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Artificial Intelligence in Criminal Justice: Emerging Technologies, Legal Challenges & Human Rights Implications

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ABSTRACT :

The rapid advancement of Artificial Intelligence (AI) has brought significant changes to the criminal justice system by introducing innovative technological tools for crime prevention, criminal investigation, forensic analysis, evidence collection and judicial administration. The integration of AI-based technologies, including facial recognition systems, predictive policing, machine learning, biometric identification and automated data analysis, has created new possibilities for improving the efficiency, accuracy and effectiveness of criminal justice institutions. These developments have the potential to strengthen law enforcement mechanisms, facilitate criminal investigations, improve the management of digital evidence and support the timely delivery of justice. In India, the growing use of digital technologies in criminal justice administration, particularly in the context of the Bharatiya Nyaya Sanhita, 2023, the Bharatiya Nagarik Suraksha Sanhita, 2023, and the Bharatiya Sakshya Adhiniyam, 2023, makes it necessary to examine the legal implications of technological transformation. It also emphasises the need for a comprehensive regulatory framework ensuring transparency, accountability, data protection and meaningful human oversight in AI-based decision-making. The study argues that Artificial Intelligence should serve as an assisting mechanism rather than replace human judgment and judicial discretion. Ultimately, technological advancement in criminal justice must remain consistent with constitutional values, the principles of natural justice, human dignity and the rule of law.

Keywords: Artificial Intelligence (AI), Criminal Justice System, Predictive Policing, Facial Recognition Technology, Digital Forensics, Data Protection, Right to Privacy, Fair Trial, Human Rights

INTRODUCTION:

The rapid advancement of science and technology has significantly transformed various aspects of human life, including the administration of justice. Artificial Intelligence (AI) has emerged as one of the most influential technological developments of the twenty-first century, offering new opportunities to improve the efficiency, accuracy, transparency and effectiveness of the criminal justice system. The integration of AI into criminal justice has introduced innovative methods of crime detection, criminal investigation, evidence collection, forensic analysis, crime prediction and judicial administration. Technologies such as machine learning, facial recognition systems, predictive policing, natural language processing, biometric identification and automated data analysis are increasingly being explored and utilised by law enforcement agencies and other criminal justice institutions across the world.

Traditionally, the criminal justice system has primarily depended upon human intelligence, investigative experience, conventional forensic techniques and judicial discretion. However, the increasing complexity of

modern crimes, particularly cybercrime, financial fraud, organised crime, terrorism and technology-based offences, has created a need for more advanced investigative mechanisms. Artificial Intelligence can assist investigating agencies in analysing large volumes of digital information, identifying suspicious patterns, recognising individuals through biometric data, examining electronic evidence and detecting potential criminal activities. These technological developments have the potential to strengthen the criminal investigation process and facilitate the timely administration of justice. Similarly, AI-based applications may assist prosecutors, defence lawyers and judicial institutions in legal research, document analysis, case management and the examination of complex evidentiary materials.In the context of India, technological advancement has become an important component of criminal justice administration. The introduction of new criminal laws, namely the Bharatiya Nyaya Sanhita, 2023, the Bharatiya Nagarik Suraksha Sanhita, 2023, and the Bharatiya Sakshya Adhiniyam, 2023, which came into force on 1 July 2024, reflects the growing importance of technology in the criminal justice framework. These legislative developments recognise electronic and digital records and provide a framework for incorporating technology into criminal investigation, procedural administration and evidentiary processes. Furthermore, digital forensic facilities, cybercrime investigation mechanisms, electronic evidence management and video-conferencing facilities have contributed to the modernisation of criminal justice institutions. In this changing legal environment, Artificial Intelligence may play an increasingly significant role in strengthening institutional efficiency and supporting evidence-based decision-making. Despite its considerable advantages, the application of Artificial Intelligence in criminal justice raises serious legal, ethical and constitutional concerns. The use of predictive policing and algorithm-based risk assessment may create possibilities of discrimination, profiling and unequal treatment, particularly where the underlying data reflects existing social or institutional biases. Facial recognition technology and extensive digital surveillance may also interfere with the fundamental right to privacy. Similarly, excessive dependence on automated systems in criminal investigation or judicial decision-making may undermine human judgment, procedural fairness and the presumption of innocence. The possibility of inaccurate algorithmic predictions, wrongful identification, manipulation of digital evidence and lack of transparency in AI-based systems further raises questions concerning accountability and legal responsibility.

