A GROWTH OF ARTIFICIAL INTELLIGENCE IN CRIME DETECTION USAGES IN LAW ENFORCEMENT

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https://doi.org/10.26634/jdf.2.2.21271

Date Received: 14/10/2024 Date Revised: 29/10/2024 Date Accepted: 22/11/2024

ABSTRACT

Artificial intelligence (AI) is increasingly becoming a valuable tool for detecting illegal activities and holding offenders accountable. Among the most advanced AI technologies, facial recognition is widely used by law enforcement agencies for crime detection and prevention. This study aims to (i) analyze the use of artificial intelligence in law enforcement and (ii) identify the drawbacks of AI. A total of 75 respondents were selected from Kanyakumari and Tirunelveli districts, using simple random sampling due to time constraints. Among the respondents, 38 were from Tirunelveli and 37 from Kanyakumari. The Garrett ranking method was employed to analyze the data. The study found that facial recognition ranked first with a Garrett score of 62.1, followed by language processing with a score of 58.97. The study concluded that facial recognition technology significantly improves the accuracy and efficiency of crime profiling, while language processing aids in overcoming language barriers during investigations.

Keywords: Artificial Intelligence, Crime Detection, Law Enforcement, Facial Recognition, AI in Policing.

INTRODUCTION

Artificial Intelligence (AI) refers to the scientific study of machines and computer systems that can emulate human intelligence. This includes their ability to learn, improve performance through experience, and analyze data while making decisions. In the field of crime-fighting, the advent of artificial intelligence has ushered in a significant transformation. This cutting-edge technology has completely transformed the methods used in investigations, leading to significant improvements in solving crimes and guaranteeing people's well-being (Wahab, 2024). The scale of crime represents a considerable challenge for law enforcement agencies, which need a coordinated approach supported by Artificial Intelligence (AI) to predict and prevent crime. It will help them design optimal police patrol strategies (Basilio et al., 2022). The dramatic rise in urban crime rates has become one of the most pressing public security challenges, affecting many facets of social sustainability, such as jobs, livelihood, health care, and education (Zhu et al., 2022). It is therefore essential to build a predictive model that can pinpoint high-crime regions and discover patterns in the incidence of crimes there in order to deploy limited resources and carry out crime prevention and reduction programs.

This paper has objectives related to SDG

With the help of artificial intelligence in crime detection, crime patterns are easily recognized by authorities. AI enables the identification of risk factors and the individuals involved in the crime, saving valuable time for the department. Implementing artificial intelligence also enhances the security of programs and verifies authenticity in a timely manner.

1. Review of Literature

Kaur and Saini (2024) explored in their study that crime was the intentional commission of an act, usually considered

socially harmful, and specifically defined, prohibited, and punishable under criminal law. Developing a society that is less susceptible to criminal acts makes crime prediction and pattern analysis (CPPA) a paramount topic for academic research interest. With the innovation in technology and rapid expansion of Artificial Intelligence (AI), the research in the field of CPPA has evolved radically to predict crime efficiently. This research uses scient metric analysis to perform a novel, systematic, and comprehensive review of CPPA research and its amalgamation with AI. The study concluded that, Machine learning and data mining techniques are gaining popularity and are widely used for CPPA research. On the other hand, deep learning and neural networks have been emerging fields of research for the last 5 years.

Puneet and Reeta (2020) presented in their research how Artificial Intelligence and Machine Learning, along with Predictive Analysis using soft evidence, could be used to sort out existing criminal records by utilizing metadata, thereby predicting crime. Furthermore, it would surely help out the police and intelligence bodies to smartly investigate the cases by referring to the database and thus help the society in curbing the crime by quicker and more effective investigation processes. It would also assist the analyst in tracking the activities and associations of various criminal elements through their recent activities, by extracting the particular details from the documents or records. Prediction of the crime can be understood through this research. The present study reflects the accuracy level of threat from 28 states of India. By researching on this topic, it becomes evident that if proper data is fed to this model, the chances of prediction are higher and more accurate. The study also aimed to explore the psychosocial perspectives of the crime and the reasons individuals engage in such crimes.

