# Unleashing the Power of Artificial Intelligence in Criminal Liability Determination in the Modern Police System with Special Reference to its Application in Combating Fishery-Related Crimes in India

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**Abstract**

Police play a pivotal role in various ways to determine criminal liability in any given system of law. Police, policing, criminal liability, and criminal justice delivery system in general have witnessed rapid change in the 21st Century, especially due to globalization and the unprecedented growth of scientific and technological developments which in turn needs the adoption of modern technologies and tools to deal and regulate the same otherwise the very purpose of police and policing will be defeated as it will become out-dated to deal with the modern crimes and criminals. The fisheries sector in India faces significant challenges due to rampant illegal practices, including illegal fishing, overfishing, and the trading of endangered species. These activities not only deplete marine resources but also have severe economic and environmental consequences. Traditional monitoring and enforcement methods have proven to be inadequate in curbing such offenses. This paper strives to highlight two significant aspects viz., a. latest policies, initiatives, and practices adopted by various major governments around the world related to artificial intelligence to improve the nuances in fixing criminal liability in the criminal justice delivery system, in general, b. the significant role of artificial intelligence in combating fishery-related offenses and crimes in India, in particular. Along with that, this paper seeks to put forward suggestions to avoid the existing lacunas and for best practices to be adopted by Indian law enforcement agencies in detecting, preventing, and investigating various crimes including fishery-related crimes. This paper also encourages further research.

**Keywords:** Artificial intelligence, India, police, policing, modernization, criminal liability, Criminal justice system, fishery-related offenses, surveillance, detection, suggestions.

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## 1. INTRODUCTION

The article studies the emerging aspect of the criminal justice system and police administration under the scope of AI. AI as discussed several times is the innovation of machines with the assistance of human actions that assist in solving problems and quick response of the same. With the usage of smart machines, it is often the idea to limit human intervention and thereby increase productivity. The criminal justice system that is the legacy of the colonial government, i.e. the British Government has had remarkable changes in the past few years but again, there are some factors that have been static for a long time now. Despite the presence of strong legislative structures, often due to lack of evidence often the rates of conviction are low. Thereby, it is through advanced methods of artificial intelligence that evidence collection also be improved by the police administration. The principal formal agencies of criminal justice are the police, judiciary, and corrections.[i] Under the Constitution of India, Police and Prison Administration are the State subjects and thus, in order to make reformations including AI can be introduced to the working mechanism of a State without prior permission or comparatively.[ii]

Further, specifically speaking, Artificial intelligence has emerged as a powerful tool in combating fishery-related offences and crimes in India. The fisheries sector in India faces significant challenges due to rampant illegal practices, including illegal fishing, over fishing, and the trading of endangered species. Traditional monitoring and enforcement methods have proven to be inadequate in curbing such offenses. Thus, there is a pressing need for innovative approaches that can augment the efforts of law enforcement agencies. Artificial intelligence offers promising solutions in this domain. By harnessing AI algorithms, fishery authorities can deploy advanced surveillance systems capable of analysing vast amounts of data from various sources, such as satellite imagery, drones, and underwater sensors. These systems can automatically detect suspicious activities, unauthorized vessels, and illegal fishing practices in real time, enabling swift intervention by enforcement agencies.

## 2. Criminal Justice system and modern police administration system

Even in the recent days, the police have been employing several techniques in crime investigation so as to ensure speedy and efficient justice delivery system. Even previously location detection methods were used to predict the location of the accused or the victim or any other concerned person. In the recent years, scientists have developed more advanced techniques such as crime

mapping that analyses and predicts systems related to criminal activities hotspots.[iii] From a survey conducted by analytics insight, it has been determined that 56% of the survey respondents have stated that AI shall be beneficial for the society at large and enhance relation between locals and regular police.[iv]

