



## The Legal Implications of Artificial Intelligence-Generated Evidence in Criminal Proceedings

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### Abstract

*This study examines the legal implications of artificial intelligence-generated evidence in criminal proceedings, focusing on evidentiary admissibility, due process protection, and regulatory accountability. Using a doctrinal legal research design combined with comparative legal analysis, the study analyzes legislation, judicial developments, policy documents, and academic literature concerning the use of AI-generated evidence across multiple jurisdictions. The findings reveal that existing evidentiary doctrines remain applicable but are increasingly challenged by algorithmic opacity, limited explainability, reliability concerns, and the emergence of synthetic media. The study further demonstrates that AI-generated evidence may affect defendants' ability to challenge evidentiary claims, thereby creating potential risks to procedural fairness and fair trial rights. The novelty of this research lies in the development of an integrated normative framework that connects traditional evidentiary principles with contemporary AI governance standards. The study contributes to ongoing debates regarding the regulation of AI within criminal justice systems and provides practical recommendations for strengthening transparency, accountability, and procedural safeguards in the use of AI-generated evidence.*

## INTRODUCTION

Artificial Intelligence (AI) technologies have made a profound impact on the modern criminal justice system. There is a growing use of AI-based applications to process criminal investigations, interpret forensic evidence, predict crime, oversee digital surveillance, recognize faces and assess evidence. Law enforcement agencies have seen significant enhancements in their ability to analyze large-scale data at a much faster rate and with higher efficiency thanks to the combination of machine learning algorithms, automated decision-making processes, and generative AI capabilities. This means that AI-generated evidence is increasingly being introduced in criminal trials, which can raise intricate legal and procedural challenges about its admissibility, reliability, and probative value (Shevchuk, 2024; Moore et al., 2025). As AI-generated evidence becomes increasingly common, traditional evidentiary rules and doctrines, which had been developed for human-generated evidence and traditional evidence collection and analysis techniques, have been found to be

undermined. The widespread use of AI-generated evidence has posed challenges to traditional evidentiary rules and doctrines that were established to govern the presentation of human-generated evidence and the use of traditional evidence collection and analysis methods (Grossman & Grimm, 2025; Mukherjee & Chang, 2026).

The rise of AI-generated evidence marks a paradigm shift in criminal evidence. The principles of authenticity, relevance, reliability, and procedural legality are traditionally used to evaluate evidence (Wang et al., 2024; Yong, 2024). In most cases, however, AI systems are built using intricate computational designs that are often out of reach for judges, prosecutors, defense attorneys, and even system builders. This phenomenon is known as the “black box problem” and brings a great deal of uncertainty about the transparency and explainability of the outputs of algorithms. Courts are facing increasing challenges to assess whether such AI-generated outputs meet the evidentiary standards established by the courts (Harris, 2023; Gunarto et al., 2023; Alkhseilat et al., 2024; Paraschiv, 2025; Costa, 2026).

Empirical developments in the recent past show the need to address these concerns. Courts in various jurisdictions have faced legal challenges concerning AI-generated content, such as deepfake videos, manipulated audio recordings, AI-aided forensic analyses, and AI-supported expert reports, among other cases (Bo, 2026; Meghwal, 2025). Judicial authorities in the United States have started to consider changes to the rules of evidence that mandate that AI-generated evidence meet the same “reliability” standards as expert evidence under the Federal Rules of Evidence (Reuters, 2025; Zhang, 2025; Ford et al., 2026). At the same time, in Australia, legal systems have cautioned about the use of AI-generated legal documents with made-up citations and incorrect factual data in court, outlining the dangers of relying on unverified algorithmic outputs in legal proceedings (The, 2026; Grossman & Grimm, 2025). The developments showcase the concern around the world concerning impacts of AI technologies on procedural justice and the integrity of the criminal adjudication process.