From a human rights perspective, the application of Artificial Intelligence in criminal justice must be examined in the light of constitutional guarantees and internationally recognised principles of justice. In India, Articles 14, 20, 21 and 22 of the Constitution provide important safeguards relating to equality before the law, protection against arbitrary criminal liability, life and personal liberty, and safeguards against arbitrary arrest and detention. The right to privacy, recognised as a fundamental right by the Supreme Court in Justice K.S. Puttaswamy (Retd.) v. Union of India (2017), also assumes considerable importance in the context of AI-driven surveillance, biometric identification and the collection and processing of personal information. Consequently, technological efficiency cannot be permitted to operate at the cost of constitutional morality, individual liberty, human dignity and the right to a fair trial.

The relationship between Artificial Intelligence and criminal justice is therefore characterised by both opportunities and challenges. On the one hand, technological innovation can strengthen crime prevention, improve investigative capabilities, facilitate forensic examination and reduce procedural delays. On the other hand, its unregulated or excessive application may threaten privacy, equality, individual autonomy and other fundamental human rights. The central challenge is to establish an appropriate balance between technological advancement and the protection of constitutional and legal safeguards.

HISTORICAL BACKGROUND

The relationship between technological advancement and the administration of criminal justice has evolved significantly over time. Historically, the criminal justice system primarily depended upon traditional methods of investigation, human intelligence, eyewitness testimony, documentary evidence and conventional forensic techniques. Criminal investigations were generally conducted through physical surveillance, interrogation, manual examination of records and other conventional investigative procedures. However, with the

development of modern science and technology, the nature of criminal investigation and the administration of justice have undergone substantial transformation. The emergence of computers, digital communication, information technology and sophisticated analytical systems has gradually changed the methods adopted by law enforcement agencies, prosecutors and judicial institutions.

The historical development of Artificial Intelligence (AI) can be traced to the mid-twentieth century. The concept of machines capable of performing tasks associated with human intelligence gained academic recognition during the 1950s. In 1950, British mathematician and computer scientist Alan Turing published his influential paper Computing Machinery and Intelligence, in which he examined whether machines could demonstrate intelligent behaviour. Subsequently, the term Artificial Intelligence was formally introduced at the Dartmouth Conference in 1956, organised by John McCarthy and other researchers. This period marked the beginning of systematic research into the development of intelligent computer systems capable of reasoning, learning and problem-solving.During the subsequent decades, AI research progressed through the development of expert systems, machine learning, natural language processing and advanced computational techniques. Initially, these technologies were primarily utilised in scientific research, industrial applications, financial services and information management. Gradually, their potential applications expanded into law enforcement and criminal justice administration. Computerised databases, automated fingerprint identification systems, DNA profiling, digital surveillance and computer-assisted criminal record management became important developments in modern criminal investigation.

The introduction of biometric identification and computerised forensic technologies significantly strengthened the capacity of investigating agencies to identify suspects and examine criminal evidence. Fingerprint databases enabled law enforcement authorities to compare and identify fingerprints more efficiently. Similarly, developments in DNA technology transformed forensic investigation by providing scientific methods for establishing biological connections between suspects, victims and crime scenes. The subsequent development of digital forensic science further expanded the scope of criminal investigation through the examination of computers, mobile phones, electronic communications and other digital devices.With the expansion of the internet, social media platforms, digital financial transactions and electronic communication, the nature of criminal activities has also become increasingly complex. Cybercrime, identity theft, online financial fraud, digital harassment, organised criminal networks and technology-assisted offences have created new challenges for traditional investigative mechanisms.

