

Artificial Intelligence and Technological Integration in Law Enforcement: A Contemporary Necessity

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Abstract:

This particular research is the problem of avoiding the efficient use of AI and Technology in crime prevention, detection or to provide justice. Unless and until there is no fair trial on the basis of fair evidence there is no meaning of human rights or values. Although there are many instances where law enforcement has used AI and technology to prevent crime or we can say to catch criminals but there are still some administrative, legal and ethical challenges coming with the use of AI in criminal investigation. The objectives of the paper are to know the need of AI and Technology in criminal investigation, to highlight the initiative taken by law enforcement to promote peace among people, to explore the instances where AI & Technology has helped the police to prevent crime. Finally, to make suggestions for how the police can fully benefit from AI and technology in crime prevention, detection and justice.

Keywords: AI, Technology, Police, Law enforcement, Challenges

1. Introduction

One of the most important technological advancements in the contemporary criminal justice system is artificial intelligence (AI). Law enforcement organizations are actively using technology to enhance the criminal investigative process; it is no longer restricted to theoretical debates or futuristic concepts. AI tools including computer vision, machine learning, natural language processing and predictive analytics are helping investigators manage intricate and extensive investigations more quickly and accurately. Large volumes of digital evidence, such as photos, videos, emails, phone logs, GPS data and social media posts, are produced by modern crimes and are frequently challenging to manually review in a short amount of time. AI facilitates the effective organization, categorization and analysis of such data by investigators. Traditional investigative techniques have been revolutionized by technologies like digital forensics, automated transcription, facial recognition and license plate recognition. Because of this, AI is progressively changing the administration of criminal justice by increasing the

effectiveness of investigations, managing evidence better and assisting law enforcement organizations in making well-informed decisions (Gerber, 2026).

By improving evidence analysis, surveillance systems, predictive policing and investigative efficiency, AI has become a game-changing instrument in forensic science and criminal investigation (Guo et al., 2026). AI technologies help law enforcement organizations evaluate massive amounts of data, spot criminal trends and enhance the criminal justice system's decision-making procedures (Tiwari et al., 2026). The employment of automated forensic tools, risk assessment systems, facial recognition and speech analysis has all been made easier by the incorporation of AI into criminal investigations. This has accelerated investigative processes and increased accuracy in resolving complicated criminal cases (Guo et al., 2026). But even with these developments, privacy, accountability, transparency and ethical governance are still issues with the use of AI in criminal justice (Tiwari et al., 2026). This research will focus upon what is the need of AI and Technology in crime prevention which is really important as one can not always wait

to let the crime happen and then get cautious for others, to appreciate the initiative taken by authorities to incorporate AI in maintaining peace among people, to explore the cases where AI & Technology has helped the police to prevent crime and promote peace which can act as a proof that yes AI and technology are doing great to aid the investigating authorities, moreover to suggest the ways in which the Police and can utilize the full advantage of AI and Technology in Crime Prevention, Detection and Justice.

2. Need of AI and Technology in Crime Prevention:

AI & Technology creates tools, equipment and services that satisfy our wants by fusing human knowledge, abilities and techniques. It affects all facets of life, including Indian law enforcement and is essential to personal, societal and international development (P., 2024). Artificial intelligence is desperately needed in criminal investigations because of the increasing complexity of crimes and the quick growth of digital evidence (Gerber, 2026). Which is becoming essential as well because the UN recommends 222 police officers per 100,000 inhabitants to solve the crime mystery in a speedy manner, however in developing nations like India, police force only has 150 officers per lakh population. Officers are overworked and put through long hours as a result of this scarcity, which lowers their effectiveness and efficiency (P., 2024).