The legal issues with AI-generated evidence are not just about the technical reliability of the evidence. The principles of criminal proceedings are based on the rights of due process, such as the presumption of innocence, equality of arms, the right to confront and the right to challenge evidence presented by the prosecution (Ostavciuc, 2022; The, 2026). When defendants cannot access, understand, analyze, or challenge the algorithms behind decision-making processes, AI-generated outputs may run counter to these protections. The opaque algorithms could generate imbalanced information environments that work against the defendants, and limit the judicial oversight of the algorithm (Moore et al., 2025; Dou & Dou, 2025; Cofone & Strandburg, 2026). In addition, algorithmic bias, data quality issues and model inaccuracy can lead to incorrect convictions, discriminatory results or procedural injustices, especially when courts rely too heavily on the technologically produced results.

The impact of AI on the criminal justice system has been explored in depth in previous studies. Other research has investigated the applications of AI in predictive policing, sentencing algorithms, forensic science and judicial decision-making (Berk, 2025; Shevchuk, 2024). Others have considered constitutional issues, accountability issues with algorithms, transparency, and human rights concerns when implementing AI in legal settings (Moore et al., 2025). Comparative legal studies have also examined new regulatory strategies implemented by the EU, the United States, and a few Asian jurisdictions to regulate high-risk AI systems in judicial settings (Alyami, 2026; Costa, 2026). The studies in this volume all point to the growing significance of creating legal protections that will not only be able to accommodate technological innovation but also ensure fundamental procedural rights.

While the scholarship continues to increase, there are still a number of theoretical and doctrinal questions that have not been answered. First, there is a lot of literature that is exploring how AI can be used as a decision support tool, but not as evidence itself. This has led to a lack of focus on exploring the evidentiary role of AI-generated content in criminal cases. Second, existing studies generally focus on the risks associated with technology rather than examining in detail how traditional evidentiary principles, such as authenticity, admissibility, chain of custody, reliability, and evidentiary weight, should be modified to account for AI-generated evidence. Third, comparative legal analyses are still mostly descriptive, focusing on particular jurisdictions and not on the establishment of broader norms that could inform the development of international law. This has left AI-generated evidence and the appropriate procedural protections for fair trials in a state of legal limbo. This has left courts with significant uncertainty about how to handle AI-generated evidence and how to adequately protect fair trials.

This uncertainty also is reflected in the current regulatory environment. Many jurisdictions do not have specific legislation to regulate the use of AI-generated evidence, and judicial AI systems are being used without any clear guidance on how to manipulate them (Alyami, 2026). In the same way, in multiple countries, judicial bodies have voiced their worries about algorithmic hallucinations, deepfakes, and automatic forensic outputs, but no detailed evidentiary frameworks have been developed (Reuters, 2025; Axios, 2025). Lack of a uniform set of standards results in varying judicial practices and a higher risk of conflicting decisions being reached on similar types of AI-generated evidence.

The subject of this study is to overcome these limitations by providing an integral judicial interpretation of the evidence produced by AI in criminal proceedings from the perspectives of evidentiary law, procedural fairness and algorithmic responsibility. This research is distinct from the earlier studies that center mostly on the investigatory or decision-making functions of AI, in particular by exploring the implications of its role in the introduction of AI-generated evidence that could impact criminal liability. The novelty of this study is in using traditional evidentiary principles in tandem with new principles in AI governance to create a framework of norms for the admissibility, reliability, and probative value of AI-generated evidence. This study seeks to explore the challenges that emerge in view of legally binding AI-generated evidence and to pinpoint the gaps in current evidentiary laws, while attempting to formulate legal standards that can support the advancement of AI and safeguard fundamental rights in criminal proceedings.

## **METHODS**

### **Research Design**

This study employed a qualitative doctrinal legal research design combined with a comparative legal analysis approach. Doctrinal legal research is particularly suitable for examining legal principles, statutory frameworks, judicial interpretations, and normative standards governing emerging legal issues associated with artificial intelligence (AI)-generated evidence in criminal proceedings. The doctrinal approach enables a systematic evaluation of existing legal doctrines concerning admissibility, reliability, authenticity, and evidentiary value while identifying regulatory gaps arising from technological developments (Hutchinson & Duncan, 2022). In addition, the comparative legal approach facilitates the examination of regulatory responses adopted across multiple jurisdictions, allowing for the identification of converging and diverging legal standards regarding AI-generated evidence.