In recent years, machine learning and deep learning technologies have accelerated the integration of Artificial Intelligence into criminal justice. Predictive policing systems are being developed to analyse crime-related data and identify locations or patterns associated with potential criminal activities. Facial recognition technology assists in identifying individuals through biometric information, while automated video analytics can examine surveillance footage to detect suspicious activities. Natural language processing and data-mining techniques can assist investigators in examining electronic communications, extracting relevant information and analysing complex documentary records. These developments demonstrate the growing importance of AI in contemporary criminal justice administration.

Internationally, several countries have experimented with AI-based systems in policing, criminal risk assessment, forensic investigation and judicial administration. In the United States, algorithmic risk-assessment tools have been used in certain criminal justice processes, including bail and sentencing-related assessments. In the United Kingdom, advanced data analytics and facial recognition technologies have been explored for law enforcement purposes. Similarly, several European countries have focused on developing regulatory safeguards to ensure that AI applications remain consistent with fundamental rights, privacy and democratic values. These international developments demonstrate that the use of Artificial Intelligence in criminal justice requires not only technological innovation but also appropriate legal and institutional supervision.In India, the evolution of technology in criminal justice has gained considerable importance with the expansion of digital governance, cybercrime investigation and electronic evidence management. The

establishment and development of digital forensic facilities, cybercrime reporting mechanisms, computerised police databases and electronic court services have contributed to the modernisation of criminal justice institutions. Initiatives such as the Crime and Criminal Tracking Network and Systems (CCTNS), the Inter-operable Criminal Justice System (ICJS) and the e-Courts Project reflect the increasing use of information technology in policing, investigation and judicial administration.

An important development in India's criminal justice framework has been the enactment of three new criminal laws, namely the Bharatiya Nyaya Sanhita, 2023, the Bharatiya Nagarik Suraksha Sanhita, 2023, and the Bharatiya Sakshya Adhiniyam, 2023, which came into force on 1 July 2024. Despite these developments, the growing application of Artificial Intelligence has created significant concerns regarding individual liberty, privacy, equality and procedural fairness. The use of facial recognition, predictive policing and automated decision-making may result in discriminatory outcomes where algorithms operate on inaccurate, incomplete or biased datasets. Moreover, the absence of transparency in certain AI-based systems may make it difficult for accused persons to challenge the reliability of technological evidence or understand the basis of automated assessments. Therefore, the historical evolution of Artificial Intelligence in criminal justice reflects a transition from conventional investigation methods to technology-assisted and data-driven systems. This transformation offers substantial opportunities to improve the efficiency and effectiveness of criminal justice institutions. Nevertheless, technological advancement must be accompanied by appropriate legal safeguards, institutional accountability and human supervision. The ultimate objective should not merely be the introduction of advanced technologies but the development of a criminal justice system that is efficient, transparent, impartial and consistent with constitutional principles, human dignity and the rule of law.

LEGAL ASPECTS

The integration of Artificial Intelligence (AI) into the criminal justice system has introduced several important legal dimensions concerning criminal investigation, evidence collection, surveillance, prosecution and judicial decision-making. Although AI-based technologies offer significant opportunities to strengthen the administration of justice, their application must operate within the established framework of constitutional principles, statutory provisions, procedural safeguards and internationally recognised human rights standards. The use of technology in criminal justice cannot be considered independent of the principles of legality, equality, fairness, accountability and due process of law.The legal framework governing Artificial Intelligence in criminal justice is still evolving across the world. At present, there is no single universally applicable legal instrument that comprehensively regulates every aspect of AI-based criminal justice applications. Consequently, existing constitutional provisions, criminal laws, evidence laws, data protection legislation and human rights principles play an important role in regulating the use of emerging technologies.