It is challenging for law enforcement organizations to efficiently handle massive amounts of data because traditional investigative techniques and a smaller number of officials frequently need a great deal of human labor and take a long time. Due to a lack of time, personnel and technical resources, significant evidence is frequently overlooked. These issues are resolved by AI, which makes it possible for investigators to swiftly and precisely examine and evaluate evidence. By identifying crime trends, potential suspects and high-risk areas, predictive analytics can support law enforcement in proactive crime prevention and resource allocation. In a similar vein, AI-powered systems can evaluate multilingual communications, assess surveillance footage and identify faces or objects in a matter of seconds. The speed, accuracy and dependability of

criminal investigations are all enhanced by these technology (Gerber, 2026). Nonetheless, technology provides a way to improve Law Enforcement Agencies' (LEAs') efficacy (P., 2024).

3. Initiative towards AI Driven investigation:

Technology-driven procedures have replaced manual techniques in fraud investigation, where investigators went through paper documents to find mistakes. Conventional techniques were tiresome, time-consuming and frequently prone to errors. Modern tools and algorithms swiftly and precisely evaluate enormous volumes of data, revealing intricate fraud schemes that were previously hard to spot. Digital forensics for gathering and storing electronic evidence, AI and machine learning for spotting complex schemes and data analysis tools for spotting patterns and anomalies are some of the key technologies. Because of these advancements, fraud detection has changed and investigations are now quicker, more accurate and far more successful in stopping fraudulent activity (Tookitaki, 2024).

The way police serve the public is changing as a result of advanced digital tools that enable them to fight crime more quickly and effectively (Tookitaki, 2024). Law enforcement may be strengthened by implementing and customizing these technologies to meet Indian requirements. Keeping abreast with international developments and using them effectively will greatly enhance India's police results.

India's law enforcement organizations are far more productive and efficient because of technology. A solid collaboration between law enforcement and technology can speed up criminal investigations, lower crime rates and better enforce law and order. Additionally, it relieves the strain of routine manual labor, freeing up law enforcement officers to concentrate on other important duties (Tookitaki, 2024).

Big Data and other advanced techniques make it possible to identify criminal hotspots and trends while giving detectives real-time access to centralized databases. Investigations can be streamlined by using smartphone applications connected to these databases, which can provide information on missing people, cars, bodies and

criminal histories rapidly (Tookitaki, 2024). Furthermore, technology like body-worn cameras reduce officer misconduct and promote accountability. The public-police divide is closed by digital services. The grievance redressal procedure is made more effective and transparent by initiatives like Punjab Police's SAANJH portal, which enables citizens to file complaints online, monitor progress and receive updates without having to visit a police station. More coherent investigations are supported by integrated data systems from the five pillars of the criminal justice system: forensics, courts, prosecution, police and jails. All things considered, a technologically sophisticated law enforcement organization not only improves public safety but also fortifies the country's security structure.

4. AI and technology to help the Police to Prevent crime

There are many tools such as CCTV (Closed Circuit Television) Cameras, CMAPS (Crime Mapping, Analytics and Predictive System), GPS (Global Positioning System), Geolitica and HART (Harm Assessment Risk Tool) have been used by law enforcement to prevent crime in crime prone areas in India and other nations or an area which can be easily chosen for crime by the criminals.

3.1. CCTV CAMERAS: Because CCTV cameras can solve a variety of situations, they are now essential tools in the battle against crime. Using CCTV footage may appear difficult at first but the advantages exceed the expense and work. Thousands of crimes have been solved with the use of CCTV recordings. Without it, authorities frequently don't have enough proof to apprehend and bring perpetrators to justice (SEO Team, 2025).

Providing Proof: In criminal cases, CCTV film provides unambiguous, trustworthy evidence. It provides forensic video evidence for court proceedings in a timely manner, capturing actions that assist investigators in constructing compelling cases.

Recognizing Criminals: Suspects can be captured on camera in still images that investigators can compare to database shots. Facial recognition software increases accuracy and aids in criminal identification but it takes time.

Finding Specifics: CCTV cameras are perfect for keeping an eye on assets and investigating crimes like theft, robbery and even murder because they can capture even the smallest motions.

Constant Surveillance: CCTV cameras offer continuous surveillance, in contrast to eyewitnesses. This facilitates speedy criminal solving and even the reopening of unresolved cases.

Resolving Traffic Cases: In order to identify criminals and gain a better understanding of situations, CCTV cameras also help with traffic investigations by recording information such as license plates and collisions.

