AI IN CRIMINAL JUSTICE: CAN ALGORITHMS DECIDE GUILT?

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ABSTRACT

This paper critically examines the integration of Artificial Intelligence (AI) into the criminal justice system, with a focus on its implications for fairness, transparency, and constitutional due process. AI technologies such as predictive policing, risk assessment tools, facial recognition, and crime mapping are increasingly deployed to enhance efficiency and data-driven decision-making in investigations and trials.

While these tools offer potential benefits including speed, accuracy, and reduced bias; their use also raises significant legal and ethical concerns. The "black box" nature of algorithms undermines the accused's right to a fair trial and presumption of innocence by producing opaque, unchallengeable outcomes. Moreover, AI-driven surveillance and profiling pose risks to privacy and may reinforce systemic biases. This paper argues that while AI can serve as a powerful administrative aid in legal research, case management, and clerical functions, its role in core judicial decision-making must remain limited and transparent. The analysis concludes that AI should assist, but never replace, human judgment in criminal adjudication, emphasizing the need for regulatory safeguards, a "right to explanation," and a human-centered approach to justice.

Keywords: Artificial Intelligence, Criminal Justice, Risk assessment tools, Black box problem, Human Demeanour, Algorithmic Transparency.

Imagine standing in a courtroom where your fate is decided by a machine; a system that analyses your past, predicts your future, and labels you "high-risk." You do not know how it arrived at that conclusion. You cannot question its logic. You are told to trust the algorithm.

As artificial intelligence (AI) begins to shape everything from facial recognition to predictive policing, it has quietly entered the criminal justice system. But can we entrust machines- trained on data, not justice; with decisions as grave as liberty, innocence, or guilt?

WHAT IS ALGORITHM IN CRIMINAL JUSTICE?

In the context of AI in criminal justice, an algorithm refers to a step-by-step computational procedure used by machines to make decisions or predictions. Think of it as a set of rules or instructions that a computer follows to solve a problem. For example, predicting whether an accused person is likely to commit another crime if released on bail.

In simple terms: An algorithm is the brain of an AI tool. It processes data, learns patterns, and gives outcomes- like a risk score, a prediction, or a recommendation.

Let's say the police use an AI tool that gives a "risk score" from 1 to 10 for a suspect, where 10 means high risk of reoffending.

The algorithm decides this score by analyzing data like: Age, gender, Prior criminal record, Area of residence, Employment status, Past patterns of similar offenders, etc.

It uses these factors, compares them to past data, and gives a result.

SO, CAN THE USE OF AI IN CRIMINAL INVESTIGATIONS AND TRIALS MEET THE STANDARDS OF FAIRNESS, TRANSPERENCY AND CONSTITUTIONAL DUE PROCESS?

The use of AI in criminal justice is not a matter of mere technological advancement, but it challenges the very foundations of legal reasoning and procedural fairness.

WHAT TYPES OF AI ARE CURRENTLY BEING USED IN THE CRIMINAL JUSTICE SYSTEM?

The following is an overview of the key types of AI technologies currently used in criminal

justice, both in India and globally.

1. Predictive Policing Algorithms

Predictive policing involves the use of AI models to analyze historical crime data and predict where future crimes are likely to occur, or who may be involved. These tools rely on pattern recognition from datasets including time, location, and frequency of criminal incidents. In jurisdictions like the United States, tools such as PredPol have been used to direct law enforcement patrols to so-called "high-risk" areas. Some Indian states have begun experimenting with similar technologies integrated into police dashboards.

2. Risk Assessment Tools

Risk assessment algorithms are used during bail hearings, sentencing, and parole decisions to assess the likelihood of an accused person committing another crime, fleeing trial, or posing a threat to society. One of the most widely studied examples is COMPAS (Correctional Offender Management Profiling for Alternative Sanctions) in the United States, which assigns defendants a risk score based on various socio-economic and criminal history indicators.

3. Facial Recognition Systems

AI-driven facial recognition is increasingly being employed by law enforcement agencies to identify suspects, monitor public spaces, and link individuals to criminal activity through image data. In India, the Automated Facial Recognition System (AFRS) has been deployed by police departments in Delhi and Hyderabad.

4. Crime Mapping and Hotspot Identification

AI tools are used to map high-crime areas and assist in strategic deployment of police personnel. In India, platforms linked to the Crime and Criminal Tracking Network & Systems (CCTNS) are gradually incorporating AI for visualizing trends and real-time monitoring.

Potential Benefits of Artificial Intelligence in Criminal Justice

1. Increased Efficiency and Speed

AI tools can process and analyze vast amounts of data within seconds; tasks that might

otherwise take human investigators or legal researchers hours or days. This is particularly useful in:

Reviewing prior case law for legal arguments, Scanning CCTV footage or digital evidence, Triaging pending investigations by prioritizing leads based on algorithmic analysis.

2. Data-Driven Decision-Making

AI can assist judges and parole boards by providing empirical risk assessments based on patterns found in previous similar cases. These tools aim to: Make bail decisions more objective, identify repeat offenders early, Reduce reliance on personal bias or subjective instincts.