The research adopted an analytical and prescriptive orientation. Rather than merely describing legal developments, the study critically evaluated the adequacy of existing evidentiary frameworks in addressing challenges posed by AI-generated outputs and

proposed normative recommendations for future legal governance. This approach aligns with contemporary legal scholarship emphasizing the need for adaptive regulatory frameworks capable of balancing technological innovation with procedural fairness and fundamental rights protection (Smits, 2023).

### **Research Context**

The study was conducted within the broader context of criminal justice systems undergoing digital transformation and increasing integration of artificial intelligence technologies. Particular attention was given to jurisdictions that have actively developed AI governance frameworks and have encountered legal controversies concerning algorithmic evidence. These jurisdictions include the European Union, the United States, the United Kingdom, Canada, and selected Asia-Pacific countries. The comparative scope was selected because these legal systems represent diverse regulatory traditions and provide valuable insights into emerging legal responses to AI-generated evidence.

The research context encompasses judicial proceedings involving AI-assisted forensic analysis, facial recognition systems, predictive algorithms, deepfake detection technologies, automated digital investigations, and generative AI outputs introduced as evidentiary materials. These developments provide a relevant empirical and legal foundation for examining how traditional evidentiary doctrines are being challenged by advanced computational technologies.

### **Data Collection Techniques**

The study relied exclusively on secondary data obtained through comprehensive legal and documentary analysis. Data were collected from primary legal sources, including statutes, regulations, judicial decisions, evidentiary rules, policy documents, and international legal instruments relevant to artificial intelligence and criminal procedure. Secondary sources consisted of peer-reviewed journal articles, academic books, legal commentaries, institutional reports, and policy papers published between 2020 and 2026.

A systematic literature review strategy was employed to identify relevant scholarly publications. Academic databases such as Scopus, Web of Science, HeinOnline, SpringerLink, Taylor & Francis Online, and Google Scholar were utilized to retrieve literature using keywords including “artificial intelligence evidence,” “algorithmic evidence,” “criminal proceedings,” “digital forensics,” “admissibility,” “due process,” and “algorithmic accountability.” The inclusion criteria focused on publications addressing legal, evidentiary, procedural, and regulatory dimensions of AI-generated evidence.

### **Data Analysis**

Data were analyzed using qualitative content analysis and comparative legal analysis techniques. Qualitative content analysis enabled the systematic categorization of legal concepts, regulatory approaches, and judicial concerns emerging from the collected materials (Schreier, 2021). The analysis proceeded through coding, thematic classification, interpretation, and synthesis of legal principles related to evidentiary admissibility, reliability assessment, transparency requirements, explainability obligations, and procedural safeguards.

Comparative legal analysis was subsequently conducted to identify similarities and differences among regulatory frameworks across jurisdictions. The analytical process focused on evaluating how different legal systems address issues of authenticity, chain of custody, algorithmic transparency, expert testimony, and evidentiary weight concerning AI-generated outputs. Through this process, the study developed a

normative framework for assessing the legal implications of AI-generated evidence in criminal proceedings.

Table 1. Analytical Framework of the Study

| Analytical Dimension            | Key Focus                                                 |
|---------------------------------|-----------------------------------------------------------|
| Evidentiary Admissibility       | Legal requirements for introducing AI-generated evidence  |
| Reliability and Accuracy        | Assessment of algorithmic performance and error risks     |
| Transparency and Explainability | Access to algorithmic logic and decision-making processes |
| Due Process Protection          | Rights of defendants to challenge AI-generated evidence   |
| Regulatory Accountability       | Governance mechanisms and legal oversight                 |

Source: Developed by the authors, 2026

As shown in Table 1, the analytical framework integrates traditional evidentiary principles with emerging AI governance standards to facilitate a comprehensive evaluation of AI-generated evidence within criminal justice systems.