Another recent development has been in the front of facial recognition technology policing that has rapidly developed in our country. It has often been stated that the police has utilised discriminatory ways to conduct investigations in the past and thereby the usage of AI shall ensure that impartial methodologies are avoided. A report submitted by Carnegie Endowment focuses on the fact that facial recognition technology has assisted in increasing conviction rates.[v] The approaching adoption of the FRTs in India poses a threat to citizens, particularly in terms of how policing practises in the country will grow and how efficient they will be. It also raises concerns about who will be held accountable in the future if crime is determined by technology rather than by individual individuals. This is due to a lack of public debate and discussion, as well as the lack of a regulatory framework. A finding of the above mentioned report is also that several governments have often adopted autocratic methods to abuse the AI surveillance scope that is provided.[vi]

## 3. NEW ARTIFICIAL INTELLIGENCE TECHNOLOGIES ADOPTED BY POLICE IN VARIOUS COUNTRIES AROUND THE WORLD

There are a variety of AI technologies being adopted by police forces around the world, including following:

**i.** **Predictive policing**[vii], which uses data and analytics to predict where crimes are likely to occur and deploy resources accordingly. The following are various instances of predicting policing:

- Facial recognition technology, which can be used to identify suspects and track down individuals in surveillance footage.
- Chatbots, which can be used to answer common questions from the public and triage non-emergency calls.
- Drones, which can be used for surveillance and search and rescue operations.
- License plate recognition technology, which can be used to track the movement of vehicles and identify stolen cars.

**ii.** Another area where AI is being used in policing is in **the management of emergency situations**. The following may be its examples:

- AI-powered systems can be used to automatically analyze sensor data, such as audio and video feeds, to detect the presence of gunshots or explosions, and to automatically alert authorities to the location of the incident.

- AI-powered systems can also be used to analyze social media and other online sources to detect signs of potential emergencies, such as reports of a gas leak or a large-scale power outage.
- AI-powered systems can also be used to support first responders in emergency situations. For example, AI-powered systems can automatically generate maps and 3D models of buildings and other structures to help first responders navigate unfamiliar environments and locate trapped or injured individuals.
- AI-powered systems can also be used to analyze sensor data from drones and other unmanned aerial vehicles to support search and rescue operations.
- AI-powered systems can also be used to support decision making in emergency situations. For example, AI-powered systems can automatically analyze sensor data and other information sources to generate real-time situation reports and recommendations for first responders.

**iii.** Another area where AI is being used in policing is **in crime analysis and investigation**.[viii] The following may be its examples:

- AI-powered software can be used to automatically process and analyze large amounts of data, such as text messages, emails, and social media posts, to identify patterns, connections, and leads in criminal investigations.
- AI-powered virtual assistants are also being used to assist detectives and analysts in the analysis of CCTV footage and other video evidence. These virtual assistants can automatically identify and track individuals and vehicles in the footage, as well as detect and analyze unusual or suspicious behavior.
- AI can also be used to improve the efficiency of police operations. For example, AI-powered dispatching systems can automatically assign the closest available officer to a call for service, reducing response times and improving overall coverage.
- AI-powered body-worn cameras and in-car cameras are also being used to help police officers make better and more informed decisions in the field. These systems can automatically detect and flag incidents such as use of force, and can also be used to analyze officer behavior and identify areas for improvement.

**iv.** Another area where AI is being used in policing is in **the tracking and management of offenders.**[ix] The following may be its examples:

- AI-powered risk assessment tools can be used to predict the likelihood of an offender reoffending, and to determine the most appropriate level of supervision and support for that individual.
- AI-powered GPS tracking systems can be used to monitor the movements of offenders on probation or parole, and to

automatically alert authorities if an offender enters a prohibited area or violates any other terms of their release.

- AI-powered systems are also being used to improve the management of offender data and records. For example, AI-powered systems can automatically extract data from offender documents, such as court records and arrest reports, and can also be used to analyze this data to identify patterns and trends in criminal behavior.
- AI-powered systems can also be used to analyze satellite imagery and other forms of surveillance data to detect suspicious activity and track the movements of individuals and groups.

