J4 A Comparison Between Different Likelihood Ratios for Assessing Handwriting Evidence

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After attending this presentation, attendees will understand how sometimes subtle changes to the prosecution and defense propositions can have a large effect upon the corresponding likelihood ratio. These impacts will be illustrated using an automated handwriting system developed and applied to handwriting samples collected by the FBI laboratories.

This presentation will impact the forensic science community by illustrating the effects of modifying the prosecution and defense propositions when interpreting handwriting evidence.

The ultimate goal of the court (and/or jury) is to make a decision concerning a specific suspect's guilt given the evidence, which in the likelihood ratio paradigm for presenting evidence is usually expressed as the posterior odds in favor of the suspect's guilt. In this paradigm, the court (and/or jury) is usually responsible for prior beliefs about guilt while the forensic scientist is responsible for providing the likelihood of the evidence when the suspect is guilty (the prosecution proposition) vs. when the suspect is not guilty (the defense proposition).

In this presentation, various sets of prosecution and defense propositions (and the resulting likelihood ratios) which have appeared in the literature will be compared and contrasted. The goal in performing these comparisons is to illustrate the effect that subtle modifications of these propositions can have on the resulting likelihood ratios. In addition, the practical and logical implications of each variation will be discussed.

This study will be performed using a dataset of bank robbery notes and a reference database composed of writing samples from over 400 writers.

Handwriting Evidence, Likelihood Ratios, Evidence Interpretation

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