**Validity and Reliability**

To ensure methodological rigor, the study employed source triangulation and legal cross-validation techniques. Multiple categories of legal materials—including legislation, case law, academic literature, and policy documents—were examined to verify consistency and reliability of findings. Triangulation enhances the credibility of doctrinal legal research by reducing interpretative bias and strengthening analytical robustness (Yin, 2023). Furthermore, legal interpretations were validated through comparative examination of authoritative sources across different jurisdictions. The systematic documentation of data collection procedures, inclusion criteria, coding processes, and analytical stages ensured transparency, replicability, and consistency throughout the research process. These measures collectively contribute to the trustworthiness and scholarly rigor of the study.

**RESULTS AND DISCUSSION**

This section presents the findings derived from a doctrinal and comparative analysis of legal instruments, judicial practices, policy documents, and academic literature concerning the use of Artificial Intelligence (AI)-generated evidence in criminal proceedings. The findings are organized into three interrelated themes. The first examines the legal admissibility of AI-generated evidence under existing evidentiary frameworks. The second analyzes the implications of such evidence for due process and fair trial rights. The third evaluates emerging regulatory approaches developed to govern the use of AI-generated evidence and ensure accountability within criminal justice systems. Collectively, the findings reveal that the increasing use of AI technologies has outpaced the development of evidentiary rules, creating substantial legal uncertainty regarding reliability, transparency, and procedural fairness.

**Admissibility of AI-Generated Evidence in Criminal Proceedings**

The analysis demonstrates that AI-generated evidence is increasingly utilized in criminal investigations and judicial proceedings. Law enforcement agencies across various jurisdictions employ AI systems for facial recognition, digital forensic examinations, predictive risk assessments, biometric identification, and the detection of manipulated digital content. These technological developments have expanded the range of evidentiary materials that may be presented before criminal courts.

Despite their growing use, AI-generated outputs continue to be evaluated through traditional evidentiary principles, including relevance, authenticity, reliability, and probative value. However, the findings indicate that these principles were originally developed for human-generated evidence and conventional forensic methods. Consequently, their application to AI-generated evidence remains legally challenging.

One significant concern relates to authenticity. Unlike traditional evidence, AI-generated outputs are often produced through complex algorithmic processes that are difficult to verify independently. Courts frequently encounter difficulties in determining whether a particular output accurately reflects the original data entered into the system. This issue becomes particularly significant in cases involving facial recognition technologies, automated forensic analysis, and AI-generated visual reconstructions. Another challenge concerns reliability. The findings reveal that the reliability of AI-generated evidence depends heavily on factors such as data quality, training methodologies, algorithmic architecture, and system validation procedures. Variations in these factors may significantly affect the accuracy of evidentiary outputs. As a result, courts increasingly require expert testimony to explain the functioning and limitations of AI systems before admitting such evidence.

Table 2. Evidentiary Challenges of AI-Generated Evidence

| <b>Evidentiary Principle</b> | <b>Legal Challenge</b>                           |
|------------------------------|--------------------------------------------------|
| Authenticity                 | Verification of algorithmic outputs              |
| Reliability                  | Assessment of accuracy and error rates           |
| Transparency                 | Limited access to algorithmic processes          |
| Chain of Custody             | Tracking multiple stages of automated processing |
| Probative Value              | Determining appropriate evidentiary weight       |

Source: Developed by the authors based on comparative legal analysis, 2026

As shown in Table 2, authenticity and reliability emerged as the most significant challenges. The findings suggest that existing evidentiary doctrines remain applicable but require reinterpretation and adaptation to address the unique characteristics of AI-generated materials. The analysis further indicates that generative AI technologies have introduced additional evidentiary risks. The emergence of deepfakes and synthetic media has significantly complicated judicial assessments of digital evidence. Courts increasingly recognize that highly realistic fabricated content may undermine confidence in digital evidence and create new obstacles for authentication procedures.

### **Due Process and Fair Trial Implications**

The second major finding concerns the impact of AI-generated evidence on due process guarantees and fair trial rights. The analysis reveals that algorithmic evidence may affect the ability of defendants to understand, challenge, and contest evidence presented against them. A recurring issue identified across jurisdictions is algorithmic opacity. Many AI systems operate through complex machine-learning models that produce outputs without providing transparent explanations regarding how conclusions are reached. This lack of explainability limits the ability of defendants and their legal representatives to examine the evidentiary basis of algorithmic findings.