1. Constitutional Framework and Fundamental Rights in India

The Constitution of India provides the foundational legal framework for regulating the use of Artificial Intelligence in criminal justice. The application of AI by police authorities, investigating agencies and judicial institutions must remain consistent with fundamental rights.

Article 14 – Right to Equality: Article 14 guarantees equality before the law and equal protection of the laws. AI-based predictive policing, facial recognition and criminal risk-assessment systems must not produce discriminatory outcomes on the basis of caste, gender, religion, social background or other irrelevant considerations. Algorithmic bias may result in unequal treatment and arbitrary classification, thereby raising serious constitutional concerns.

Article 20 – Protection in Respect of Conviction for Offences: Article 20 provides important safeguards against ex post facto criminal laws, double jeopardy and compelled self-incrimination. The use of AI-assisted interrogation, automated behavioural analysis or technology-based evidence must respect the constitutional protection against compelled self-incrimination under Article 20(3).

Article 21 – Right to Life and Personal Liberty: Article 21 protects life and personal liberty and requires that any deprivation of liberty follow a procedure established by law that is just, fair and reasonable. AI-based surveillance, automated suspect identification and predictive criminal assessment must therefore comply with constitutional standards of fairness, legality and procedural safeguards.

Article 22 – Protection Against Arbitrary Arrest and Detention: The use of AI in identifying suspects or assessing criminal risks cannot eliminate the legal safeguards available to arrested persons. Arrest and detention must comply with constitutional and statutory requirements rather than depend exclusively upon automated technological assessments.

2. Right to Privacy and Data Protection

The right to privacy is one of the most significant legal considerations in the application of Artificial Intelligence to criminal justice. In Justice K.S. Puttaswamy (Retd.) v. Union of India (2017), the Supreme Court of India recognised privacy as a fundamental right under Article 21 and other constitutional freedoms. This judgment has considerable relevance to AI-based surveillance, facial recognition, biometric identification and the processing of personal information.AI systems frequently require access to extensive datasets, including personal details, biometric information, location records, communication patterns and other sensitive information. The collection, storage, processing and sharing of such information by law enforcement agencies must satisfy applicable legal requirements and constitutional standards.

The Digital Personal Data Protection Act, 2023, provides an important statutory framework concerning the processing of digital personal data. However, its application to law enforcement and criminal justice must be examined in light of its specific provisions, including statutory exemptions. The protection of personal information must be balanced against legitimate law enforcement objectives, subject to legality, necessity and appropriate safeguards.

3. Bharatiya Nyaya Sanhita, 2023

The Bharatiya Nyaya Sanhita, 2023 (BNS), which replaced the Indian Penal Code, 1860, came into force on 1 July 2024. It provides the substantive criminal law framework in India. Although the BNS does not specifically establish a comprehensive regulatory framework for Artificial Intelligence, its provisions remain relevant where AI technologies are used in the commission, facilitation or detection of criminal offences.

4. Bharatiya Nagarik Suraksha Sanhita, 2023

The Bharatiya Nagarik Suraksha Sanhita, 2023 (BNSS), which replaced the Code of Criminal Procedure, 1973, provides the procedural framework for criminal investigation, inquiry and trial in India. The legislation incorporates several technology-oriented provisions that are relevant to the modernisation of criminal justice.Some important provisions include:

- Section 94: Provides for the production of documents, electronic communications and communication devices that may contain digital evidence for investigation, inquiry or trial.

Section 173: Recognises the submission of information relating to cognizable offences through electronic communication, subject to the prescribed requirements.

Section 176: Contains provisions concerning police investigation, including forensic examination in specified categories of serious offences.

Section 193: Deals with the police report upon completion of investigation and includes provisions concerning electronic communication and digital evidence.

