

## Call for Abstracts

Special Issue of [\*Law, Probability & Risk\*](#)

*Statistical Models for Fingerprint Analysis: Thinking Broadly about the Future*

Sponsored by: [Center for Statistics and Applications in Forensic Evidence](#)

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Statistical models assist forensic scientists by enabling them to evaluate and report the significance of their findings in a logical and scientifically defensible manner. However, the actual development and use of such models have been slow and subject to controversy. Over the past several years there has been renewed focus on developing statistical models in forensic science and on how forensic evidence is best interpreted in the context of the courtroom.

Forensic DNA profiling is perhaps the area in which such models and legal practices have been most fully developed, but now the most obvious candidate discipline for a statistical model is friction ridge (“fingerprint”) analysis. Fingerprint analysis remains widely used and highly trusted. Conceptual work on statistical

models for fingerprint analysis has been done (e.g., Neumann et al., 2012), and at least two working models are available (e.g., Swofford et al., 2018).

Scholars have already published conceptual descriptions of fingerprint statistical models (Neumann et al., 2012, Swofford et al., 2018), and the scientific merits of these concepts have begun being debated (Aitken et al., 2012, Neumann, 2020, Swofford et al., 2020). The focus of this Special Issue is different.

This Special Issue begins from the assumptions that statistical models, algorithmic and artificial intelligence techniques for fingerprint analysis are coming, and will in turn serve as exemplars for other forensic pattern disciplines. From this assumption, contributors will envision what a future with a fingerprint statistical model will look like – with particular emphasis on the scientific, legal, sociological, and ethical issues and solutions that such a future may entail.

Rather than debate the *technical merits* of such models, the contributors will ask how these debates *should be conducted and interpreted by users and consumers of the evidence*. The contributors will also be asked to envision a world in which fingerprint statistical models exist. How will this world differ from the one we live in today? What will be better? What will be worse? What new challenges and opportunities will emerge?

All contributions to this special issue will be written for a broad audience of stakeholders in forensic evidence. It is hoped that in the aggregate, the contributions will enable readers to come away with 1) an understanding of what a statistical model for fingerprinting is, and 2) be prepared to understand, and even engage in, the scientific, legal, and ethical debates that such models may entail.

It is expected that topics covered by the Special Issue may include, but will not be limited to:

- What are statistical models, algorithmic and artificial intelligence techniques for fingerprint analysis?
- Is a statistical model needed? If so, why? How does it differ from conventional approaches to evaluating and reporting evidence?
- How will technical issues raised by statistical models be debated and resolved? What information about the model or the code to implement it will be needed to explore such technical issues?
- What should the role of law be with regard to statistical models? Will law play a role in assessing the merits of statistical models, or will statistical models become just another tool in adversarial armamentaria?
- Are there concerns about bias in statistical models?
- How will lay people understand the results of statistical models, compared to how they understood the results of conventional reporting?

- What business models—by governments or corporations—support the development, innovation, and maintenance of statistical models?
- How will statistical models affect practitioners?

## Timeline

|                                                  |                         |
|--------------------------------------------------|-------------------------|
| Deadline for abstract submission                 | <b>April 30, 2022</b>   |
| Selection of abstracts for full paper submission | <b>May 15, 2022</b>     |
| Full papers due                                  | <b>January 31, 2023</b> |

## Submission

Submit abstracts to Justin Sola [solaj@uci.edu](mailto:solaj@uci.edu)

## References

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