The findings indicate that procedural fairness requires not only accurate evidence but also meaningful opportunities to challenge its validity. However, when AI systems function as “black boxes,” defendants may be unable to scrutinize the reasoning process underlying evidentiary outputs. This limitation may weaken fundamental procedural safeguards traditionally associated with criminal adjudication.

Furthermore, the analysis identified concerns regarding algorithmic bias. AI systems trained on incomplete or biased datasets may reproduce existing social inequalities and generate discriminatory outcomes. Although algorithmic bias does not automatically invalidate evidence, it raises important questions concerning evidentiary reliability and equality before the law. Another significant concern involves proprietary algorithms. Many AI technologies used by law enforcement agencies are developed by private companies that protect their source code and technical information through intellectual property rights. The findings reveal that such restrictions may limit defense access to information necessary for challenging algorithmic evidence, thereby creating tensions between commercial confidentiality and procedural fairness.

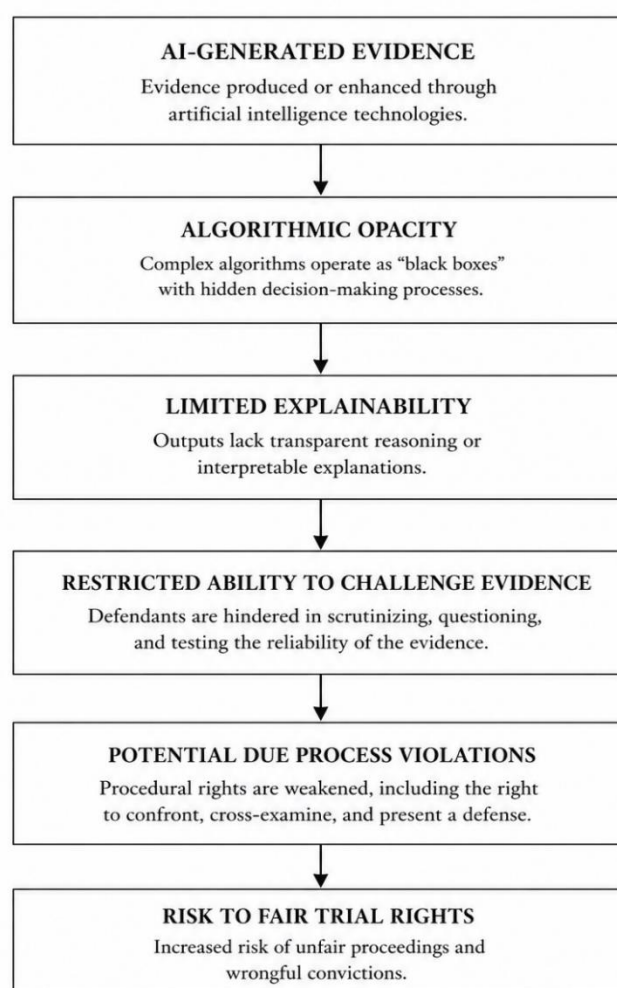


Figure 1. Relationship Between AI-Generated Evidence and Fair Trial Risks

Source: Developed by the authors, 2026

Figure 1 illustrates how technological opacity may generate procedural risks within criminal proceedings. The findings demonstrate that legal concerns associated with AI-generated evidence extend beyond technical accuracy and encompass broader questions of fairness, transparency, and accountability.

### Emerging Regulatory Frameworks and Accountability Mechanisms

The final finding concerns the development of regulatory responses to AI-generated evidence. Comparative analysis reveals substantial differences among jurisdictions regarding the governance of AI technologies in criminal justice systems.

The European Union represents the most comprehensive regulatory model. The findings indicate that AI applications used within law enforcement and judicial contexts are increasingly categorized as high-risk systems subject to enhanced oversight requirements. These requirements include transparency obligations, risk management procedures, human supervision, documentation standards, and accountability mechanisms. In contrast, the United States largely relies on judicial interpretation and existing evidentiary doctrines to address issues arising from AI-generated evidence. Courts play a central role in determining admissibility and evaluating reliability through expert testimony and constitutional safeguards. While this approach offers flexibility, it may also result in inconsistent judicial outcomes.