**v.** Another area where AI is being used in policing is in **the field of forensic investigation**.[x] The following may be its examples:

- AI-powered systems can be used to analyze forensic evidence such as DNA samples, fingerprints, and ballistics data to identify suspects and link them to specific crimes.
- AI-powered systems can also be used to analyze digital evidence such as computer files, images, and videos to uncover hidden information and detect patterns of criminal activity.
- AI-powered systems can also be used to improve the efficiency of forensic labs. For example, AI-powered systems can be used to automatically process and analyze large amounts of data, such as fingerprint images, to reduce the time and cost of forensic investigations.
- AI-powered systems can also be used to improve the accuracy of forensic analysis. For example, AI-powered systems can be used to analyze images of fingerprints, to identify patterns and features that might be missed by human analysts.
- AI-powered systems can also be used to improve the effectiveness of forensic investigations. For example, AI-powered systems can be used to analyze large amounts of data from different sources, such as DNA samples, fingerprints, and ballistics data, to identify patterns of criminal activity that might not be apparent to human analysts.
- AI-powered systems can also be used to support the decision making in forensic investigations. For example, AI-powered systems can be used to generate real-time situation reports and recommendations for forensic investigators.

**vi.** Another area where AI is being used in policing is in the **field of community policing**.[xi] The following may be its examples:

- AI-powered systems can be used to analyze data from social media, crime reports, and other sources to identify potential hotspots of criminal activity and areas of community concern.
- AI-powered systems can also be used to analyze data from community surveys and

other sources to identify patterns of community engagement and areas where community relations can be improved.

- AI-powered systems can also be used to support community engagement initiatives. For example, AI-powered chatbots can be used to answer common questions from the public and triage non-emergency calls, freeing up police officers to focus on other tasks.
- AI-powered systems can also be used to support community policing initiatives. For example, AI-powered systems can be used to automatically generate maps and 3D models of neighborhoods, to help police officers navigate unfamiliar environments and identify potential hotspots of criminal activity.
- AI-powered systems can also be used to support decision making in community policing initiatives. For example, AI-powered systems can be used to generate real-time situation reports and recommendations for community policing initiatives.

**vii.** Another area where AI is being used in policing is **in the field of training and education**.[xii] The following may be its examples:

- AI-powered systems can be used to support the training and development of police officers, for example, AI-powered simulations and virtual reality systems can be used to provide officers with realistic training scenarios, allowing them to practice and refine their skills in a safe and controlled environment.
- AI-powered systems can also be used to support the education of police officers, for example, AI-powered tutors can be used to provide officers with interactive and personalized learning experiences, helping them to acquire new knowledge and skills more efficiently.
- AI-powered systems can also be used to support the ongoing professional development of police officers, for example, AI-powered systems can be used to monitor the performance of officers in the field and to provide them with real-time feedback and coaching to improve their performance.
- AI-powered systems can also be used to support the selection and recruitment of police officers, for example, AI-powered systems can be used to analyze the resumes, aptitude tests and interview data of job candidates to identify the most suitable candidates for a role.

**viii.** Another area where AI is being used in policing is in **the field of data management**.[xiii] The following may be its examples:

- AI-powered systems can be used to support the management of large datasets, such as crime data, demographic data, and other forms of data that are used to support policing operations. AI-powered systems can be used to extract and analyze data from different sources, such as police

records, social media, and other online sources.

- AI-powered systems can also be used to improve the accuracy and completeness of police records and other forms of data. For example, AI-powered systems can be used to automatically extract data from police reports and other forms of documentation, reducing the risk of errors and omissions.
- AI-powered systems can also be used to improve the accessibility and usability of police data. For example, AI-powered systems can be used to generate interactive visualizations and other forms of data that are easy to understand and use.

