

## Error 404: Criminal Not Found, Leveraging The Use of Machine Learning in the Field of Forensics and Criminal Profiling

Kuhu Sukhija

### Abstract:

Traditional criminal profiling has long relied on the qualitative expertise of forensic psychologists to identify behavioral patterns. However, the rise of Big Data and Artificial Intelligence presents a transformative opportunity to enhance the accuracy of these investigations. This paper explores the intersection of machine learning algorithms and psychological theory, specifically focusing on how predictive models can analyze vast datasets—including crime scene characteristics and victimology—to identify high-probability offender traits.

The research evaluates the current shift from "gut-instinct" profiling to data-driven behavioral analysis, highlighting how AI can mitigate cognitive biases in human investigators. Furthermore, the paper addresses the critical legal and ethical implications of using algorithmic profiling within the judicial system, particularly concerning data privacy and the "black box" nature of AI decision-making. By synthesizing psychological principles with emerging technological capabilities, this study argues for a hybrid approach that maintains human oversight while leveraging computational power to improve public safety and judicial outcomes.

### Keywords:

Forensic psychology, Machine Learning, Criminal Profiling, Predictive Analytics, Legal Ethics, Modern Criminal Profiling.