The findings further reveal that many Asia-Pacific jurisdictions remain in the early stages of developing AI-specific legal frameworks. Existing regulations frequently focus on data protection and cybersecurity rather than evidentiary admissibility or procedural safeguards. Consequently, legal uncertainty remains significant in these jurisdictions.

Table 3. Comparative Regulatory Approaches to AI-Generated Evidence

| <b>Jurisdiction</b>        | <b>Regulatory Characteristics</b>          | <b>Primary Accountability Mechanism</b>   |
|----------------------------|--------------------------------------------|-------------------------------------------|
| European Union             | Comprehensive risk-based regulation        | Transparency, auditing, and oversight     |
| United States              | Case-law and evidentiary doctrine approach | Judicial review and expert testimony      |
| United Kingdom             | Hybrid governance model                    | Regulatory guidance and judicial scrutiny |
| Canada                     | Rights-based AI governance                 | Algorithmic impact assessment             |
| Asia-Pacific Jurisdictions | Emerging regulatory frameworks             | Administrative and ethical oversight      |

Source: Compiled from legislation, judicial decisions, and policy documents (2020–2026)

Table 3 demonstrates that although regulatory approaches vary, several common principles have emerged across jurisdictions. These include transparency, explainability, human oversight, accountability, and independent auditing. The convergence of these principles suggests the gradual development of a shared international understanding regarding the governance of AI-generated evidence. The findings reveal that AI-generated evidence is becoming an increasingly important component of contemporary criminal proceedings. However, existing legal frameworks continue to face significant challenges in addressing questions of admissibility, procedural fairness, and accountability. The results indicate that future legal reforms must integrate traditional evidentiary doctrines with emerging principles of AI governance to ensure that technological innovation remains compatible with the fundamental values of criminal justice.

### **Reconstructing Evidentiary Principles for AI-Generated Evidence: Balancing Technological Innovation, Due Process, and Accountability**

The findings of this study demonstrate that the integration of Artificial Intelligence (AI)-generated evidence into criminal proceedings has generated a profound normative challenge for contemporary evidentiary law. While AI technologies have significantly enhanced investigative capabilities, forensic efficiency, and evidentiary processing, their increasing use simultaneously exposes limitations within traditional legal frameworks that were developed primarily for human-generated evidence and conventional forensic methodologies. The present study argues that the

central challenge is not whether AI-generated evidence should be admitted in criminal proceedings, but rather how legal systems can adapt existing evidentiary principles to ensure that technological innovation remains compatible with procedural fairness, judicial accountability, and fundamental rights protection.

The findings concerning evidentiary admissibility support previous scholarship emphasizing that existing evidentiary doctrines remain relevant but insufficient when applied to AI-generated outputs. Recent studies have similarly argued that traditional legal standards of authenticity and reliability encounter significant difficulties when confronted with machine-learning systems characterized by algorithmic complexity and autonomous data processing (Ashley, 2022; Shevchuk, 2024). The present findings extend these observations by demonstrating that admissibility concerns are not merely technical issues but represent broader institutional challenges involving judicial competence, evidentiary transparency, and legal accountability.

The research also addresses current concerns raised in the literature about the implications for evidence of generative AI technologies. Casey and Niblett (2023), and Surden (2024) have conducted studies that demonstrate the growing sophistication of AI-generated synthetic content, such as the deepfake technology and its automated digital reconstruction capabilities. These academics believe that new capabilities of AI have completely shifted the view of digital evidence authenticity. The current results hold true in this regard as well, showing that even with the apparent realism of digital materials, it is not enough for the courts to presume their reliability. Rather, technical analysis, algorithmic validation and independent expert analyses are increasingly essential to evidentiary verification.