3. Crime Pattern Recognition and Prevention

Predictive policing tools can analyze historical crime data to identify high-crime zones and optimal patrol deployment. This can potentially: Prevent crimes before they occur, assist in resource allocation in understaffed police stations, Provide insights into emerging criminal trends.

4. Improved Investigative Capability

AI aids in identifying suspects through facial recognition, biometric data, and even forensic analysis such as voice matching or behavioural profiling. This can:

Strengthen evidence-based investigation, reduce dependency on coercive interrogation, Help solve crimes faster, especially in cases of missing persons or organized crime.

5. Assisting Legal Research and Drafting

Judges and lawyers can benefit from AI-powered legal research platforms that suggest precedents, highlight inconsistencies, and automate drafting of standard documents. In overburdened judicial systems like India's, such tools can ease clerical burdens and increase judicial productivity.

Risks Posed by Artificial Intelligence to Fundamental Rights in Criminal Justice

While AI technologies offer the promise of speed, objectivity, and efficiency, their integration

into criminal justice processes without robust safeguards threatens several constitutionally guaranteed fundamental rights.

1. Presumption of Innocence (Article 21)

At the core of criminal jurisprudence lies the presumption of innocence; the principle that every accused is innocent until proven guilty. AI-driven risk assessment tools, however, often assign guilt probabilistically, treating individuals as high-risk based on generalized data rather than individual conduct.

For example, predictive policing algorithms may label individuals as "likely offenders" based on their location, community, or past association, not concrete evidence, effectively reversing the burden of proof.

This risks undermining Section 101 of the Indian Evidence Act, which places the burden of proof on the prosecution.

2. Right to a Fair Trial (Article 21)

The right to a fair trial includes access to: The evidence being used, the *ability to challenge and cross-examine it*, and a reasoned judgment from the court.

AI systems often function as *"black boxes,"* offering outputs (like risk scores or suspect matches) without explaining how conclusions were reached. If judges rely on such outputs without scrutiny, it violates the accused's procedural due process.

3. Right to Legal Representation (Article 22) vs. Tech Complexity

Article 22 ensures the accused the right to consult and be defended by a legal practitioner of their choice. However, when decisions are influenced by highly technical AI tools, even lawyers may lack the expertise to interpret or challenge the evidence.

Without algorithmic transparency and expert assistance, the right to representation becomes symbolic rather than substantive.

5. Right to Privacy (Article 21)

In Justice K.S. Puttaswamy v. Union of India (2017), the Supreme Court recognized informational privacy as a facet of the right to life. AI tools used for: Facial recognition, behavioural tracking, and data profiling often collect and process sensitive personal information without the subject's knowledge or consent.

When used by the State for policing or surveillance without legal authorization, such practices violate the triple test (legality, necessity, and proportionality) laid down in Puttaswamy.

THE BLACK BOX PROBLEM: A BARRIER TO TRANSPERENCY

What Does "Black Box" Mean?

A black box is something where you can see the input and the output, but not what happens inside.

For example:

Input: The AI receives data about a person : their location, previous record, age, neighborhood, etc.

Output: The AI says this person is a "high risk" for reoffending or flags them as a suspect.

But the reasoning in between that why the AI reached that conclusion is hidden or too complex to explain.

In human trials, a police officer or an expert can be cross-examined to explain their reasoning. But when an algorithm makes a similar claim, it cannot be questioned, and its logic cannot be fully understood. This is what makes it a black box.

Why is This a Problem in Law?

In the criminal justice system, every accused person has a right to a fair trial, including the right to: Know what evidence is being used against them, understand how that evidence was created and challenge it in court.

If the evidence comes from an AI system, but no one- not the judge, not the lawyer, not even the expert can explain how the AI made its decision, how can the accused defend themselves?

This directly violates the principle of "natural justice" — especially the idea that "Audi alteram partem" (no one should be condemned unheard).

In some parts of the U.S., a tool called COMPAS was used to assess how likely a criminal is to commit another crime. The scores it gave were used in sentencing. However, when a defendant tried to challenge it, the company refused to explain how the tool worked.

Cross-Examination of Algorithms: The Need for a "Right to Explanation"

In traditional criminal trials, the credibility of evidence depends not just on what is said, but on how it is tested. Witnesses can be cross-examined. Experts can be questioned on their methods. Judges can demand reasons. This process ensures that the accused has a fair opportunity to understand and challenge the case against them.

However, when artificial intelligence tools are used to generate evidence such as risk scores, facial matches, or behavioural predictions, this safeguard breaks down. These tools often function as "black boxes" that deliver conclusions without disclosing their reasoning. The result is an evidentiary claim that cannot be interrogated, only accepted or rejected blindly.

This creates a serious due process gap. If the accused cannot examine how an algorithm arrived at its conclusion or whether it used flawed, biased, or irrelevant data, their right to a fair trial is compromised.

To solve this problem, many legal experts and international laws have started calling for a "right to explanation." This means that whenever a machine makes an important decision about a person like giving a risk score or suggesting a sentence, that person should have the right to know how the machine reached that decision.

