International Journal of Law
www.lawjournals.org
ISSN: 2455-2194
Received: 13-03-2026, Accepted: 13-04-2026, Published: 28-04-2026
Volume 12, Issue 2, 2026, Page No. 214-217

Role of artificial intelligence in criminal justice administration

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Abstract
Artificial Intelligence is rapidly expanding technology. Every field is trying to incorporate AI in some or the other way. Artificial Intelligence can be used in criminal justice administration in order to facilitate speedy justice. It can be used at various stages of criminal trial. The judges can take assistance of AI for finding precedents, analysing facts of the case to save time and having a structured approach. The advocates can take assistance of AI for drafting of their case. But howsoever, they cannot rely on AI recklessly. It is true that AI helps to complete task faster in organised way but when it comes to criminal justice administration the use of human intelligence cannot be ignored. Over reliance on AI can lead to miscarriage of justice. This research study aims to analyse possible use of AI in criminal justice administration, its threats and way forward. It also discusses the present AI model being used for administration of justice.

Keywords: Artificial intelligence, criminal justice administration, benefits, limitations, suggestions

Introduction
Artificial Intelligence refers to enabling machine to perform such tasks which generally require human intelligence. The criminal justice administration involves agencies like police, courts and corrections which detect, apprehend, prosecute, adjudicate, and punish individuals who violate criminal laws. The aim of criminal justice administration is to provide justice to people by punishing the wrong doer. Parallely also discharging or acquitting the accused wrongly framed. Now it's the era of technology. With this evolving technological development even the agencies involved in criminal justice administration needs institutional reform so as to enable it to inculcate use of AI. Although at present also police, courts and advocates are using some AI models. The artificial intelligence helps in easing task and assists in speedy justice. It can be used during investigation by the police in form of predictive policing etc. it can be used by courts to identify and analyse facts of the case and precedents related to it. It can be used by advocates to draft their case by incorporating landmark cases and petitions which make their case strong. However a careful approach is to be adopted. Even the slightest error by AI may lead to miscarriage of justice. Use of AI in criminal justice administration cannot be replacement of human intelligence but it can assist human intelligence for better results. Therefore AI is not alternative to human intelligence but rather a supplement to it. There are few AI models adopted by police, courts and advocates. This research study aims at understanding the use of AI in criminal justice administration, its threats and futuristic approach.

Hypothesis
The incorporation of AI is beneficial for criminal justice administration.

Research Questions
1. What is AI?
2. What are types of AI?
3. How it can be used by various agencies of criminal justice administration?
4. What are present AI models used by various agencies of criminal justice administration?
5. What are benefits with the use of AI in criminal justice administration?
6. What are challenges involved with use of AI in criminal justice administration?
7. What can be futuristic approach as to use of AI in criminal justice administration?

Research Methodology
- This research is doctrinal legal research. The main focus is to analyse use of AI in criminal justice administration highlight the use of AI, challenges and suggestions.
- The material used includes law online sources like e-journals, e-websites, e-articles, e-blogs.

Result
1. Artificial intelligence means enabling machines to performs such tasks which generally require human intelligence.
2. Machine leaning, deep learning, natural language processing and generative AI are types of artificial intelligence on basis of its application
3. The police can use artificial intelligence systems for purpose of predictive policing, facial recognition and surveillance purpose etc. In courts it can be used for the purpose of legal research, predictive sentencing and case management etc. The general pubic can use AI as legal assistant for preliminary legal information.
4. The SUPACE, SUVAS and LegRAA are some artificial intelligence tools which are presently used in Supreme Court. Also AI facial recognition technology is used by Delhi and Bengaluru police. Crime Mapping Analytics and Predictive System (CMAPS) and ANPR Cameras (Automatic Number Plate Recognition) are also used by some state police.
5. The benefits of incorporating AI in criminal justice administration include time saving, efficient working, preventive crime deterrence etc.

6. The challenges with AI in criminal justice administration include algorithm bias, lack of regulatory framework etc.
7. The possible suggestions includes implementing AI in phased manner, framing regulatory framework for use of AI, using AI as aid in criminal justice administration and not as alternative of humans.