Reenacting Crime Scenes: To make sure no evidence is overlooked, police use video to reconstruct events.

Illustration: In India, With the installation of more than 31,000 CCTV cameras at 11,524 points throughout Noida under the 'Mission Trinetra,' police were able to solve 360 cases and enhance public safety in just five months (Bahl, 2023).

Illustration : The City and Industrial Development Corporation of Maharashtra (CIDCO) and the Navi Mumbai Municipal Corporation (NMMC) have constructed a network of CCTV cameras in Navi Mumbai. Since they went into service in 2012, these cameras have assisted law enforcement with 936 criminal investigations, traffic monitoring and infraction detection. The authorities set up 803 cameras, with CIDCO installing 524 in Zone II (Kharghar to Panvel) and NMMC installing 279 in Zone I (Airoli to Belapur). In Zone I, plans are in motion to install 1,200 additional cameras. The majority of cameras are situated on busy highways, intersections, delicate locations, train stations, marketplaces and bus stops. Officers in the command center keep a close eye on these cameras, keeping an eye out for any unusual activity and sending film to investigators when required. When there are no eyewitnesses, CCTV evidence is very helpful in solving crimes like theft, hit-and-run instances and chain snatching (Assainar, 2024). Thereafter, The murder of a jeweler in Nerul (2022), a ₹2 crore dacoity in Vashi (2017) and the apprehension of offenders such as serial rapist Rehan Qureshi and chain snatcher Fayyaz Shaikh

are notable instances resolved by CCTV evidence. Additionally, footage facilitates live surveillance from command centers during sizable public gatherings. Moreover, In Zone I, 2,459 requests for film were filed between December 2012 and December 2023 and 1,589 of those requests were granted, supporting 681 investigations and resolving 343 cases. Since August 2016, 1,885 requests for film have been filed in Zone II, 1,661 of which have been granted, assisting in 817 investigations and 325 case resolutions. Across zones, 479 videos were made available in 2023 alone, which helped with 472 investigations and 38 case resolutions.

Illustration : The other case is of Boston where many would thanks mostly to security film, the suspects in the Boston Marathon bombing were identified in a matter of hours. Police were able to find the culprits because of crucial evidence that was recorded by a security camera outside the Lord & Taylor store on Boylston Street. The study was further aided by public donations of smartphone recordings.

Illustration : Thereafter, Carlesha Freeland-Gaither was kidnapped in Philadelphia at night in another instance. The moment she was pushed into a Ford Taurus was caught on surveillance footage. After the video was made public, Virginia police who were looking into a different crime identified the vehicle. Delvin Barnes, a suspect wanted for a related crime, was linked to the crime. After Barnes' father recognized the vehicle as belonging to his son, Barnes was apprehended and Freeland-Gaither was saved.

3.2. CMAPS: The Delhi Police employ CMAPS, a predictive policing technology, to efficiently schedule patrols and distribute resources. It integrates predictive models, criminal trend analysis and spatial profiling and was first introduced in 2015 through a collaboration with the Indian Space Research Organization (ISRO). Data from First Information Reports (FIRs) kept in the Crime and Criminal Tracking Network System (CCTNS) and the Dial 100 emergency helpline are used by the system. Prior to CMAPS, trends for crimes like rape and robbery were found through manual crime hotspot mapping, which began in 2007. These days, mapping is done both manually and automatically.

CMAPS offers tools for crime analysis, such as filters for places with a history of crime and for crowded areas like train stations and schools. In high-risk regions, police officers utilize these findings to allocate resources and enhance patrols.

3.3. GPS: Law enforcement is increasingly using GPS tracking as a useful tool to investigate crimes and enhance public safety (Dongre et al., 2024). There are many examples of it. Such as, A resident of Oregon caught mail and package thieves by hiding a GPS tracker in a dummy parcel. Police were able to trace the stolen package in real time thanks to this, which resulted in arrests and put an end to a wider fraud and identity theft criminal spree (Dongre et al., 2024).

