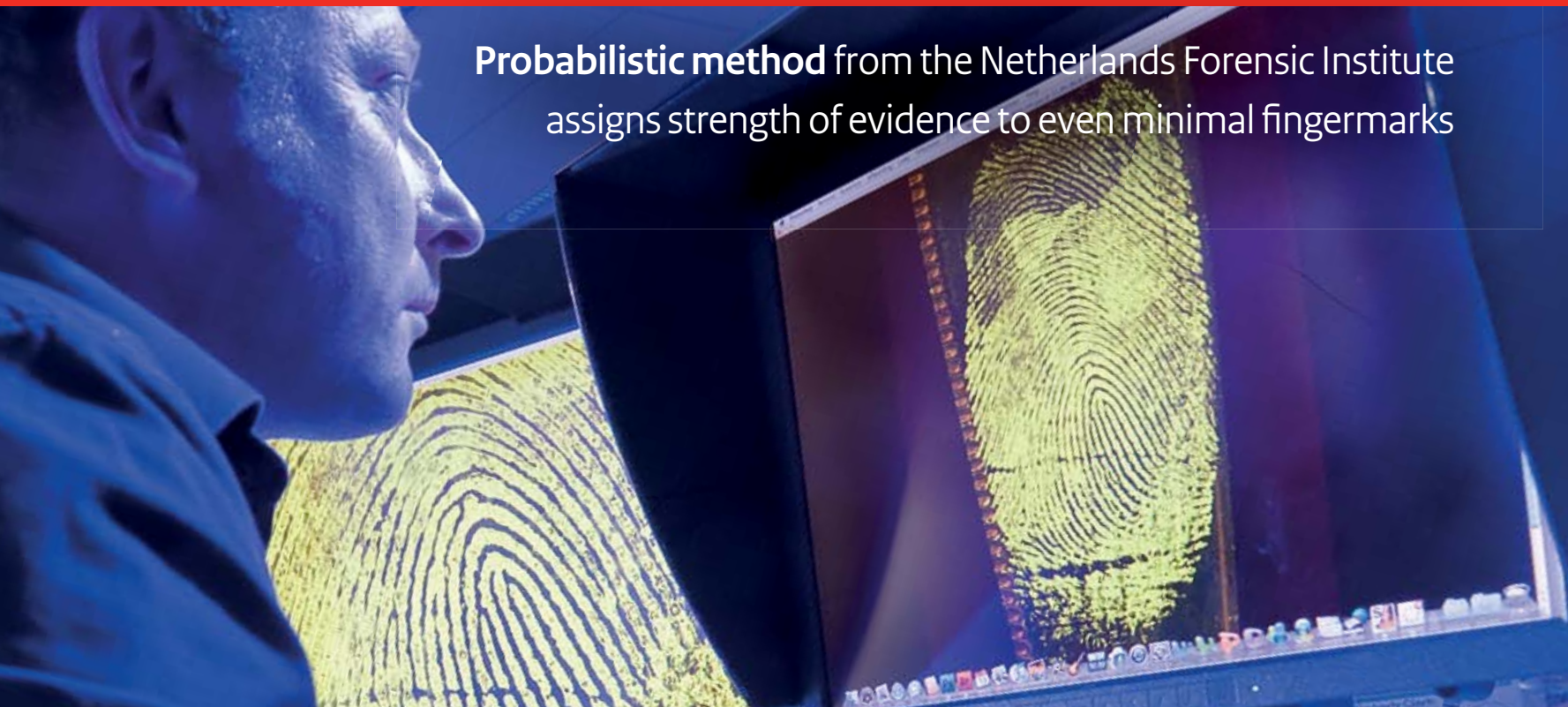
Netherlands Forensic Institute
Ministry of Security and Justice

Neglected fingermarks now useful after all



Probabilistic method from the Netherlands Forensic Institute assigns strength of evidence to even minimal fingermarks

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Fingerprints have been used in forensic identification since the end of the nineteenth century. Until recently, identifications were reported only when fingerprint examiners could find sufficient matching characteristics. As a result, many poor-quality marks that failed to meet this standard were considered useless as evidence and discarded. Now, however, thanks to a probabilistic approach currently being applied at the Netherlands Forensic Institute (NFI), it is possible to specify an objective strength of evidence for even slight traces of fingers or palms.

