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FROM BLACK BOX TO GLASS BOX: RETHINKING AI-GENERATED EVIDENCE UNDER THE BHARATIYA SAKSHYA ADHINIYAM

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1. Abstract

Artificial Intelligence has become an important part of the modern criminal justice system. Today, technologies such as facial recognition, predictive policing, biometric analysis, digital surveillance, and automated forensic tools are widely used during criminal investigations and trial proceedings. These technologies help investigative agencies process large amounts of information quickly and improve the efficiency of evidence collection. However, the growing use of AI-generated evidence also raises several legal and constitutional concerns regarding authenticity, reliability, transparency, and fairness in criminal trials. This research examines the admissibility and legal validity of AI-generated evidence within the framework of Indian evidence law, particularly under the Bharatiya Sakshya Adhiniyam, 2023. The study analyses the close relationship between Artificial Intelligence and electronic evidence and discusses how existing legal provisions apply to AI-based evidence during trial proceedings. It further examines important judicial decisions such as *Anvar P.V. v. P.K. Basheer* and *Arjun Panditrao Khotkar v. Kailash Kushanrao Gorantyal* in relation to electronic evidence and their relevance to AI-generated evidence. The research also highlights major concerns such as algorithmic bias, deepfake technology, privacy violations, lack of explainability, and the "black-box" nature of AI systems. Finally, the study emphasizes the need for a separate legal and regulatory framework to ensure that the use of AI in criminal trials does not affect procedural fairness, transparency, and the right to a fair trial.

2. INTRODUCTION

2.1. Introduction to the Law of Evidence and Technological Development

Law of evidence is the basic foundation of the criminal justice process, in the sense that it regulates the procedure of proving facts in court. The fundamental purpose of this law is to restrict courts from accepting evidence that is irrelevant, unreliable, not credible, and illegally

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acquired. Traditionally, evidentiary laws were based on the use of anthropocentric forms of evidence, for instance, testimonies, documents, and tangible objects. However, due to technological developments, courts had to accept new forms of evidence, such as forensic evidence and electronic evidence. This phenomenon has been experienced in India through the Bharatiya Sakshya Adhiniyam, 2023 (BSA), especially sections 62 and 63.

2.2. Artificial Intelligence's Role in Criminal Justice

Artificial Intelligence is a turning point for the discipline of criminal justice and evidence law. While regular electronic systems only help store or transfer information, artificial intelligence has the ability to analyze information, make patterns, gain knowledge from data sets, and draw conclusions without much assistance from human beings. Modern criminal justice practices have incorporated the use of AI in various areas including facial recognition, predictive policing, surveillance, forensics, voice recognition, and crime mapping. Evidence created by these systems is referred to as AI-generated evidence, which is distinct from regular electronic evidence due to its autonomous and algorithmic nature.

2.3. Legal Issues Associated with AI-generated Evidence

The dependence on AI-generated evidence poses various legal and procedural issues. Conventional rules of evidence were formulated to regulate human-made and ordinary electronic evidence and, therefore, lack a comprehensive framework for regulating AI-generated evidence. AI-generated evidence poses challenges in relation to the conventional principles of relevance, authenticity, reliability, and admissibility of evidence. The black-box nature of many AI systems makes it hard for one to ascertain the process through which certain findings are generated. Besides, AI-generated findings have probabilities attached to them while, in criminal law, the threshold of proof is proof beyond reasonable doubt. Courts have set out several criteria for determining the admission of electronic evidence as per judicial precedents in cases like Anvar P.V. v. P.K. Basheer. However, these precedents fail to consider various aspects related to technology that come into play in AI-generated evidence. As a result, courts are currently faced with interpreting existing rules of evidence in circumstances in which they were not intended to be applied.

2.4. Constitutional Issues and Procedural Safeguards

The issue of AI evidence also presents serious constitutional concerns. Under the right to a fair trial provided for in Articles 20 and 21 of the Constitution of India, evidence used in criminal

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trials must be transparent and open to scrutiny by the accused. In Maneka Gandhi v. Union of India, the Supreme Court held that fairness, reasonableness, and due process form an important part of Article 21. But, since AI systems lack transparency, it might be impossible for the accused to challenge the outputs of such systems. This will violate the principle of natural justice and the procedural safeguard of cross-examination. Finally, bias in algorithms can lead to discrimination against people based on their gender, race, age, and other personal characteristics. This poses potential issues under Article 14 of the Constitution of India.

