2001-001

Article Title: Quantitative assessment of evidential weight for a fingerprint comparison I. Generalisation to the comparison of a mark with set of ten prints from a suspect

Origin: Forensic Science International Journal

Date Published: 2010-09-06

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Article's Subject Matter:

This article discusses the advancement of the Neumann "et al" statistical model of the likelihood ratio's (LR) taking into account that a latent crime scene impression is normally compared to a database consisting of 10 prints taken from a suspect vs being compared to a database of single digits which is how Neumann et al did their first calculation of likelihood ratios.

Key Points in Article

- Neumann's original LR was based on the probability of a crime scene impression being made by a finger other than the one identified by corresponding minutiae was one in three billion (based on values of 3-12 for corresponding minutiae)
- Considering the fact that a crime scene mark is normally compared to a 10 print database his likelihood ration change to one in 300 million which is still a significant number.
- Neumann went further to take into account that the Ident. Officer can also add judgement regarding the likely digit that left the impression and with this put into his formula the LR changes to one in 700 million
- He states that these calculations are presently based simply on a configuration of minutae and does not consider other ridge features such as level three detail which he is planning on incorporating into the model in future studies.

Fallacies and Issues

- The math involved in this model is at a level far superior to that of the average individual so one has to accept or not that the mathematics of his model is correct and provable.
- As a result of the NAS report on the State of Forensic Science, this type of quantitative expression of fingerprint evidence could gain momentum in the courts so may be coming to a courtroom near you in the future.
- In addition to Identification Specialist testifying in court as to what their part was in making an identification to a suspect, a scientist trained in the mathematics of probability models may also be required to assist the court in deciding the evidential weight to place on the fingerprint evidence.