2. Statement of the Problem

AI has the potential to improve law enforcement by increasing accuracy and efficiency in both preventing and solving crimes. However, it is crucial to use this technology responsibly, ensuring the protection of civil rights, privacy, and data security. In law enforcement, artificial intelligence refers to a framework supported by computer assistance. With the help of AI programs, crime prevention becomes more efficient, and pattern analysis serves as a valuable tool for the department. AI technology holds great potential for advancing crime detection in the future, making it essential to study its growth in this area.

3. Objective of the Study

The objectives of the studies are as:

- To analyze the usage of artificial intelligence in law enforcement.
- To find out the draw backs of artificial intelligence.

4. Research Methodology

The study uses both primary and secondary data. Primary data were collected from the workers in law enforcement offices. All the data were collected from using a structured questionnaire. Secondary data were collected from articles, websites, text books, E- reports pertained to the artificial intelligence in crime detection and AI.

4.1 Sample Design

Due to time constraints, only 75 respondents were selected for this study, all of whom were from the Kanyakumari and Tirunelveli districts. A simple random sampling technique was used in this study, with 38 respondents from the Tirunelveli district and 37 respondents from the Kanyakumari district. To analyze the data, Henry's Garrett ranking method was applied to assess the study's objectives. The Garrett ranking technique assigns numerical values to rank the issues from highest to lowest order.

5. Data Analysis and Interpretation

5.1 Usage of Artificial Intelligence in Law Enforcement

Table 1 shows the usage of artificial intelligence in law enforcement, analyzed using Garrett ranking. The analysis highlights that facial recognition ranks first with a Garrett score of 62.1, followed by language processing with a score of 58.97, and voice analysis in third place with a score of 55.0. Data visualization ranks the lowest, with a mean score and Garrett score of 40.13.

Sl. no	Usages	Garret Score	Rank
1.	Easy- decision making	52.01	V
2.	Situation prediction	43.56	VI
3.	Facial recognition	62.1	I
4.	Voice analysis	55.0	III
5.	Language processing	58.97	II
6.	Cyber-crime detection	54.78	IV
7.	Data visualization	40.13	VII

Source: Primary data

Table 1. Usages of Artificial Intelligence

5.2 Drawbacks of Artificial Intelligence

Table 2 outlines the drawbacks of artificial intelligence in crime detection, analyzed using Garrett ranking. The analysis identifies loss of privacy as the most significant drawback, with a Garrett score of 58.91. This is followed by increased laziness, ranked second with a score of 54.88, and opaque decisions, which rank third with a score of 53.10. The absence of mind ranks fourth with a score of 51.00, while always depending on data is ranked lowest, with a Garrett score of 45.10.

6. Suggestions

- Artificial intelligence provides a range of tools that help law enforcement officers make better decisions in a timely manner.
- With the help of AI technology, the growing rate of crime is minimised by the law enforcement department.
- Artificial intelligence security system uses millions of data base to forecast crime detection. So, the law enforcement officers may easily detect crime and crime location.
- Facial recognition is a very useful tool to the department to identify the criminals in larger extent.

Conclusion

In law enforcement, artificial intelligence refers to a framework that is assessed through a computer assistance. Artificial intelligence technology holds most potential to advance crime detection in the future. In usage of AI, the main usage is language processing. The language processing helps the department to investigate the crime without any unknown language problem. The main draw backs of AI are loss of privacy, in order to ensure the ethical and conscientious application of AI in law enforcement, the privacy issues must be addressed and controlled by the government and department. By using facial recognition technology, law enforcement can more efficiently locate and arrest individuals wanted by the authorities. However, the use of this technology raises significant privacy and ethical concerns, underscoring the need for a responsible and ethical approach. For future studies, a deeper exploration into the usage of artificial intelligence and its role in the prevention of crime could provide valuable insights.

Sl. no	Draw Backs	Garret Score	Rank
1.	Loss of privacy	58.91	I
2.	Opaque decisions	53.10	III
3.	Absence of mind	51.00	IV
4.	Increase laziness	54.88	II
5.	Always depended on data	45.10	V

Source: Primary data

Table 2. Drawbacks of Artificial Intelligence

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