For example, in Europe, *the General Data Protection Regulation (GDPR)* gives people the right to ask for a clear explanation when decisions are made by algorithms. In criminal cases, this is even more important. If an AI tool is going to influence whether someone gets bail or how long they go to jail, then lawyers and judges must be able to see how it works, question it, and check if it is fair.

Without this right, AI tools can become like invisible witnesses in the courtroom making serious claims but never being questioned. That's dangerous. Because in a fair trial, it's not enough for the evidence to look smart or scientific — it must also be open to challenge.

Justice cannot be done if no one knows how the decision was made.

The Role of Human Demeanour: What AI Cannot See

In criminal adjudication, the process of evaluating evidence transcends the mere content of words. Judicial officers often rely on *non-verbal cues and the demeanour of witnesses* including facial expressions, tone of voice, body language, hesitation, and emotional responses to assess the *credibility and reliability* of testimony. This nuanced and intuitive evaluation forms a critical, though often understated, component of judicial reasoning.

Under *Section 280 of the Code of Criminal Procedure, 1973*, a judge is required to record the demeanour of any witness, it should appear relevant to the case. This statutory requirement is not a technical formality; rather, it reflects the legal system's recognition that justice is not based solely on factual data, but also on the *human context in which those facts are communicated.*

For instance:

- A trembling voice, a hesitant pause, or visible distress may indicate sincerity.
- Conversely, a flat, rehearsed tone or lack of affect even when the content appears consistent may cast doubt on the witness's credibility.

Can Artificial Intelligence Capture This?

The short answer is no- at least, not with the depth of context or *empathy* that a human judge brings to the courtroom. While certain AI tools claim to analyse *voice modulation, facial micro-expressions, or body movement* using emotion-recognition algorithms, these systems suffer from significant limitations:

- They are *not context-sensitive*; for example, a traumatised victim may appear emotionless due to shock, rather than deceit.
- They may misunderstand behaviour that is shaped by a person's culture, gender, or

mental differences like autism.

- They may wrongly treat genuine human emotions as signs of lying, or mistakenly believe fake emotions to be real.

AI can detect *patterns* but it cannot comprehend human pain, nuance, or emotional complexity. If judicial reliance shifts towards AI-generated behavioural analysis, the risk emerges of trials becoming *data-driven and dehumanised,* where decisions are informed by metrics, not meaning.

The criminal justice system is built not only on logic but also on *empathy, moral judgment, and human experience*. Demeanour evidence reminds us that trials are not spreadsheets- they are stories, often told under pressure, by people whose trauma, fear, or stress cannot be measured by machines. If AI tools become dominant in judicial decision-making, especially in *pre-trial assessments or credibility scoring, then entire layers of human understanding critical to justice may be lost.*

Smart Use of AI

Artificial Intelligence, when used only as much as needed**,** can be a powerful asset in India's criminal justice system. Just like any tool, its value depends on how — and how much — we use it. If confined to non-judgmental functions like administrative assistance, case management, and legal research, AI can greatly reduce delays and lighten the burden on human officials, without interfering in judicial discretion or fundamental rights.

India has already begun experimenting with such applications:

- *The Supreme Court's "SUPACE" (Supreme Court Portal for Assistance in Court Efficiency)* uses AI to assist judges with legal research and summarisation.

- Police departments in Delhi and Hyderabad have started using *Automated Facial Recognition Systems (AFRS*) to help identify suspects in crowded public spaces.

- *Crime and Criminal Tracking Network and Systems (CCTNS) and*

Inter-operable Criminal Justice System (ICJS) integration connects police, courts, prisons, forensics, and prosecution into one digital system. It creates a huge opportunity for AI to

improve coordination and speed.

These are instances where AI is used thoughtfully; not to replace human judgment, but to support it. They demonstrate how, when AI is applied within boundaries, it can bring speed, accuracy, and efficiency to a system often slowed by paperwork and procedural load.

Therefore, India does not need to avoid AI, but it must ensure that its use is measured, transparent, and limited to roles that don't touch the soul of justice.

AI as a Virtual Clerk:

Using AI in judicial decisions is risky, but for clerical work, it's safe and helpful. AI can organize files, manage schedules, transcribe hearings, and assist legal research, tasks that don't need human judgment. This reduces delays, avoids errors, and improves efficiency. Since these uses are transparent and low-risk, AI as a virtual clerk is a smart way to modernize courts without losing the human role in justice.

CONCLUSION

Artificial Intelligence in criminal justice is a double-edged sword. While it offers efficiency, speed, and support in clerical and investigative tasks, its use in core legal decisions like predicting guilt or assessing risk raises serious concerns. Algorithms lack empathy, transparency, and the ability to be questioned like human witnesses. They may reinforce bias, undermine fair trial rights, and erode constitutional safeguards. India must move forward with caution: encourage AI where it helps, regulate it where it risks harm. Use it to assist justice, not replace human judgment. So we are left with the big question:

Can algorithms decide guilt? And more importantly, *should they?*