2.5. Need for a New Evidentiary Framework

Taking into account these trends, the admissibility of AI-produced evidence has become one of the most relevant problems in the field of evidence law. Although AI tools provide great benefits concerning efficiency, rapidness, and investigation capabilities, they should be used in criminal proceedings under strict regulation in order to avoid any misuses or miscarriages of justice. At the same time, the existing evidentiary system is not sufficient for addressing such issues as explainability, accountability, algorithmic bias, and reliability. Thus, the development of a new evidentiary framework appears to be a matter of urgency. This framework should regulate standards concerning the admission and assessment of AI-produced evidence in the criminal process.

3. LITERATURE REVIEW

The convergence of artificial intelligence with the field of criminal law and procedure has been a subject of great academic interest, particularly as far as evidence acquisition and procedures are concerned. There are a number of studies that not only highlight the potential benefits that AI can bring, but also discuss the formidable legal barriers it faces.

An important research paper by one author is titled "Artificial Intelligence as an Evidence-Generating Mechanism in Criminal Trials." In the study, the author highlights the capacity of artificial intelligence to improve the speed and minimize the error rate of evidence acquisition but warns against the inherent nature of such systems that includes opacity, potential algorithmic bias, and accountability. The author discusses the possible impact that the output generated by AI can have within the context of fairness in the criminal process since AI output is similar to a "black-box" procedure that might prove difficult for both the court and the defendant to evaluate. In addition, dependence on AI can undermine a number of procedural rights such as the presumption of innocence, the right to cross-examine witnesses, and equality of arms.

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The second work authored by Karthika M., "Admissibility of AI-Generated Evidence in Criminal Trials: A New Challenge for the Law of Evidence" is focused on examining the Indian legislation. The study notes that both the Indian Evidence Act of 1872 and its Sections 65A & 65B fall short of providing an adequate framework for dealing with AI-generated evidence. The point is made that time-honored concepts such as relevance, authenticity, and reliability are difficult to apply in case of products of AI due to probabilistic characteristics and complex algorithms underlying them. Furthermore, the author reviews landmark judicial decisions relating to the admissibility of electronic evidence and shows that the existing doctrines cannot address the new kind of evidence adequately. Moreover, the work identifies issues related to constitutional protection provided in Articles 14 & 21 due to opacity and non-appealability of AI-generated evidence.

The third source, written by Shruthika S., is called "The Use of Artificial Intelligence in Criminal Trials." This research takes a wider view of the use of artificial intelligence in criminal justice and observes its growing usage in matters of predictive policing, forensic examination, and judicial decision-making. There are benefits to using AI in these areas as it brings efficiency and consistency to the process. However, it also raises important issues concerning impartiality, accountability, and transparency, mostly because most AI technologies are often used in the form of a "black box," which means that defendants do not have an opportunity to question evidence presented through such technology. Another danger of using AI lies in the fact that it might duplicate biases existing in training data. The author explores various models of regulating artificial intelligence in the context of criminal trials, including those used in the U.S. and EU. One issue that stands out is that of the lack of regulation in India where no clear rules for admitting AI-generated evidence exist.

4. Research Gap

Though numerous works examine the potential benefits and threats that may arise through the use of artificial intelligence in criminal justice, there is no one-size-fits-all legal standard governing the conditions under which AI-based evidence may be used, particularly in India. The literature discusses several shortcomings, including the issues of bias, lack of transparency, and procedural injustice; however, few attempts have been made to articulate the doctrinal foundations required for incorporating AI-based evidence within existing standards of evidence. It is precisely this research gap that the present work endeavors to bridge.

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5. OBJECTIVES

1. Explain the working of the Artificial Intelligence while making evidences, like facial recognition and predictive analysis.
2. Highlight the usage and application of the AI evidence while trying criminal cases.
3. Discuss the legality of the AI evidence while citing the precedents set by courts like Anvar P.V. v. P.K. Basheer and Arjun Panditrao Khotkar v. Kailash Kushanrao Gorantyal in accordance with the Indian Evidence Act, 1872.
4. List down the issues that arise in connection with AI evidence in terms of law and the Constitution of India.
5. Create a model to regulate AI evidence in criminal cases.

6. Research Problem

This study elucidates the mechanism of Artificial Intelligence with particular reference to facial recognition and predictive analytics, examines the uses and applications of AI-generated evidence during criminal proceedings, analyses the legality and admissibility of such evidence under the Indian Evidence Act, 1872 in light of judicial precedents such as *Anvar P.V. v. P.K. Basheer* and *Arjun Panditrao Khotkar v. Kailash Kushanrao Gorantyal*, identifies the legal and constitutional concerns surrounding AI evidence within the framework of the Constitution of India, and formulates a regulatory model for governing the use of AI-generated evidence in criminal trials.

