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# **ARTIFICIAL INTELLIGENCE AND CRIMINAL JUSTICE SYSTEM IN INDIA**

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## **❖ ABSTRACT:**

In a densely populated nation like India the arena of crime has turned out to be inexorable. All claims are taken to court, ranging from insignificant misdemeanours to prominent offences. The sphere of criminal justice administration being dynamic and self-motivated in nature, time and again displays humungous changes which is being witnessed globally. It is important to acknowledge the fact that today the Criminal Justice System is functioning only due to its quality of adaption to the new and that it has espoused the new disguise effortlessly by never being stringent, as well as refrained from acting as a hinderance to the fervent necessities that were required with change of time.

High increase of urban population and infrastructure complemented by recent geopolitical world events, generated an increasingly alarming number of threats. Law enforcement authorities are established to redesign societal security concepts to meet the upcoming new challenges. The impact of the new technology on the criminal justice administration helps to carry out justice effortlessly and more effectually. Criminal Justice Administration in India has advanced over an unrestrained period and appreciates the relevance and significance to adopt new technological methods. Although current technological advances ease the information access, for e.g. surveillances through cameras, satellite data, drones etc., manual analysis of such assorted data to extract strategic knowledge is not a solution anymore. There is the critical need for automated steadfastness and determination for eradication of issues related therewith.

The Paper aims to determine criminal consequences by introduction of AI in the Indian society as well as the ongoing challenges erupting every now and then and also highlights AI's potential as a Criminogenic Phenomenon, in terms of scaling up of existing crimes as well as facilitating new digital wrongdoings, This paper further drives attention towards the ways AI pattern is transforming policing, surveillance, and criminal justice practices vide diffused monitoring based on predictions and prevention which is an ir retrievable and progressive development of science which shall result in the evolution.

**Key Words:** Artificial Intelligence, Criminal Justice System, Population, Surveillance, Automated Steadfastness, Criminal Consequences.

## ❖ **INTRODUCTION:**

The last few decades of the 20th century have seen a sharp increase in the rate of change towards economics and knowledge growth. The recognition of knowledge as a necessary and intangible existence has undoubtedly presented a number of issues that occasionally become barriers to knowledge management, as knowledge is one of the most dynamic fundamentals that can be used to drive economic progress in the globe. Rearranging priorities has been encouraged by this for some people.

To the amazement of the entire world, IBM's supercomputer Deep Blue demonstrated in 1997 that hardly any activity shall be "too human" for the Automated Technology systems. This encompassed defeating World Chess Champion Garry Kasparov in a game of chess. Twenty years later, artificial intelligence is a crucial aspect of daily life. AI systems are widely used in anything from cleaning robots to drones, and their use is predicted to increase dramatically in the future. Examples of these systems include automated purchase recommendations, drones, and digital voice assistants like Siri and Alexa.

AI presents a number of issues for all international legal systems. The first is a precise definition of the word "Artificial Intelligence," as there is a dearth of agreement over this concept's precise meaning.

Diverse interpretations have been offered worldwide by a diverse array of individuals.

**The European definition is as follows:**

The Commission defines Artificial Intelligence (AI) as systems that exhibit intellectual behaviour by assessing their environs and acting, sometimes instinctively, to comprehend to previously established goals.

Artificial intelligence (AI) can be integrated into hardware devices such as advanced robotics, inertial navigation systems, and drones, or it can be exclusively software-based and operate in the virtual world like voice assistants, image scrutiny software, search engines, speech recognition systems, and facial recognition systems.<sup>1</sup>

The ability of AI systems to:

- a) Gather And evaluate data from the surrounding location;

*and*

- b) Conduct activities to meet the machine specific goals—that are often predefined by a human operator—is highlighted in this definition.

These skills are akin to what is typically understood when one speaks of "**Intelligence.**"

**❖ SCOPE OF STUDY**

Artificial Intelligence is a rapidly developing topic that is being utilised to advance both the criminal investigation and justice systems.

Experts in criminal investigation are currently confronted with numerous challenges because of the massive volume of data, the minute pieces of evidence in the complex and chaotic environment, the traditional laboratory structures, and occasionally the lack of knowledge that could cause an investigation to fail or a miscarriage of justice.

