

OSAC RESEARCH NEEDS ASSESSMENT FORM



Title of research need:

Determination of the relevance of marks to an incident in question through estimation of age and interpretation of placement to infer activity

Describe the need:

The question of age estimation of friction ridge skin marks can be decisive and disputed in numerous cases. Currently there is no recognized method to estimate age and the practice varies between experts. The same applies when examiners are asked to comment on the activities that led to the deposition of the marks based for example on their localization on the surface, their relative positioning or how they relate to the handling of the object. The reporting practice is not standardized nor based on solid and recognized scientific research. Age estimation research needs to be focused on solutions that can be implemented in an operational environment and will converge with activity level probability modeling as age estimation research matures.

Keyword(s):

Age estimation, interpretation, activity level reporting

Submitting subcommittee(s):

Friction Ridge

Date Approved:

June 27, 2022

Background Information:

1. Does this research need address a gap(s) in a current or planned standard? (ex.: Field identification system for on scene opioid detection and confirmation)

Yes. This information will be useful in the testimony documents because it will help to identify the limits of the opinions that an examiner may express on the questions of age or deposition activity.

2. Are you aware of any ongoing research that may address this research need that has not yet been published (e.g., research presented in conference proceedings, studies that you or a colleague have participated in but have yet to be published)?

Yes. The Netherlands Forensic Institute (NFI) has ongoing projects on activity level reporting. The London Metropolitan Police Service (MPS) is also active in this area. Research on age estimation is undertaken by a few groups that are publishing on a regular basis (see edited work below).

3. Key bibliographic references relating to this research need: (ex.: Toll, L., Standifer, K. M., Massotte, D., eds. (2019). Current Topics in Opioid Research. Lausanne: Frontiers Media SA. doi: 10.3389/978-2-88963-180-3)

An edited book on fingerprint age estimations: de Alcaraz-Fossoul, J. (Ed.) (2021). Technologies for Fingerprint Age Estimations: A Step Forward. New York: Springer Verlag.

On activity level reporting:

de Ronde, A., van Aken, M., de Poot, C. J., & de Puit, M. (2020). A study into evaluating the location of fingerprints on letters given activity level propositions. *Forensic Science International*, 315, 110443.

de Ronde, A., Kokshoorn, B., de Poot, C. J., & de Puit, M. (2019). The evaluation of fingerprints given activity level propositions. *Forensic Science International*, 302, 109904.

de Ronde, A., van Aken, M., de Puit, M., & de Poot, C. (2019). A study into fingerprints at activity level on pillowcases. *Forensic Science International*, 295, 113-120.

4. Review the annual operational/research needs published by the National Institute of Justice (NIJ) at <https://nij.ojp.gov/topics/articles/forensic-science-research-and-development-technology-working-group-operational#latest>? Is your research need identified by NIJ?

Indirectly -- this research impacts "Novel and/or improved evidence recognition, collection, and visualization tools and analytical instrumentation for field and lab use" and "Scientific foundations for expert conclusions of forensic evidence".

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

This type of research will provide better methods to estimate the age of marks. It will also provide a methodology and data to support examiners in their consideration of the activities that led to the deposition of marks.

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

Research in this area will produce methods and datasets to support examiners in providing reliable statements on age or deposition activities.

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

Research will provide data to un-validated assertions that are commonly encountered in court.

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

IV	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.