Discussion

Concept of Artificial Intelligence

Artificial intelligence is made up of two words which are artificial and intelligence. Artificial means man made and not natural and intelligence means ability to think. So artificial intelligence can said to be man made thinking power. Artificial intelligence is the branch of computer science which deals with making machine which can act and take decision like human beings. The skills of AI include learning, analysing, reasoning and solving problems. With artificial intelligence the human interference is bare minimum. A pre- programmed machine is able to carry out the tasks given to it with aid of programmed algorithms enabling it to work on its own intelligence.

Types of Artificial Intelligence

Basically there are four kind of artificial intelligence on the basis of its application. Machine learning involves systems which are capable of making predictions or decision without being explicitly programmed for it. Netflix, spotify, facial recognition feature are example of this. Secondly, deep learning AI can be sub component of machine learning. It uses Artificial Neural Networks to learn data. This artificial neural network is just like human brain and it is a deep layered system. It consists of an input layer, multiple hidden layers, and an output layer that process information in high-dimensional spaces. Virtual assistant, self driving cars are example of this. Thirdly by the use of natural language processing AI model machines are able to understand interpret, and generate human language. Its popular example includes voice assistant such as chatbots,Sieri, Alexa etc. Lastly generative AI is not limited to classify data rather it is capable of generating new codes, images and text. Chatgpt, Gemini etc are example of this.

Use of AI in Criminal Justice Administration

With the technological advancement it is high time that for criminal justice administration one must adopt AI technology instead of traditional methods. In following ways AI can be used for criminal justice administration.

a. Use by Law Enforcement Agencies

- **Predictive Policing**

It helps law enforcement agency to use and allocate their resources carefully. It involves use of artificial intelligence, machine learning, and big data to analyze historical crime records, identify, and prevent future crimes. It highlights the area with high crime rates and identifies individuals likely to commit crime or is habitual of committing crime assisting police to use their resources accordingly.

- **Facial Recognition**

It can be used to recognize person involved in commission of crime by analysing surveillance footage or databases. A low pixel photography from CCTV camera can be transformed into clear picture by use of AI enabling to identify the person. Also it can scan surveillance cameras recording to identify the person.

- **Crime Data Analysis**

A legal database can be created which can be analyzed by AI i.e. Data sheets, social data etc. to identify the trend of crime, correlations and hotspots which physically may require a lot of time.

- **Digital Evidence Processing**

The Natural Language Processing Model can be used to analyse data of text, e-mail, messages, chats etc which enables to identify theme of conversation, keywords used in conversation and connections between suspects thereby accelerating the review process.

- **Cybercrime Investigation**

The AI can be used for online surveillance which enables tracking of online criminal activity. It is capable of identifying patterns and detects malware and phishing attacks effectively.

- **Automated Report Writing**

The AI can assists officers in writing report by providing them structured format thereby saving their time.

- **Surveillance and Video Analytics**

AI can monitor live CCTV feeds to detect suspicious behavior, abandoned objects, or unusual movements in real time.

- **Prison Management**

AI can be used for the purpose of surveillance and incident detection by analysing real time camera recording and highlighting and prompting authorities about any suspicious activity. The chat bots can be used on secure tablets to provide 24/7 mental health support, cognitive-behavioral therapy, and educational tools to prisoners. The AI tools can also analyze phone calls and highlights key words and pattern in conversation highlighting potential threats.

b. Use by Judges and Advocates

- **Risk Assessment in Bail and Sentencing**.

In case of repeated or habitual offenders AI can analyse history of person providing potential possibility of reoffending or failing to appear in court, assisting judges in making bail or sentencing decisions.

- **Legal Research Assistance**

The AI system can quickly scan and analyse vast databases of statutes, case law, and precedents, helping advocates and judges find relevant authorities in seconds instead of spending hours on going through books or manually using search engines for it.

- **Case Outcome Prediction**

The AI can also predict potential case outcome. However it cannot be completely determinative but can assists advocate to strategies and judges to understand patterns in similar cases.

- **Sentencing Support System**

The AI can assists judges by analysing prior decisions providing details about sentencing ranges, reducing disparities while still leaving final discretion to judges.