There are plenty of concerns about how artificial intelligence may affect crime and criminal justice given its growing capabilities and apparent skill at tasks that were previously only performed by humans.

Artificial intelligence (AI) has the potential to change not just how crimes are committed but also how the criminal justice system and law enforcement are run. Naturally, the

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<sup>1</sup> International Congress of Penal Law Artificial Intelligence and Criminal Justice Prof. Katalin Ligeti

administration of justice is not the only area where these significant changes will occur because AI will impact many facets of human behaviour.

Due to worries about the gaps between criminals and law enforcement as the offenders indulge in high-tech crimes, criminal justice required to be equally prepared and equipped to employ technology like AI to promote crime prevention and control.

Artificial intelligence has the potential to be a long-term part of our criminal justice ecosystem, providing assistance with investigations and empowering criminal justice professionals to better safeguard public safety. From a criminal justice standpoint, pattern recognition is essential. Pattern recognition comes naturally to humans, and with practice we may learn to discriminate between a wide range of objects, people, complex human emotions, facts, and situations. In computer hardware and software, artificial intelligence (AI) seeks to replicate this human ability. Self-learning algorithms, for instance, use data sets to learn how to recognize medical conditions from challenging radiological scans, execute complex computational and robotic tasks, identify people from their images, comprehend online shopping habits and patterns, and forecast stock market movements.<sup>2</sup>

As a result, the study's scope includes learning about a wide range of AI tools used for criminal investigation and justice in order to better understand how the tools are now being used as well as to look for better opportunities for future so as to be at pace with requisites of the Social order .

#### ❖ **ARTIFICIAL INTELLIGENCE AND CRIME (AIC).**

Research and legislation surrounding artificial intelligence (AI) aim to bring a balance amid the advantages of innovation and potential negative consequences or upheavals. The phrase AI-Crime (AIC) refers to the potential reorientation of AI technology to enable criminal behaviour, which is an unplanned consequence of the recent rise in AI research.

Because of reported efforts in systematizing fraud directed towards social media users and examples of AI-driven management of simulated marketplaces, It is theoretically feasible.

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<sup>2</sup>Artificial Intelligence In Criminal Investigation And Criminal Justice In Indian Perspective Written By Debakanta Mohanty

However, the future of AI appears secure because AIC is still a comparatively new and basically interdisciplinary field that spans formal science to socio-legal studies.

Until now, the significance of AIC as a unique occurrence has not been recognised. Rather than taking into account AI's potential role in crime, the works on the ethical and social implications of AI concentrates on regulating and managing AI's civil uses (Kerr 2004). Moreover, the existing AIC research is dispersed throughout various disciplines, such as computer science, psychology, robotics, socio-legal studies, and computer science, to mention a few. The absence of AIC-focused research limits the possibility for forecasts and remedies in this emerging field of possible criminal action.

This paper gives a thorough and methodical examination of the pertinent interdisciplinary academic literature in order to shed some light on the state of our knowledge and comprehension of AIC.<sup>3</sup>

#### ❖ **APPLICATION OF AI TECHNOLOGIES FOR UPGRADING CRIMINAL INVESTIGATION**

AI is the tool used to combat these problems using both machine and deep learning. In several forensics domains, neural networks and case-based cognitive provide reproducible, unbiased, and error-free outcomes. With its various techniques, including data analysis, pattern recognition, image processing, computer vision, data mining, statistical analysis and probabilistic methods, computational and mathematical methods, and graphical modelling, artificial intelligence (AI) is currently supporting nearly all of the major fields of criminal investigation.

As a result, AI is helping investigators at all stages of the inquiry by creating logical evidence, reconstructing crime scenes in three dimensions, managing evidence efficiently, and analysing it to draw logical conclusions as AI-based algorithms are utilized for the recognition, prevention, and even forecast of future criminal activity since they can analyse vast amounts of data to identify risk. The application of AI tools is thus required for modernizing criminal investigations since the introduction of these technologies is assisting security and law enforcement professionals not only with criminal detection but also with