Police in Maryland tracked down a stolen vehicle and linked it to burglaries using GPS. Despite the suspect's objections, the court decided that the tracker was lawful because the owner of the vehicle had granted permission. More robberies were avoided as a result of this instance (Dongre et al., 2024).

The Maricopa Police Department in Arizona use "Starchase," a GPS device that mounts on evading automobiles. By enabling cops to follow suspects at a safe distance, this lessens the need for risky high-speed pursuits. In order to apprehend "porch pirates" who steal deliveries, police in New Jersey have collaborated with Amazon to embed GPS trackers in fictitious shipments (Dongre et al., 2024). This operation proved the usefulness of GPS tracking for this expanding issue and resulted in several arrests in a matter of days. Mike Young, the chief of police for North Richland Hills, shares a memory with Kera News of a time when arrests or collisions frequently followed police pursuits. The public's expectations and the department's goals regarding pursuits have changed during his 39-year career. In order to keep an eye on offenders without putting the public in danger, officers now carefully evaluate risks and depend more and more on technology like GPS tracking (Osibamowo & Wolf, 2024). When cops should end a pursuit is outlined in the department's policy. Officers themselves stopped 17 pursuits in 2023 after concluding that the risks outweighed the crime and 19 of 39 chases were canceled. Similar adjustments have been made by

other police departments, such as Houston's, which now use GPS to follow suspects in nonviolent misdemeanor cases in order to prevent risky pursuits. GPS technology was one of 65 recommendations made in a 2022 report by the National Highway Traffic Safety Administration, Police Executive Research Forum and other organizations. The forum's Chuck Wexler emphasizes the necessity of putting community safety first by minimizing dangerous pursuits with substitutes like GPS tracking. The National Highway Traffic Safety Administration, Police Executive Research Forum and other organizations issued a report in 2022 with 65 suggestions for safer chase procedures. The forum's Chuck Wexler characterizes chases as a high-risk use of force, emphasizing the importance of considering the hazards to officers, suspects and spectators prior to initiating a pursuit (Osibamowo & Wolf, 2024).

Illustration : According to Oak Brook police, two Elmhurst burglary suspects were taken into custody after utilizing GPS technology known as "Star Chase." On the Eisenhower Expressway, this device which included a magnet and epoxy was hurled against the suspects' evading car. The culprits were apprehended in Oak Park as a result of the officers' safe monitoring of the vehicle's whereabouts thanks to the GPS tracker (Tafoya, 2024).

According to Oak Brook Police Chief Brian Strockis, his department was the first in Illinois to implement Star Chase, which is currently used once a week and mounted on all patrol cars. He highlighted how it has been successful in safely putting a halt to risky hobbies while holding offenders accountable. Using the device also results in an insurance discount for the department (Tafoya, 2024).

3.4. GEOLITICA: Geolitica is a Santa Cruz, California-based business that uses data-driven solutions to improve police operations. It was founded in 2012 with a focus on predictive policing but it has now expanded to include solutions for patrol management, accountability and transparency. Geolitica's software platform delivers patrol recommendations and measures officer effectiveness in real time using information from dispatch systems and police records (Geolitica,

2021). The software offers comprehensive instructions on maps that are viewable on any internet-connected device, assisting police agencies, sheriff's offices and security teams in efficiently managing patrols. In order to assess officers' actions throughout shifts, it also keeps track of vehicle whereabouts. Geolitica's tools provide reports to enhance departmental and community communication. With more than 200 million hours of officer instruction provided globally and 70 years of research, Geolitica helps protect one in every 30 Americans, enabling agencies to make efficient use of their resources and enhance public safety (Geolitica, 2021).

3.5. HART: From 2016 to 2021, Durham Police used an AI-based predictive policing system called the Harm Assessment Risk Tool (HART) to categorize people detained on suspicion of crimes into three groups: high, medium and low risk of reoffending. By deciding whether to prosecute individuals or divert them to rehabilitation programs like Checkpoint, the system sought to support police decision-making (Burgess, 2018). Using a variety of data inputs, including contentious and discriminatory postcode profiles acquired from Experian, HART performed approximately 22,265 assessments on 12,200 people during its operational span. High-risk people were more likely to be accused and prosecuted, while medium-risk people had the chance to escape prosecution by finishing the rehabilitation program (Burgess, 2018).

