



Article Title: *Beyond C.S.I.: The Rise of Computational Forensics*

Pattern recognition and other computational methods can reduce the bias inherent in traditional criminal forensics

Origin: This article originally appeared in print as "Computing the Scene of a Crime".

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Article's Subject Matter: Computational forensics; the value of probabilistic modeling in forensics. He suggests that many forensic science disciplines are the application of skill and art versus real science. Refers to the NAS Report and suggests the evolution and use of statistics and probabilities are crucial to the future of fingerprint and other physical evidence individualizations.

Key Points in Article

- Author writes, *"At present, nobody really knows how likely it is for two people's prints to match closely."*, suggesting more research is needed to build databases for statistics.
- Further he writes, *"That's a key thing to know. If a fingerprint found at the crime scene corresponds reasonably well to a print from the accused, the prosecution hypothesis is that they are from the same person, while the defense hypothesis is that they are from different people. With the right computational tools you can calculate two probability values, one for the prosecution hypothesis and one for the defense hypothesis. And the ratio of the former to the latter shows just how incriminating (or not) this evidence is."*
- *"So how might greater automation of classical forensics techniques help? New algorithms and software could improve things in a number of ways. One important area is to quantify the chance that the evidence is unique by applying various probability models."*
- *It's still common, though, for a lawyer to ask a forensics expert to speculate on matters further afield, such as the type of activity that might have led to the presence of the evidence at the crime scene. And some of those experts will freely render such opinions—but they shouldn't.*
- Author is thought provoking and open-minded, recognizing the values of forensic evidence to not only exonerate the innocent but also to ensure the guilty are held to account.

Fallacies and or Issues

- Author states, *"One way to do this is with an image-processing technique known as intelligent thresholding, which automatically breaks up an image into its component segments and separates the foreground (the print) from the background (the surface)." but he does not speak to the challenges of evidence integrity or reliability resulting from this.*
- Author writes *"Left loops, for example, are found in 30 percent of all fingerprints, and right loops are nearly as common."* Incomplete or misleading statement as he does not refer to ulnar versus radial as one aspect of defining frequencies of left versus right loops.