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<sup>3</sup> Artificial Intelligence Crime: An Interdisciplinary Analysis of Foreseeable Threats and Solutions Thomas C. King1 · Nikita Aggarwal1,2 · Mariarosaria Taddeo, Luciano Floridi1

prevention and forecasting.<sup>4</sup>

## ❖ UTILITY OF AI-DRIVEN TECHNOLOGIES TO ENHANCE EFFICIENCY

### 1. PATTERN RECOGNITION

Pattern recognition is a form of automatic machine recognition process that is divided into different categories based on the kind of learning technique that was utilized to produce the desired output. One of the most important aspects of forensic science is the identification and comparison of particular patterns in the suspected data. A pattern could be anything, such as a speech signal, a human face, a handwritten text in cursive, or a picture of a fingerprint. Numerous applications, including speech recognition, face, fingerprint, iris, and visual scene interpretation

### 2. HANDWRITING PATTERN RECOGNITION

Images with different handwriting or signature patterns may be recognized and compared using pattern recognition software. Experts are using some pattern recognition algorithms and artificial intelligence neural network models to identify the gender of writers.

### 3. FINGERPRINT IDENTIFICATION AND CLASSIFICATION

Deep learning has achieved great triumph in pattern recognition and computer vision because it does not require manual feature extraction. When there are enough training data inputs, deep learning automatically learns structures and features. Because of these benefits, artificial intelligence can be applied to a variety of tasks in automatic fingerprint recognition and categorization systems. Additionally, these AI-based automated solutions can significantly reduce the number of comparisons made during the high-accuracy corresponding process.

### 4. MULTIMEDIA ANALYSIS

While analyzing image, video, or CCTV material for a criminal investigation, artificial intelligence (AI) has the ability to overcome human errors. In order to support the skills of humans, traditional software algorithms are restricted to preset features such as eye colour, eye shape, eye distance for facial recognition, and demographic data for pattern analysis. In order to complete certain jobs, the AI algorithms created for multimedia analysis were

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<sup>4</sup> <http://www.webology.org>

not to only learn difficult tasks but also create and identify their own unique complex facial recognition traits and strictures. With the help of these sophisticated AI algorithms, it may be possible to recognize weapons, match faces, compare voices, and identify complicated events like murders or accidents.

## 5. **HUMAN FACE RECOGNITION**

Numerous scholars have investigated and created AI systems for the automated identification of human faces. Even Nevertheless, the majority of effective systems rely on neural networks.<sup>5</sup>

### ❖ **AI FOR CRIME PREDICTIONS :**

The development of AI technology is helping law enforcement and security experts not just with criminal detection but also with preclusion and forecasting. Some of the most sophisticated AI algorithms are created to identify suspected anomalies and patterns in crime, forecast potential crime scenes, evaluate criminal risk factors, and identify criminal networks. Various algorithms based on artificial intelligence and machine learning are used to analyse the distribution of criminal weaponry, crime locations, and crime kinds in order to anticipate future crime hotspots. In a nutshell, it wouldn't be incorrect to say that an artificial intelligence (AI) system may effectively support the identification of potential crime scenes through data mining, identify potential criminals using facial recognition, and monitor changes in an individual's behaviour.<sup>6</sup>

### ❖ **THE INDIAN SCENARIO INVOLVING ARTIFICIAL INTELLIGENCE:**

With the purchase of predictive policing software in 2015, the Maharashtra police began employing AI technologies for crime control. The department has also acquired Universal Forensic Extraction Devices (UFED) from well-known international brands as part of the plan; these devices are utilized in digital forensics and investigations. These gadgets can recover data from a variety of sources, including hard drives, social networking sites, mobile phones, and other devices—even deleted data. They are also able to recall audiovisual footage from CCTV and drones.

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<sup>5</sup> Artificial Intelligence: Advancing Automation in Forensic Science & Criminal Investigation Ekta B Jadhav, Mahipal Singh Sankhla, Rajeev Kumar

<sup>6</sup> AIDP-IAPL International Congress of Penal Law Artificial Intelligence and Criminal Justice Prof. Katalin Ligeti

Uttar Pradesh having the highest crime rate in India, in accordance with the 2016 crime report. Began to deal with these, by utilizing a variety of AI technologies, including predictive systems and analytics for crime mapping in collaboration with ISRO.

The AI-powered smartphone app "Trinetra" was introduced by Om Prakash Singh, the Director-General of Police, in December 2018. Trinetra maintains a database of five lakh offenders, along with each criminal's photo, address, and criminal history.