The results, however, also show some important differences when compared to other studies. The literature often focuses on the reliability of technology and/or the accuracy of algorithms as key factors in determining admissibility (Berk, 2025; Costa, 2026). These elements are still relevant, but the current study suggests that transparency and explainability are now also pertinent legal concerns. When it comes to criminal proceedings, the quality of the evidence is not the only thing that is looked at, but whether it is understandable to parties and whether parties have the ability to challenge the basis for the evidence. As such, explainability must be considered a requirement in the evidence of an AI system and not just as a technical feature.

This is reflected most clearly in the case of protections afforded under due process. The results demonstrate that the opacity of algorithms directly influences the capacity of defendants to effectively exercise procedural rights. The findings align with those of Citron (2022), Bagaric et al. (2022), and Kordzadeh and Ghasemaghahi (2022), who each submit that algorithmic systems are opaque, which manifest themselves in information disadvantage for criminal defendants. These ideas have also surfaced in human rights scholarship, where scholars have begun to focus on the importance of having clear pathways through which decisions are made, which is as much as it is about making the right decision (Ruano-Chamorro et al., 2022; Terpstra & van Wijck, 2023; Yeung, 2024).

The “black box” is now a key issue in modern discussions about AI accountability in justice. The studies so far have mostly perceived algorithmic opacity as a technical challenge that can only be addressed by improving the design of the system (Završnik, 2022; Langer & König, 2023). The present study, on the other hand, proposes that opacity is also a legal issue, as it lessens adversarial scrutiny, diminishes judicial review, and may compromise the legitimacy of criminal adjudication. This viewpoint adds to the growing scholarship supporting the integration of explainability requirements into the evidentiary law, and not as an add-on technical governance concern.

Another significant finding concerns algorithmic bias and its implications for equality before the law. Existing research consistently demonstrates that AI systems may reproduce historical biases embedded within training datasets (Eubanks, 2022; Selbst et al., 2023). The present findings support these concerns but further reveal that bias-related risks extend beyond discriminatory outcomes. Algorithmic bias may also affect perceptions of evidentiary reliability, judicial confidence, and public trust in criminal justice institutions. Consequently, addressing bias is not merely a matter of improving technical performance but also a prerequisite for maintaining institutional legitimacy.

The findings additionally contribute to ongoing debates regarding proprietary algorithms and access to evidence. Previous studies have highlighted tensions between intellectual property protections and defendants' rights to examine evidence used against them (Pasquale, 2023; Ferguson, 2024). The present analysis confirms that these tensions remain unresolved across multiple jurisdictions. Criminal courts increasingly rely on technologies developed by private entities, yet defendants often encounter substantial barriers when seeking access to source code, training data, or algorithmic documentation. This situation creates an imbalance between commercial interests and procedural fairness that existing legal frameworks have not adequately addressed.

A particularly important contribution of this study concerns regulatory accountability. The comparative analysis demonstrates that jurisdictions increasingly converge around five core governance principles: transparency, explainability, human oversight, auditability, and accountability. Similar trends have been identified in recent comparative studies of AI governance (Veale & Borgesius, 2022; Floridi et al., 2023; Smuha, 2024). However, the present study advances this literature by demonstrating that these principles should not be viewed as separate regulatory objectives. Instead, they function as interconnected safeguards necessary for ensuring the lawful use of AI-generated evidence in criminal proceedings.

The European Union provides an illustrative example of this emerging governance model. Recent regulatory developments increasingly classify judicial AI applications as high-risk systems requiring extensive oversight and documentation. While previous scholars have praised the EU's risk-based approach as a model for responsible AI governance (Smuha, 2024; Veale, 2025), critics argue that regulatory compliance alone may not guarantee procedural fairness within criminal proceedings. The findings of this study support both perspectives. Although comprehensive regulation improves accountability, legal safeguards remain effective only when courts possess sufficient institutional capacity to evaluate algorithmic evidence critically.