These provisions provide opportunities for technology-assisted investigation and electronic documentation. AI-based analytical tools may assist investigating agencies in examining digital information, identifying

patterns and organising evidence. Nevertheless, the use of AI cannot replace statutory investigative procedures, independent verification or the legal responsibility of investigating officers.

5. **Bharatiya Sakshya Adhiniyam, 2023:**

The Bharatiya Sakshya Adhiniyam, 2023 (BSA), which replaced the Indian Evidence Act, 1872, provides an important evidentiary framework for the use of electronic and digital records in judicial proceedings. The following provisions are particularly relevant:

Section 61 – Electronic or Digital Records: Recognises the legal validity and admissibility of electronic or digital records, subject to the requirements of the Act.

Section 62 – Special Provisions as to Evidence Relating to Electronic Records: Provides that the contents of electronic records may be proved in accordance with Section 63.

Section 63 – Admissibility of Electronic Records: Prescribes the conditions for the admissibility of electronic records, including specified requirements relating to computer-generated outputs and certification.

These provisions are particularly important in cases involving AI-generated content, digital images, CCTV recordings, electronic communications, voice recordings and other technology-based evidence. However, the mere production of AI-generated material does not automatically establish its authenticity or evidentiary reliability. Courts must examine its source, integrity, accuracy, manner of production and compliance with applicable evidentiary requirements.

An important legal issue is the distinction between an authentic digital record and artificially generated or manipulated content. Deepfake videos, synthetic audio recordings and AI-generated images may create difficulties in determining the genuineness of evidence. Therefore, scientific verification, forensic examination, preservation of metadata and an established chain of custody are essential for ensuring evidentiary reliability.

6. Information Technology Act, 2000

The Information Technology Act, 2000, provides the principal statutory framework for addressing several categories of computer-related offences and electronic activities in India. Although the Act was enacted before the recent expansion of generative AI technologies, various provisions are relevant to offences committed through AI-enabled digital platforms. Important provisions include:

Section 43: Provides for penalties and compensation for specified unauthorised acts involving computer systems and resources.

Section 66: Addresses computer-related offences committed dishonestly or fraudulently.

Section 66C: Deals with identity theft involving electronic signatures, passwords or other unique identification features.

Section 66D: Provides punishment for cheating by personation using computer resources.

Section 66E: Addresses violation of privacy through the capture, publication or transmission of images of private areas without consent.

Sections 67 and 67A: Deal with the publication or transmission of obscene and sexually explicit material in electronic form, respectively.

These provisions may become relevant where AI technologies are misused for identity impersonation, digital fraud, privacy violations and the creation or circulation of certain unlawful synthetic content, depending upon the ingredients of the particular offence.However, the existing IT legislation does not comprehensively address all emerging issues relating to AI-generated misinformation, algorithmic discrimination, automated criminal

profiling and liability for autonomous AI systems. This creates a need to examine whether existing laws are adequate to address the rapidly changing technological environment.

7. Digital Personal Data Protection Act, 2023

The Digital Personal Data Protection Act, 2023, is an important legislative development concerning the protection of personal data in India. AI-based criminal justice applications frequently depend upon the collection and processing of personal information, including biometric identifiers, facial images, location information and digital communication records.

The Act provides a statutory framework for the processing of digital personal data. However, Section 17 contains specific exemptions, including an exemption relating to processing necessary for the prevention, detection, investigation or prosecution of offences. Therefore, the application of the Act to law enforcement activities must be assessed with reference to its precise statutory provisions.

The principal legal concern is to ensure that personal information is not collected, retained, processed or shared arbitrarily. Even where statutory exemptions apply, constitutional requirements and other applicable legal safeguards remain important. The development of responsible AI-based criminal justice systems therefore requires appropriate standards concerning data security, access control, proportionality and institutional accountability.

Judicial Interpretation:

Judicial interpretation plays an important role in determining the constitutional limits of technological intervention in criminal justice. Certain landmark judgments provide a foundation for examining the relationship between technology, individual liberty and the administration of justice.