**ix.** Another area where AI is being used in policing is in **the field of crime prevention**.[xiv] The following may be its examples:

- AI-powered systems can be used to analyze crime data and other forms of data to identify patterns and trends in criminal activity. This information can then be used to develop targeted crime prevention strategies, such as increased patrols in high-crime areas or targeted interventions to address specific types of crime.
- AI-powered systems can also be used to analyze data from social media and other online sources to detect signs of potential criminal activity, such as the planning of a protest or a gang-related activity.
- AI-powered systems can also be used to support the evaluation of crime prevention strategies. For example, AI-powered systems can be used to analyze crime data before and after the implementation of a strategy, to determine its effectiveness and make adjustments as necessary.
- AI-powered systems can also be used to support the decision-making process in crime prevention. For example, AI-powered systems can be used to generate real-time situation reports and recommendations for crime prevention, based on the analysis of the data.

**x.** Another area where AI is being used in policing is in the **field of intelligent automation**.[xv] The following may be its examples:

- AI-powered systems can be used to automate routine and repetitive tasks, freeing up police officers to focus on more complex and higher-priority tasks.
- For example, AI-powered systems can be used to automate the process of transcribing interview notes, or to automatically identify and flag potential issues or inconsistencies in police reports.
- AI-powered systems can also be used to automate the process of processing and analyzing large amounts of data, such as CCTV footage, or to automatically identify and flag potential issues or inconsistencies in the data.
- AI-powered systems can also be used to support the decision-making process in intelligent automation. For example, AI-powered systems can be used to generate

real-time situation reports and recommendations for intelligent automation, based on the analysis of the data.

**xi.** Another area where AI is being used in policing is in **the field of Cybercrime investigations.**[xvi] The following may be its examples:

- Cybercrime refers to criminal activities that involve the use of the internet and technology, such as hacking, identity theft, and fraud.
- AI-powered systems can be used to analyze large amounts of data from the internet and other digital sources to detect patterns of criminal activity and identify suspects.
- AI-powered systems can also be used to analyze data from social media, online forums, and other online sources to detect signs of potential cybercrime, such as the planning of a cyber-attack or the sale of stolen data.
- AI-powered systems can also be used to support the analysis of digital evidence, such as computer files, images, and videos, to uncover hidden information and detect patterns of criminal activity.
- AI-powered systems can also be used to support the decision-making process in cybercrime investigations. For example, AI-powered systems can be used to generate real-time situation reports and recommendations for cybercrime investigations, based on the analysis of the data.

**xii.** Another area where AI is being used in policing is in **the field of patrol management.**[xvii] The following may be its examples:

- AI-powered systems can be used to optimize the deployment of patrols, for example, AI-powered systems can be used to analyze crime data, traffic data and other forms of data to identify areas where patrols are needed most and to plan the most efficient routes for patrols.
- AI-powered systems can also be used to support the real-time monitoring of patrols, for example, AI-powered systems can be used to track the location and movements of patrol vehicles and officers, and to automatically alert authorities to any deviations from planned routes or other issues.
- AI-powered systems can also be used to support the decision-making process in patrol management. For example, AI-powered systems can be used to generate real-time situation reports and recommendations for patrol management, based on the analysis of the data.

## 4. Application of artificial intelligence in combating fishery-related offences and Crimes in India

The fisheries sector in India is not free from various illegal activities and time and again crimes of various magnitudes take place there.

These offenses not only pose a threat to marine biodiversity but also have severe economic and environmental consequences. Traditional monitoring and enforcement methods have proven inadequate in tackling these challenges, necessitating the exploration of innovative solutions. Artificial intelligence (AI) has emerged as a powerful tool with the potential to enhance fisheries enforcement efforts. This thematic study aims to investigate the role of AI in combating fishery-related offenses and crimes in India, focusing on surveillance, detection, data analysis, and decision-making processes.[xviii]