HART was heavily criticized despite its goal of streamlining policing procedures and increasing efficiency by conserving money and resources. Concerns about the tool's ethical implications, including its reliance on biased data that perpetuated racism and systemic inequality, overshadowed its predicted efforts to reduce crime by directing interventions (Fair Trials, 2022). HART's shortcomings outweighed its benefits, as evidenced by its 53.8% accuracy rate, which was no better than random guessing and its incorporation of historical prejudice into decision-making. The technology was eventually abandoned by Durham Police in 2021, citing the resources needed to

5. Challenges:

AI has many benefits, its application must be weighed against issues of privacy, accountability, transparency and civil rights protection in order to guarantee the impartial administration of justice (Gerber, 2026).

There are many administrative, legal, ethical and technical obstacles to overcome when using AI in criminal investigations. Algorithmic bias, which occurs when AI systems are trained on historically skewed or inadequately representative datasets and produces discriminatory results against particular communities or regions, is one of the main issues (Guo et al., 2026). For example, facial recognition technology may result in greater rates of misidentification for vulnerable groups, eroding justice system impartiality and public trust (Guo et al., 2026). Furthermore, in complicated situations like bad weather, rural surveillance settings, or dialect-based voice recognition, AI systems frequently have limited adaptation, which lowers their operational effectiveness (Guo et al., 2026). Because AI-driven investigations necessitate the collecting and storage of vast amounts of sensitive personal data that may be susceptible to cyberattacks, illegal access, or misuse, data privacy and security continue to be major concerns (Tiwari et al., 2026). Accountability is further complicated by the lack of transparency in AI decision-making, also known as the "black box" problem, which makes it challenging to ascertain how particular conclusions are reached or who should be held accountable for mistakes made by automated systems (Tiwari et al., 2026). Furthermore, erroneous or manipulated data might jeopardize the administration of justice and have a negative impact on investigative results (Tiwari et al., 2026). Significant regulatory concerns are caused by the lack of comprehensive legal frameworks governing AI-generated evidence and ambiguous norms surrounding accountability for technological misuse (Guo et al., 2026). Additionally, the successful application of AI tools in criminal investigations is hampered by investigators' lack of technical skills and the scarcity of interdisciplinary personnel who can integrate law and technology (Guo et al., 2026).

6. Conclusion:

AI has improved the speed, precision and efficiency of law enforcement procedures, making it a crucial part of contemporary criminal investigations (Gerber, 2026). Hence, AI has greatly advanced the efficiency, data analysis and forensic capabilities of criminal investigations (Guo et al., 2026; Tiwari et al., 2026). Its capacity to evaluate vast amounts of digital data, spot trends in criminal activity and aid in decision-making has revolutionized conventional investigative techniques. The basic tools used for investigation are CCTV Cameras, CMAPS, GPS, Geolitica and HART. But the growing use of AI also brings up significant issues with accountability, privacy, transparency and prejudice. Therefore, the responsible, moral and legally controlled application of AI in criminal justice while upholding human judgment and fundamental rights is essential to its successful future (Gerber, 2026). However, its ethical and successful application within the criminal justice system is still challenged by issues with bias, privacy, accountability, transparency and insufficient legal regulation (Guo et al., 2026; Tiwari et al., 2026).

7. Suggestions:

1. The people should get aware of the new initiatives which are developed so that the dispute can be reported or solved in just one or few clicks.
2. There must be awareness and willingness to use advanced technology for criminal investigation in the competent authority.
3. The technology is growing in nature but it should not be so hard to understand which could not be easily learned by the authorities.
4. The more advanced technology should be promoted by the Research and Development authority to eliminate the challenges with AI systems.
5. The new cell of the investigating authority should be developed which will focus only on the technical part, this will solve the problem of less number of police as well.

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