7. Research questions

1. Whether AI-derived evidence satisfies the requirements of admissibility under the Indian Evidence Act, 1872?
2. To what extent do judicial precedents such as Anvar P.V. v. P.K. Basheer and Arjun Panditrao Khotkar v. Kailash Kushanrao Gorantyal accommodate AI-generated evidence?
3. What legal and constitutional challenges arise from the use of AI-derived evidence, particularly in relation to the right to a fair trial?
4. What doctrinal framework can be developed to regulate the admissibility and use of AI-based evidence in criminal proceedings.

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8. Conceptual Framework

The conceptual framework of this research focuses on the relationship between Artificial Intelligence and the legal principles governing evidence and trial procedures. With the rapid growth of technology,[1] AI has become an important tool in criminal investigations, forensic analysis, surveillance systems, and judicial processes. The framework aims to study how AI-generated evidence influences court proceedings and whether existing legal provisions are capable of regulating such evidence effectively.

[2]This framework also examines the balance between technological advancement and procedural justice. It highlights the need to ensure that the use of AI in courts does not affect fairness, reliability, or the rights of individuals during trial proceedings.

8.1. Use of Artificial Intelligence in the Legal System

[3]Artificial Intelligence is increasingly used in various areas of the legal and [4]criminal justice system. Modern investigative agencies and forensic departments use AI technologies for facial recognition, predictive policing, digital surveillance, biometric analysis, automated decision-making, and electronic discovery.

[5]According to the research article *"Artificial Intelligence as Evidence"* by Paul W. Grimm, Maura R. Grossman, and Gordon V. Cormack, AI systems are capable of collecting, analyzing, and classifying large amounts of digital information more quickly and efficiently than traditional human methods. Because of this capability, AI has become an important part of modern evidence collection and investigation processes.

8.2. AI-Generated Evidence and Electronic Evidence

AI-related evidence is closely connected with electronic evidence because AI systems mainly operate through digital technologies. Artificial Intelligence collects, processes, stores, and generates information in electronic form, and therefore the outputs produced by AI systems become electronic evidence before courts.

[6]AI-generated evidence may include surveillance footage, facial recognition reports, biometric data, predictive algorithms, voice recognition outputs, deepfake videos, emails, chat records,

[1] https://ierj.in/journal/index.php/ierj/article/view/5097?utm
[2] https://www.axios.com/2025/07/25/courts-deepfakes-ai-trial-evidence?utm
[3] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5917402&utm`
[4] https://www.scribd.com/document/959496151/Admissibility-in-the-Age-of-Algorithm-Madhavi-Tiwary
[5] https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=6919&context=faculty_scholarship
[6] https://www.taxtmi.com/acts?id=42078&lawId=all&searchIn=aiMain&type=all&sort=default

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metadata, digital documents, and automated forensic reports. Since these forms of evidence exist electronically, their admissibility and evidentiary value are governed by the legal provisions relating to electronic records.

The connection between AI and electronic evidence becomes highly important during criminal investigations and trial proceedings because courts must verify the authenticity, reliability, and integrity of AI-generated material before admitting it as evidence.

8.3. Legal Framework under Bharatiya Sakshya Adhiniyam, 2023

The admissibility of AI-generated electronic evidence is mainly governed by the Bharatiya Sakshya Adhiniyam, 2023. [7]Section 61 of the Act recognizes electronic and digital records as admissible evidence and provides them with the same legal validity as physical documents. Further, [8]Section 62 states that the contents of electronic records may be proved according to the procedure provided under Section 63. [9]Section 63 is particularly important because it lays down the conditions for admissibility of electronic records and computer-generated evidence before courts.

[10]AI-generated outputs such as digital forensic reports, surveillance recordings, facial recognition data, algorithmic analysis, and electronic communications fall within the scope of electronic evidence under these provisions. Therefore, AI evidence must satisfy legal requirements relating to authenticity, admissibility, and certification before being accepted during trial proceedings.

8.4. Variables in the Conceptual Framework

[11]In this research framework, AI-generated evidence acts as the independent variable. The dependent variables include admissibility of evidence, reliability, authenticity, judicial accuracy, fairness of trial, and protection of procedural justice.