(i) Justice K.S. Puttaswamy (Retd.) v. Union of India (2017): The Supreme Court recognised the right to privacy as a fundamental right. The judgment is particularly relevant to AI-based surveillance, facial recognition, biometric databases and the processing of personal information.

(ii) Maneka Gandhi v. Union of India (1978): The Supreme Court established that the procedure depriving a person of life or personal liberty must be just, fair and reasonable. This principle is significant when examining automated decisions affecting personal liberty.

(iii) Selvi v. State of Karnataka (2010): The Supreme Court examined the constitutional validity of involuntary narco-analysis, polygraph examination and brain electrical activation profile tests. The judgment emphasised the protection against compelled self-incrimination under Article 20(3) and the right to personal liberty under Article 21. It provides an important constitutional reference point for evaluating intrusive technology-assisted investigative techniques.

(iv) Shreya Singhal v. Union of India (2015): The Supreme Court struck down Section 66A of the Information Technology Act, 2000, on grounds of constitutional invalidity. The decision highlights the importance of protecting freedom of speech and expression while regulating activities in the digital environment.

International Era:

The regulation of Artificial Intelligence in criminal justice has also become an important issue in international legal discourse. Different jurisdictions have adopted approaches aimed at balancing technological innovation with fundamental rights and institutional accountability.

European Union: The European Union's Artificial Intelligence Act establishes a risk-based regulatory framework for AI systems. Certain AI applications used in law enforcement and biometric identification are subject to strict restrictions or high-risk requirements. The Act also regulates specified uses of real-time remote biometric identification in publicly accessible spaces for law enforcement purposes, subject to limited exceptions and safeguards.

United States: The use of algorithmic risk-assessment tools in criminal justice has raised significant concerns regarding fairness, transparency and discrimination. The legal debate particularly concerns the use of automated assessments in bail, sentencing and decisions relating to the likelihood of reoffending.

United Kingdom: The use of facial recognition and automated analytical technologies by law enforcement authorities has generated important legal discussions concerning privacy, proportionality, equality and the need for appropriate oversight.These international experiences demonstrate that AI regulation in criminal justice requires a comprehensive approach involving legal standards, independent oversight, transparency and effective remedies against technological errors.

10. Legal Challenges Relating to Artificial Intelligence in Criminal Justice

Despite the development of various statutory and constitutional safeguards, the application of Artificial Intelligence raises several unresolved legal questions.

A. Algorithmic Bias and Discrimination: AI systems may produce discriminatory outcomes because of biased training datasets or defective algorithms. Such discrimination may violate the constitutional guarantee of equality under Article 14.

B. Reliability and Admissibility of AI-Generated Evidence: The authenticity, accuracy and reliability of AI-generated evidence remain significant legal concerns. Courts must carefully examine whether such evidence has been manipulated, altered or generated through unreliable technological processes.

C. Accountability and Legal Liability: An important question arises regarding the determination of legal responsibility when an AI-based system produces an incorrect identification, discriminatory assessment or misleading investigative result. The responsibility of developers, technology providers, law enforcement agencies and other relevant authorities requires appropriate legal examination.

D. Right to Privacy and Surveillance: Excessive use of facial recognition, biometric identification and predictive surveillance may interfere with individual privacy and personal liberty. Such practices must satisfy constitutional requirements and applicable statutory safeguards.

E. Right to Fair Trial: Dependence on automated systems may adversely affect the rights of accused persons if the methodology, underlying data or basis of an AI-generated assessment cannot be adequately examined or challenged. The principles of natural justice and fair trial require meaningful opportunities to contest relevant evidence.

F. Lack of Transparency and Explainability: Certain AI systems operate through complex algorithms that may not provide easily understandable explanations for their outcomes. This creates difficulties for courts, accused persons and investigating agencies in assessing the accuracy and fairness of automated decisions.