- **Document Summarisation**

The AI can be used to summarize lengthy documents, witness statements etc thereby saving time.

- **Court Scheduling and Case management**

AI can optimize court calendars, reduce delays, and prioritize urgent cases, improving overall judicial efficiency.

- **Access to Justice Tools**

AI chatbots and legal assistants can help litigants understand procedures, file basic documents, and navigate the legal system—especially useful for underrepresented populations.

c. For General Public

- **Primary AI Legal Assistance**

The legal chatbot AI can assist the general public with basics of their case. It can provide information about filing FIR to police, rights of individual, finding the best advocate etc. with aim of giving basic legal assistance. It guides individual as to their next action when they are involved in any criminal case irrespective of as victim or as accused.

- **AI for User Assistance and Chatbots**

The AI driven virtual assistants and chatbots enables litigants to have with real-time information on case status, procedural guidance, and essential legal updates. It makes judicial process easy and user friendly.

Instances where AI is presently used for criminal Justice Administration

- **CMAPS (Crime Mapping Analytics and Predictive System)**

It is used by Telengana police. It involves predictive crime mapping, hotspot identification, patrol optimization.

- **ANPR Cameras (Automatic Number Plate Recognition)**

It is used by Delhi, Bengaluru, and Chandigarh police for tracking stolen vehicles, detecting traffic violations (speeding, no helmet), and automated ticketing.

- **Facial Recognition Technology**

This is deployed at major airports like Delhi, Bengaluru, Hyderabad, Varanasi for airport passenger processing via the "Digi Yatra program. It is also used by in Hyderabad, Delhi, Chennai, and Jammu & Kashmir police for identification of suspect, crowd sourced surveillance, and forensic analysis.

AI Initiatives and Tools for Indian Judiciary

- **SUPACE (Supreme Court Portal for Assistance in Court's Efficiency**

It is an AI tool launched SC in April 2021; the purpose is to improve judicial efficiency by providing assistance to judges with automating research, identifying relevant laws, and analyzing case facts. It analyses massive data thereby speeding up decision-making without replacing human discretion

- **SUVAS (Supreme Court Vidhik Anuvaad Software)**

It was launched on 26 November, 2019. It is used by Supreme Court and is capable of translating judicial documents, orders, and judgments from English into regional languages thereby making access to justice easy by providing regional language access to legal documents.

- **TERES (Transcription of Electronic Record and Speech**

It is developed by Vikas Mahendra, Vinay Mahendra, and Badarivishal Kinhal of Bengaluru. The AI system is capable of live transcribing proceedings of Supreme Court.

- **LegRAA (Legal Research Analysis Assistant)**

It is developed under guidance of the e-committee, Supreme Court of India. The purpose is to aid judges in legal research, document analysis, and judicial decision support. It is also part of the technology initiatives under Phase-III of the e-Courts Project to enhance judicial efficiency.

- **E- Courts Phase III Project**

E-Courts Phase III (2023–2027) is a ₹7,210 crore initiative by the Government of India .The e- courts project focuses on developing digital ecosystem providing seamless paperless interface between courts, litigants, and other stakeholders. It focuses on digitisation of courts including expansion of virtual courtrooms, adopting and encouraging trial by video conferencing and adoption of AI-based tools for scheduling and case management. It also aims to establish 4400 E-Sewa Kendras for facilitating citizens.

Benefits of AI in Criminal Justice

a. Enhanced Efficiency and Speed:

Using AI for purpose of as case tagging, documentation, FIR registration, and record-keeping can save time and will increase efficiency.

b. Improved Investigative Accuracy

Facial Recognition System powered by AI can assist in identifying suspects or missing persons from vast video surveillance data. Further if we use AI in digital forensics then vast data comprising of emails, phone logs, and social media etc can be scanned to identify patterns thereby enabling to anaylse links between suspects, events, and criminal networks.

c. Data-Driven Decision-Making

Use of AI system like Crime and Criminal Tracking Network & Systems and Inter-operable Criminal Justice System (ICJS) can be used for seamless data sharing among: police, courts, prisons, forensics and prosecution. Also AI can examine cross institutional datasheets and identify detect case overlaps, missed links, and procedural delays.

d. Preventive Policing and Crime Deterrence

Predictive policing helps in indentifying crime hotspots and potential offenders thereby increasing vigilance helping to deter crime.

e. Empowerment of Law Enforcement Personnel

AI will help in reducing workload of police officers as e-filing, use of facial recognition technology in surveillance etc saves time.

f. Time Effective

Use of AI by judges for the purpose of analysing facts, precedent and similar pattern of cases not only assist in saving time but also helps in ensuring speedy justice. Similarly advocate can use AI for purpose of research related to their case thereby saving their time of manual research.