A few laws dealing with various fishery-related crimes in India under various facts and circumstances include the Indian Fisheries Act, 1897, Indian Marine Fisheries Act, 1981, The Wildlife (Protection) Act, 1972, Coastal Regulation Zone (CRZ) Notification, 2011, Biological Diversity Act, 2002, Environment (Protection) Act, 1986, Forest (Conservation) Act, 1980, Water (Prevention and Control of Pollution) Act, 1974, Prevention of Cruelty to Animals Act, 1960, The Prevention of Money Laundering Act, 2002 (relevant in cases of illegal fishing and related financial crimes) etc. A few examples of various fishery-related crimes would include Illegal Fishing, Overfishing, Poaching, Dynamite Fishing, Blast Fishing, Bottom Trawling, Shark Finning, Smuggling of Endangered Species, Unauthorized Aquaculture, Use of Unauthorized Fishing Gear, Fishing in Prohibited Areas, Fishing without Valid Licenses or Permits, Fishing during Restricted Seasons, Fishing with Poisonous Substances, Harvesting and Trade of Protected Fish Species, Destruction of Fish Habitat, Catching and Trading of Juvenile Fish, Unauthorized Sale and Trade of Fish and Fishery Products, Fraudulent Labelling and Misrepresentation of Fish Products, Money Laundering related to Fishery Crimes etc. There are many authorities that investigate these crimes including Department of Fisheries, Coast Guard, Marine Police, Wildlife Crime Control Bureau (WCCB), Central Bureau of Investiga- tion (CBI), State Police Departments, Directorate of Revenue Intelligence (DRI), Customs Department, State Forest Depart- ments, Environmental Protection Agencies etc.

Detecting, preventing, and investigating fishery-related crimes in India can be significantly enhanced through the application of artificial intelligence (AI) enabled technologies. The following may be a few examples in this regard:

i. **Surveillance and Monitoring:** AI-powered systems can analyze satellite imagery, aerial surveillance, and remote sensing data to detect illegal fishing activities, monitor vessel movements, and identify suspicious patterns in real-time. These technologies can assist in the early

detection of illegal activities, enabling timely intervention.[xix]

ii. **Data Analysis and Pattern Recognition:** AI algorithms can process large volumes of data, including historical fishing records, vessel tracking data, and environmental factors, to identify patterns and correlations. This analysis can help identify areas prone to illegal fishing, understand illegal fishing methods, and predict potential hotspots for criminal activities.[xx]

iii. **Image and Video Analysis:** AI-based image and video analysis can aid in identifying and classifying illegal fishing practices, such as blast fishing or unauthorized gear usage, by automatically analyzing images and videos captured by surveillance systems or drones. This technology can assist enforcement agencies in identifying and prosecuting offenders.[xxi]

iv. **Predictive Analytics and Risk Assessment:** AI algorithms can analyze historical data on illegal fishing incidents, weather conditions, vessel movements, and other relevant factors to predict potential areas and times at high risk of criminal activities. This information can help authorities allocate resources effectively and proactively prevent fishery crimes.[xxii]

v. **Fraud Detection and Monitoring:** AI technologies, including machine learning algorithms, can be used to analyze sales and supply chain data to detect fraudulent practices such as mislabeling, species substitution, or illegal trade of fish and fishery products. By monitoring transactions and identifying anomalies, AI can assist in curbing illegal trade.[xxiii]

## 5. Analysis

From the above discussion, it can be stated that despite the recommendations and highly technical systems that are adopted by western countries and even the European Union for the matter, it can be observed that there are some shortcomings and precautions that are to be borne in mind by the authorities while implementing the system. Mostly, the defence of self-incrimination and privacy are grounds that come into concern for maximum instances. There is also an growing concern relating to unaccountability of results and sometimes an form of biasness can also be very much evidence in these circumstances. Even NITI Aayog in the year 2018 discussed on the impact of human privacy with the development of AI in the recent times.[xxiv] However, it also observed that the world has had a more collaborative approach in recent times as the databases around the world have shared information about crimes that have taken place in the most remote places only increasing the access to detecting crime but also assisting in tracking criminal network systems around the world.[xxv] An essential examination can be of the software produced by Durham Police Department, famously

known as HART (abbreviated form – Harm Assessment Risk Tool)[xxvi] that has assisted the police in gathering and keeping a calculated task of all the offences that were conducted in the area.

