errors

Develop additional or refine existing studies to measure the impact of various factors that result in examination errors, and suggest practices to reduce them.

Factors Affecting the Abilities of Friction Ridge Examiners

Further explore the cognitive processes friction ridge examiners use when performing examinations.

Develop additional or refine existing studies on how aspects in vision science, such as form and color blindness, affect an examiner's ability to conduct friction ridge examinations.

Research other psychological or physiological conditions that may affect an examiner's ability to conduct friction ridge examinations.

Latent Prints on Human Skin

Develop additional or refine existing method(s) for the detection of latent prints on human skin.

Other Friction Ridge Skin Features

Assess the discriminating strength of friction ridge skin features such as cuts, lacerations, abrasions, scars, creases, warts and blisters in friction ridge examination.

Persistence of Skin and Reproducibility of Level 2 and 3 Level Detail

Further assess and develop additional studies on the reproducibility and persistence of Level 2 and Level 3 detail. Persistence relates to variations in the same friction ridge skin over an extended period of time, considering external impacts (e.g. environmental changes, occupational exposure, aging and chemotherapy or other medical treatment) Reproducibility relates to the extent of variations among multiple impressions of the same friction ridge skin.

Processing Techniques

Develop additional or refine existing research regarding the composition of latent print residue.

Develop additional or refine existing chemical, physical, or spectral imaging processes to enhance friction ridge detail based on the specific substrate or composition of latent print residue.

Compare existing chemical, physical or spectral imaging processes to determine which produce the highest quality and quantity of latent prints per substrate, to include the cost per application and ease of use.

Develop additional quality control standards for use in reagent testing.

Quality Assurance Assessment

Assess the effectiveness of various friction ridge examination quality assurance measures (e.g., percentage of casework that is technically reviewed, frequency of proficiency testing, instrument and equipment calibration and maintenance, and frequency of reagent testing).

Standard Training

Develop a comprehensive standard training program for latent and tenprint examiners that incorporates SWGFAST documents and can be implemented on a national scale.

Statistical or Probability Models

Develop additional or refine existing statistical or probability models regarding friction ridge examination.

Develop additional or refine existing models that aid in assessing the reliability of the friction ridge examination process, to include methodology and conclusions.

Develop additional or refine existing models that provide an assessment of the discriminating strength of features used in friction ridge examination.

Status of Tenprint Identification Agencies

Assess the status of tenprint operations within identification agencies regarding issues to include hiring standards, training, workloads, and compensation.

Measurability of Sufficiency

Conduct additional studies regarding the objective measure of quality and quantity of friction ridge detail required to conclude whether two impressions originated from the same source.

Conduct additional studies regarding the objective measure of quality and quantity of friction ridge detail required to conclude whether two or more simultaneous impressions originated from the same source.

Superimposed Friction Ridge Impressions

Explore means to determine the chronology of the placement of superimposed friction ridge impressions.

Develop additional or refine existing tools to separate superimposed friction ridge impressions.