The Government Railway Police (GRP), the prison department, and district police provided inputs into the collection of this data and In Lucknow, Trinetra has shown to be a successful aide in the capture of one prominent felon.

In 2020, Delhi Police investigated 755 cases of violence in North East Delhi using artificial intelligence and other forensic technologies. Approximately 945 CCTV clips and smartphone videos were examined using facial recognition and other AI tools, leading to the arrest of the offenders.

On February 24, 2021, a 26-year-old man named Solanki was shot and killed in another incident behind Delhi's Rajdhani School. The suspect's cell phone was confiscated and looked through.

The investigation of the Google Map that was downloaded into his phone allowed for the establishment of the crime & like wise By 2020's end, the Delhi Police successfully filed 342 such charge sheets and resolved over 400 cases by means of various AI tools.

### ❖ **ARTIFICIAL INTELLIGENCE FOR JUSTICE :**

"Long-pending cases are a major challenge to the Indian judicial system." Even with the introduction of e-courts and alternative dispute resolution, the court system was unable to effectively stop the growing number of pending cases. The issue is made worse by the lack of judicial officers.

This results in the denial of justice, or the postponement of justice. Hence It's time to adopt some unconventional tools to bring back the efficiency of the justice delivery system. Using artificial intelligence (AI) in the Justice Administration system is one such technology.

Despite government efforts to digitize police records, traditional paper-based records continue to be used extensively in India. Criminal investigation and tracking are difficult, time-consuming tasks due to this offline method.

To properly investigate a case, the police need access to current information. This is where AI is put to use. Biometric data—such as face, speech, blood type, fingerprint, and information about past crimes—can be recorded with the aid of artificial intelligence. The investigation is enabled by the AI-powered search engine.<sup>7</sup>

### **CONCLUSION:**

The study showed that artificial intelligence can be applied to criminal law impact determination in more ways than just choosing a sanction type with the same weighted average setting for its term or size. It can also be used to determine the next best course of action for a person who has been found guilty of a crime. Unquestionably, the choice made about the defendant's level of criminal guilt has a direct influence on—or minimizes—the rights and legitimate interests of other parties, such as victims, employers, family members, and dependents, among others.

Following a discussion of the many uses of artificial intelligence (AI) in a variety of fields and its potential application in forensic science and criminal investigation to support forensic experts, police investigators, and security personnel, it is clear that AI-powered devices, programs, or software can assist experts or investigators in cutting down on the time required for various tasks at various stages of an examination and investigation.

Efficient handling of cases would result in reduced waiting times, which would ultimately help reduce the number of cases pending because of drawn-out and intricate investigative processes. Proper criminal justice would eventually result in more expertise, accuracy, and lack of bias.

According to the study, attorneys and intelligent justice enthusiasts have criticized robots,

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<sup>7</sup> Artificial Intelligence Crime: An Interdisciplinary Analysis of Foreseeable Threats and Solutions.

citing programming errors or providing inaccurate data and knowledge systems. As a result, it produces an incorrect application and could lead to incorrect choices. In this context, the researcher observes the following:

Regarding the mistakes found in artificial intelligence antecedents, knowledge bases, and software systems, they ought to be precise and exact, comprising all the machine language determinants that the robot is capable of understanding. Because incorrect data necessitates both data correction and cognitive system correction, the notion of deploying artificial intelligence systems in investigations is not at all cancelled.

Rather than having the choices made by the artificial intelligence system imposed without first being reviewed, we have a clear and certain stage in front of us to examine via actual experience with actual accused. We can go to the trial stage if it comes from the initial investigator into the matter of the accusation. Furthermore, because there is a chance that the intelligent interrogator robot may be fed false or inaccurate information, this critique, in the opinion of the researcher, is directed more at the application process than the artificial intelligence system itself.

The artificial intelligence system's flawed, or deliberate, inability to conduct appropriate, intelligent investigation results in its reporting of incorrect judgments, and It is not the artificial intelligence system itself that is at fault, but rather how it should be addressed. The error, whether deliberate or not, stems from the system's incapacity to carry out suitable, intelligent inquiry, leading it to report the incorrect decisions. The mistake, or intentional, for the artificial intelligence system's inability to conduct appropriate, intelligent investigation, which results in its reporting of the incorrect decisions; this does not provide the problem in the intelligent system itself, but rather in the manner in which it should be addressed.

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