It is also essential that we take into account the Indian initiative of digitalisation of records for which AI has been in discussion by major Ministries. In 2017, the district police of Alwar in Rajasthan commissioned a pilot project with STAQU called ABHED (Artificial Intelligence Based Human Efface Detection). ABHED is STAQU's proprietary technology stack delivered through an app with a simplified user interface that allows police personnel to have real time information for criminal identification through biometric identification with fingerprint, voice, and facial recognition with the potential for being integrated with CCTNS and use for tracking missing persons.[xxvii] Similar initiatives were also adopted by various other state police departments in our country.

It can be analysed that, despite the shortcomings that might have arose in the past, it can be observed that with the introduction of reformations there shall be some problematic conditions that be a product of the same but again, it is also essential that some precaution is kept in place so as to remove the discrepancies that have been a part of the problem.

## 6. Suggestions and recommendations

The author lays down some suggestions that is a result of the above discussions which are as follows:-

- The Police forces around the world through the assistance of the world community shall formulate a common database that stores record of convicted or arrested persons on the basis of the degree of crime.
- It shall also considered that the relevant data shall be accessible to only a set section of the police authorities so as to ensure that privacy and secretive information is protected.
- AI technologies that are developed after research should also be made accessible to States with less purchasing power in the country. Further, the police authorities should also be trained accordingly to understand the usage of the same.
- Technical expert persons shall be appointed in each district of every police station to ensure that AI system can be repaired in case of sudden failure. It is essential that the AI system is understood according to the Indian structure.
- Considering that the CCTNS website, often is not updated and not responsive to the general public, the state government shall conduct awareness programmes in regional languages such that the public can have access to the same.

## 7. Scope for further research

The article mainly researched on the possibility of a coordinated mechanism of AI in the criminal justice system in India with an emphasis on the police administrative structure. Considering that the subject matter has been evolving continuously and there are several aspects that have not been discussed yet, thus there is a scope for further study on the subject matter. It can be analysed scientifically the procedures through which the discrepancies arising out of AI can solved. As this paper is based theoretical and policies adopted by various governments, there is a scope for researchers to analysed the scientific methods for the same. Again, further non-doctrinal/experimental research in the areas of fishery related crime detection, prevention and investigation in India can contribute to the development of robust AI-based solutions that empower authorities in combating fishery crimes, protecting marine ecosystems, and ensuring sustainable fisheries management in India.

## 8. Conclusion

The modern police system is being transformed by artificial intelligence, which is opening up new options for evaluating criminal responsibility. Law enforcement organizations can improve their investigative procedures, increase productivity, and reduce prejudices by utilising AI. But it's crucial to strike a balance between using AI's promise and respecting moral principles. We can create a future where determining criminal responsibility is more accurate, just, and transparent by integrating AI technology ethically and with the necessary protections.

Although AI can enhance the detection, prevention, and investigation of fishery-related crimes, its implementation must be accompanied by appropriate legal frameworks, data privacy safeguards, and collaboration between law enforcement agencies, scientific institutions, and technology providers in order to ensure responsible and effective use of these technologies for the larger interest of society.

Lastly, the author would like state that there is a very high possibility that AI can be efficiently used by the concerned authorities to improve the criminal justice system in general and fixing or determining criminal liability, in particular. Several specialised investigating agencies of India such as Central Bureau of Investigation, Crime Investigation Department, and National Investigating Agency etc. have time and again utilised methods to improve the process of evidence collection, formation of database for recording and storage of critical information. Thus, similar to specialised agencies, other organisations or state police departments can also implement the same in due procedure. The author opines that it is only with constant effort and new methodologies that the discrepancies in the criminal justice system

and police administration can be solved in the higher level.

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