The theoretical contribution of this study is the idea of rethinking evidentiary law in the era of AI in criminal justice. The legal literature on admissibility, due process and accountability focuses on the three as distinct issues. In contrast, the present study illustrates how the dimensions are structurally interrelated. Admissibility standards have an impact on procedural fairness; procedural fairness has an impact on accountability mechanisms; accountability mechanisms have an impact on legitimacy of evidentiary decision-making. Therefore, AI-based evidence should be assessed within a unified framework that involves the reliability of the evidence, the transparency of the procedures, and the accountability of the algorithms.

The novelty of this study lies in its innovation in creating a normative framework that unifies traditional evidentiary rules with modern principles on AI governance. This research is unique in focusing specifically on the evidentiary status of AI outputs, as opposed to the more common studies that consider AI either a decision-making instrument or investigative tool in criminal trials. By comparing the current

principles of evidence with the legal landscape in other countries, the study shows that the existing rules of evidence are still applicable but need to be reinterpreted to address the challenges brought about by algorithmic opacity, synthetic media and automated decision making systems. This account provides a valuable addition to the growing field of research on AI and crime.

The results have several policy implications from a practical standpoint, and these implications are discussed in the following sections. Explicit legal standards for the admissibility and consideration of AI-generated evidence should be created. Courts should define transparency and expert validation and documentation of algorithms. Police forces should develop their own audit mechanisms for the reliability of the system and for any possible biases. Moreover, the capacity of judges, prosecutors, and defense counsel of legal education institutions should be enhanced with regards to technological literacy, to further assess the algorithmic evidence. The research has also broader implications for ongoing governance efforts for AI in the future. As AI technologies evolve, legal systems need to evolve beyond reactionary regulatory measures to anticipatory governance measures that can mitigate new evidentiary risks and challenges. These must include cross-disciplinary cooperation with computer scientists, forensicists and policymakers as well as legal scholars. If these are not done collaboratively, the technological innovation/legal regulation gap will just continue to grow.

There are a number of caveats to the shown results. First, the study is doctrinal and comparative rather than empirical; that is, it focuses more on doctrinal and comparative analysis of the law than on an empirical analysis of judicial behavior. The results therefore are not based on in-court experiences but rather on normative and regulatory changes. Second, the legal landscape surrounding AI technologies is constantly shifting, and evolving laws could impact some of the findings included in this report. Third, the study's comparative scope is limited, as it predominantly examines jurisdictions which have actively pursued AI governance initiatives, potentially reducing the generalisability to less regulated legal contexts.

Future studies should thus consider empirical inquiries into the impact of AI-generated evidence in reality, from the perspective of both judges, prosecutors, and defense attorneys. Realistic case studies, exploring evidentiary issues with actual criminal proceedings, would also contribute substantially to the understanding of evidentiary issues raised by algorithmic technologies. Further, future scholarship on the implications of new generation AI systems, automated forensic tools and synthetic evidence detection technologies for criminal justice systems is invited. This research will have to play a key role in the creation of legislation that can protect technological innovation and the core principles of due process in the era of AI.

## **CONCLUSION**

The increasing integration of artificial intelligence-generated evidence into criminal proceedings has fundamentally challenged traditional evidentiary frameworks and procedural safeguards. This study demonstrates that while AI technologies enhance investigative efficiency, forensic capabilities, and evidentiary processing, they simultaneously create significant legal concerns related to admissibility, transparency, reliability, and accountability. The findings reveal that conventional evidentiary principles remain relevant but require reinterpretation to address the unique characteristics of algorithmic outputs, particularly those associated with opacity, limited explainability, and synthetic media. Furthermore, the study highlights that due process protections may be compromised when defendants lack meaningful opportunities to understand and challenge AI-generated evidence. Comparative analysis also indicates a growing convergence among jurisdictions toward transparency, explainability, human oversight, auditability, and

accountability as core regulatory principles. Theoretically, this research contributes an integrated framework linking evidentiary law with emerging AI governance principles. Practically, it provides guidance for legislators, courts, and law enforcement agencies in developing safeguards for the responsible use of AI-generated evidence. Nevertheless, the study is limited by its doctrinal focus and absence of empirical courtroom analysis. Future research should investigate judicial practices, evidentiary decision-making, and the real-world implementation of AI governance mechanisms in criminal justice systems.

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