The framework studies how AI technologies influence judicial decision-making and whether the present evidentiary laws are sufficient to regulate AI-based evidence effectively. It also examines whether the growing dependence on AI systems may affect the fairness and

[7] https://www.aaptaxlaw.com/bsa/61-bsa-electronic-or-digital-record-61-bsa-2023.html
[8]https://www.aaptaxlaw.com/bsa/62-bsa-special-provisions-as-to-evidence-relating-to-electronic-record-62-bsa-2023.html
[9]https://www.apnilaw.com/bare-act/bsa/section-63-bharatiya-sakshya-adhiniyam-bsa-admissibility-of-electronic-records/
[10]https://ijlsss.com/admissibility-of-ai-generated-electronic-evidence-a-legal-analysis-with-reference-to-bharatiya-sakshya-adhiniyam-2023/
[11] https://www.taxtmi.com/acts?id=42078&lawId=all&searchIn=aiMain&type=all&sort=default

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transparency of judicial proceedings.

8.5. Challenges Associated with AI Evidence

[12]The framework identifies several legal and ethical challenges associated with the use of Artificial Intelligence in evidence and trial procedures. One major concern is algorithmic bias, where AI systems may produce discriminatory or inaccurate results due to biased training data. Another challenge is the lack of transparency and explainability in AI systems. Many AI technologies function as "black-box" systems, making it difficult for courts, lawyers, and parties to understand how conclusions were reached. This creates problems in verifying the reliability of AI-generated evidence.

[13]The framework also addresses issues such as privacy violations, manipulation of digital records, deepfake technology, fabricated electronic evidence, and risks associated with automated decision-making. These challenges directly affect the credibility of evidence and may influence the fairness of trial proceedings.

8.6. Judicial Scrutiny and Reliability Testing

[14]Judicial scrutiny plays an important role in determining whether AI-generated evidence should be admitted before courts. Courts must carefully examine whether AI systems produce accurate, reliable, and scientifically valid results. [15]The research framework emphasizes the importance of reliability testing, independent verification, and scientific validation of AI systems before their use in civil and criminal trials.

Courts may consider factors such as testing procedures, accepted scientific standards, error rates, and technical accuracy while evaluating AI evidence. [16]Expert testimony and digital forensic examination also become essential for helping courts understand the functioning and reliability of AI technologies used during investigations.

8.7. Procedural Safeguards under BNSS

[17]The conceptual framework also incorporates procedural safeguards provided under the Bharatiya Nagarik Suraksha Sanhita, 2023 relating to investigation, collection of electronic

[12] https://www.livelaw.in/articles/digital-forensics-indian-evidence-laws-ai-generated-proof-531826
[13] https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=6919&context=faculty_scholarship
[14] https://share.google/gPqyT2QyE4FiypVCJ
[15] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=6515418
[16] https://www.livelaw.in/articles/digital-forensics-indian-evidence-laws-ai-generated-proof-531826
[17]https://blog.ipleaders.in/bharatiya-sakshya-adhiniyam-2023-complete-guide-to-indias-new-evidence-law/https://www.pib.gov.in/PressReleasePage.aspx?PRID=2106239&reg=3&lang=2

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evidence, forensic examination, and production of digital records before courts.

[18]Proper chain of custody, forensic verification, expert examination, and compliance with statutory procedures are necessary to maintain the integrity and admissibility of AI-generated evidence. These safeguards help ensure fairness and protect the rights of individuals during trial proceedings.

8.8. Role of Judicial Decisions

[19]The framework additionally relies upon principles developed through landmark judicial decisions relating to electronic evidence. Important cases such as *Anvar P.V. v. P.K. Basheer* and *Arjun Panditrao Khotkar v. Kailash Kushanrao Gorantyal* emphasized the importance of authenticity, certification, and admissibility requirements for electronic evidence. [20]These judicial principles are relevant in AI-related trials because AI-generated outputs are primarily produced and stored electronically. Therefore, courts must apply similar standards while evaluating AI evidence.

The conceptual framework of this research seeks to examine the relationship between Artificial Intelligence, electronic evidence, and trial procedures within the modern legal system. It analyzes how AI technologies influence evidence collection, authentication, admissibility, and judicial decision-making. [21]The framework further highlights the importance of legal safeguards, judicial scrutiny, expert verification, and statutory compliance in ensuring that AI-generated evidence does not compromise fairness and procedural justice. Ultimately, the research aims to study how the law can balance technological innovation with the protection of fair trial rights in the evolving digital era.