11. Need for Legal Reforms and Regulatory Safeguards

The increasing use of Artificial Intelligence in criminal justice requires a comprehensive legal and institutional framework. The following measures may be considered:

1. Specific AI Legislation: India should consider developing a comprehensive legal framework governing the use of Artificial Intelligence in criminal investigation, policing and judicial administration.

2. Human Oversight: AI-based decisions affecting arrest, detention, prosecution, bail and sentencing should remain subject to meaningful human supervision and independent judicial scrutiny.

3. Algorithmic Transparency: AI systems used by law enforcement agencies should be subject to appropriate disclosure, explainability and independent auditing requirements.

4. Protection of Personal Data: Appropriate safeguards should be established to prevent unauthorised collection, processing, storage and disclosure of personal and biometric information.

5. Reliability of Digital Evidence: Clear standards should be developed for the authentication, preservation and forensic examination of AI-generated and AI-manipulated evidence.

6. Accountability Mechanism: Legal responsibility should be clearly determined where negligence, misuse, discriminatory algorithms or technological failures result in violations of individual rights.

7. Judicial and Police Training: Judges, prosecutors, advocates, investigating officers and forensic experts should receive specialised training concerning AI technologies and their legal implications.

8. Effective Legal Remedies: Individuals affected by erroneous or discriminatory AI-based decisions should have access to appropriate mechanisms for challenging such decisions and obtaining legal remedies.

CONCLUSION

The emergence of Artificial Intelligence has brought a significant transformation in the functioning and administration of the criminal justice system. The rapid development of machine learning, facial recognition, predictive policing, biometric identification, digital forensics and automated data analysis has created new opportunities for improving the efficiency, accuracy and effectiveness of criminal investigation and judicial administration. These technologies have the potential to strengthen crime prevention, facilitate the identification of offenders, improve the examination of electronic evidence and support the timely delivery of justice. Therefore, Artificial Intelligence has emerged as an important instrument in the modernisation of criminal justice institutions.

However, the increasing application of AI in criminal justice also presents serious legal, constitutional and ethical challenges. The possibility of wrongful identification or reliance on inaccurate AI-generated evidence raises serious concerns regarding the presumption of innocence, procedural fairness and the right to a fair trial. Consequently, technological advancement cannot be considered a substitute for established principles of criminal jurisprudence, constitutional morality and the rule of law.

In the Indian context, the constitutional framework, particularly Articles 14, 20, 21 and 22, provides essential safeguards against arbitrary state action and protects equality, personal liberty and procedural fairness. The recognition of privacy as a fundamental right in Justice K.S. Puttaswamy (Retd.) v. Union of India (2017) further strengthens the constitutional limitations on intrusive technological practices. Similarly, the Bharatiya Nyaya Sanhita, 2023, the Bharatiya Nagarik Suraksha Sanhita, 2023, and the Bharatiya Sakshya Adhiniyam, 2023, provide an important legal foundation for addressing contemporary challenges involving digital investigation and electronic evidence. Nevertheless, the existing legal framework requires further development to address the specific concerns arising from AI-driven criminal investigation, algorithmic accountability and automated decision-making.

An important issue is the determination of legal responsibility when an AI-based system produces an inaccurate, discriminatory or misleading result. The law must establish appropriate standards of accountability for the agencies and individuals responsible for developing, deploying and using such technologies. Furthermore, AI-generated evidence should not be accepted merely because it is produced through advanced technological systems. Its authenticity, reliability, accuracy and legal admissibility must be independently examined in accordance with established evidentiary principles. Human supervision and judicial scrutiny must remain essential components of every criminal justice process involving AI.Such a framework should incorporate algorithmic transparency, independent auditing, protection of personal data, safeguards against discriminatory outcomes, reliable digital evidence standards and effective legal remedies for individuals affected by technological errors. Specialised training should also be provided to judges, advocates, prosecutors, police officers and forensic experts to ensure the responsible and informed use of emerging technologies.

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