Challenges with AI

- **Non Uniform Data System**

The non digitalisation of criminal records, inconsistency and criminal record in regional languages lead to low quality inputs for AI systems.

- **Privacy Issues**

If we inculcate the use of AI in criminal justice system then it raises privacy concerns. The surveillance and other AI enabled technologies such as facial recognition, biometric identification, geolocation tracking, and predictive analytics are required for continuous monitoring in public and semi-public places. Where on one hand these are necessary to maintain law and order they may also infringe the privacy of individuals.

- **Algorithmic Bias**

Another major challenge in the use of AI in criminology is the risk of algorithmic bias and discrimination. AI systems rely on historical data to learn patterns and make predictions. In the Indian context, crime data is often shaped by socio-economic inequalities, caste dynamics, religious profiling, and uneven law enforcement practices. When such data is used to train AI models, the resulting algorithms may replicate and amplify these biases. For example based on previous data predictive policing AI may identify certain place as crime hotspots due to historically high levels of policing, rather than actual crime rates. So this may lead to over surveillance at place where in reality is not required.

- **Problematic in Sentencing**

Since we are in early stage of developing AI, its use should be avoided for predictive sentencing. As it may have bias against an individual and may label individuals from disadvantaged backgrounds as high-risk, affecting their chances of fair treatment. The use of COMPAS algorithm in United State is an example of this. Also AI might not consider mitigating factor on case based on emotional intelligence. Therefore sentencing by use of AI should not be adopted at present.

- **Absence of Legislative Framework and Legislations**

At present because AI itself is in developing phase, India does not have AI specific law. So issues like algorithmic accountability, any fault in automated decision-making are difficult to deal with in absence of any legislation accountability cannot be fixed in such cases.

Suggestions

- **Implementing AI in phased manner**

AI in criminal justice administration must be used in phased manner. Firstly it can be used for the purpose case management and legal research. Secondly it can be used for the purpose of surveillance and facial recognition and predictive policing. Lastly it is to be deployed for predictive sentencing

- **AI Regulation**

With the adoption of AI the government should also focus on framing guidelines or law for the purpose regulating it so that accountability can be fixed if something goes wrong because of AI.

- **AI to be used as aid but nor replacement of humans**

AI for the purpose of legal research by advocates and judges should be used as aid but not as an alternative of human intelligence because AI is an assisting mechanism but judges and advocated must verify the information received from AI system before using it in any matter. Example: - AI may provide wrong non existing cases as landmark cases. So this should be cross checked by judges or advocates before using it in any judgment.

- **Extensive Training and Strong Infrastructure**

To include use of AI system in criminal justice administration it is important to provide training to police officers, judges and advocates which are key personnel's in criminal justice administration. Also courts must be well equipped with AI systems with having good facilities so as to facilitate its use.

- **Pilot Programs with Sunset Clauses and Review Mechanisms:**

Any new AI system should be firstly used in experimental way in few places with having termination clause, which is to be followed by independent review mechanism before full-scale adoption. The emphasis should be laid on transparency, accountability, and redressal effectiveness

Conclusion

It is to be concluded that artificial should be incorporated in Indian criminal justice system for efficient working and speedy justice. However it should be implemented in phased manner and after careful observation and review. The use of artificial intelligence does not substitutes the use of human mind rather it assists various agencies involves in criminal justice administration to work efficiently. With this the government should also focus on framing regulatory framework to regulate artificial intelligence so as to fix its accountability. The diligent use of AI in criminal justice administration surely will be a reformatory step for criminal justice administration.

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