9. Solutions and Recommendations

9.1. Passing of Special Legislation Governing AI-Generated Evidence

It has become imperative that special legislation be passed or amendments made in the Indian Evidence Act, 1872, for the regulation of AI-generated evidence. The current provisions relating to AI-generated evidence under sections 65A and 65B of the Indian Evidence Act are insufficient because in the case of AI-generated evidence, the computer independently analyzes information and produces a conclusion based on such analysis rather than storing electronic

[18] https://ljrfvoice.com/ai-and-admissibility-of-evidence-2/
[19] https://supremetoday.ai/issue/electronic-evidence-bsa-admissibility-rules
[20]https://www.scconline.com/blog/post/2024/10/23/electronic-evidence-in-focus-navigating-legal-shifts-in-the-law-on-electronic-evidence-under-the-bsa-2023/
[21] https://www.livelaw.in/articles/digital-forensics-indian-evidence-laws-ai-generated-proof-531826

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records only.

9.2. Explainability and Transparency Requirement

An artificial intelligence program that is applied in criminal cases should adhere to the principle of explainability. There should be an ability on the part of the courts and defendants to understand the workings of an algorithm behind reaching certain conclusions. In any case, black box technology cannot be deemed definitive proof.

9.3. Independent Audit and Certification of AI Systems

AI systems deployed in criminal justice should undergo independent technical audits and certification before being used as evidentiary tools. Such audits should evaluate accuracy, reliability, bias, and accountability to ensure trustworthy AI practices.

9.4. Human Supervision in Criminal Proceedings

AI must act as a facilitator but never a substitute for human judgement in judging. Judges as well as law enforcement authorities need to review any outputs that have been provided by the use of AI technology. Human supervision is vital for ensuring justice in criminal proceedings.

9.5. Protection of Rights for a Fair Trial

There should be an adequate chance to contest the AI-produced evidence. The disclosure of methodology, data sets, and system flaws is essential to ensure the right to cross-examine and have a fair trial as enshrined in Articles 20 and 21 of the Indian Constitution.

9.6. Regulations against AI Bias and Discrimination

AI models should be frequently tested to ensure that there is no discrimination arising due to algorithmic bias. This can be harmful to minority groups, thus violating Article 14 of the Indian Constitution.

10. Future Prospects of AI in Evidence and Criminal Trials

Artificial Intelligence has the capacity to make significant changes to criminal investigations, evidentiary procedures, and the administration of criminal trials. The technologies powered by AI may prove to be useful in crime detection, improving forensic techniques, helping in analyzing large amounts of digital data, and avoiding delays. Facial recognition, predictive analysis, forensic automation, intelligent surveillance, and voice recognition are some of the

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technologies that will gain popularity in the field of criminal justice.

Future laws will emphasize more on the concept of explainable AI, ethical governance of AI technologies, human control, accountability of algorithms, and privacy protection. International trends point toward an increasing emphasis on "Trustworthy AI," which combines innovation with constitutional protections and respect for human rights. In India, AI technology may revolutionize criminal law and evidentiary procedures only when adequate measures are put in place to guarantee fair and equal treatment, due process, and judicial independence. When controlled properly, AI may serve as a tool to facilitate criminal adjudication without compromising the essence of justice and the rule of law.

11. Conclusion

Artificial Intelligence has significantly changed the way criminal investigations and trial procedures are conducted in the modern legal system. Technologies such as facial recognition, predictive analytics, biometric systems, digital surveillance, and forensic automation have made evidence collection faster and more efficient. At the same time, the increasing use of AI-generated evidence has created several legal, ethical, and constitutional challenges that cannot be ignored. This research shows that AI-generated evidence differs from ordinary electronic evidence because AI systems not only store information but also independently analyse data and generate conclusions through algorithms. Although the Bharatiya Sakshya Adhiniyam, 2023 provides legal recognition to electronic evidence, the present legal framework is still not fully equipped to deal with the unique issues arising from AI-generated evidence.

Concerns such as algorithmic bias, lack of transparency, deepfake technology, privacy violations, and the inability to fully understand the functioning of AI systems may affect the fairness of criminal trials and the rights of accused persons. The study also highlights the importance of judicial scrutiny, expert examination, forensic verification, and procedural safeguards while dealing with AI-based evidence. Judicial precedents relating to electronic evidence continue to play an important role, but there is a clear need for specific laws and guidelines regulating AI-generated evidence in criminal proceedings. Therefore, while Artificial Intelligence has the potential to improve the criminal justice system, its use must remain transparent, accountable, and consistent with constitutional principles in order to protect procedural fairness and ensure justice in trial proceedings.