Typical example 1
Police investigating a mysterious death find a poor-quality fingermark on a nearby car. They have a suspect, but although the fingermark matches a finger of the suspect, the examiners still doubt whether the mark is of sufficient value to be usable in court. The fingermark is re-examined at the NFI, using its probabilistic approach. Based on this re-evaluation, the fingermark is accepted by the judge as having probative value.

Typical example 2
A number of well-known politicians receive letters containing anthrax spores. Police find a fingermark on one of the envelopes. However, they cannot link it to a suspect, because the mark is not suitable for identification purposes. When the NFI's probabilistic approach becomes available, the fingermark is re-analysed, generating useful new evidence.

The examples in this leaflet are fictitious.

What is the probabilistic approach?

The probabilistic approach combines NFI state-of-the-art fingermark individualisation, with, most importantly, an objective assessment of the strength of evidence of the disputed mark. This is performed on the basis of a robust comparison of certain characteristics. For this purpose, an anonymised database of prints is combined with advanced search technology.

The unique strength of the probabilistic approach

This innovative approach expresses the strength of evidence of fingermarks in terms of a statistical likelihood ratio. Such a likelihood ratio for a match may be anything from, say, 10 times more likely to 1 million times more likely. The strength of evidence provides the court with a well-founded basis for interpreting a mark's explicit relevance to the forensic case. As a result, especially in conjunction with other supporting evidence, even relatively poor-quality marks can still make a useful, quantifiable contribution to the forensic case.

The NFI is the only laboratory in the world currently applying this validated, probabilistic approach in forensic fingerprint case research. It is also the only laboratory in the world that combines state-of-the-art fingermark individualisation with the statistical analysis of fingerprint evidence.

Benefits at a glance

- ✓ State of the art
- ✓ Objective assessment of strength of evidence
- ✓ Even for poor-quality fingermarks
- ✓ Unique, validated methodology

To apply for our services

You can benefit from the NFI's probabilistic approach in any of the following circumstances:

Regular case investigations – Matching a fingermark with a reference print, including a likelihood ratio. Delivery time (up to 3 prints): 2-4 weeks. Cost per print: 20 hours at an hourly rate of EUR 170.

Cold-case investigations – Re-examining old trace material using the probabilistic approach to make even slight traces of fingermarks usable. Delivery time (up to 3 prints): 2-4 weeks. Cost per print: 20 hours at an hourly rate of EUR 170.

Expert investigations – Re-examining traces, in the context of providing a second opinion, using the probabilistic approach. Typical delivery time: 2-4 weeks. Typical cost per print: 30-40 hours at an hourly rate of EUR 170. Please ask for a quotation.

If you wish to apply for our services, please contact the NFI Front Office (see back of leaflet) and send (1) either the original mark or a high-resolution scan (1000 dpi) and (2) the reference material (of the suspect, the victim or the witness) in the same resolution.

All prices are excluding VAT.

The Netherlands Forensic Institute

The Netherlands Forensic Institute (NFI) is one of the world's leading forensic laboratories. Its mission is to strengthen the rule of law worldwide. As the role of forensic science in the fight against crime grows in importance, the NFI seeks to develop the most useful and advanced forensic products and services for a wide range of national and international clients.

Biometrics at the NFI

Biometrics research at the NFI covers the principal areas of biometric and identification expertise, including the detection and individualisation of fingermarks, the comparison of faces, writing and signatures, as well the analysis of speech, audio recordings, images and documents. NFI research also covers multimodal biometrics and the use of statistics to make the combination of expert opinion and automated analysis suitable for intelligence or evidential purposes.

For more information on fingermark research using the probabilistic approach and/or other products and services of the Netherlands Forensic Institute, please contact:

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