



AI for Justice: Artificial Intelligence in Criminal Justice System

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ABSTRACT

The rapid advancement of digital technologies worldwide has significantly transformed criminal processes, with artificial intelligence (AI) playing a pivotal role. Notably, the US judicial system has embraced various digital tools, while AI-driven legal start-ups have demonstrated remarkable accuracy in predicting court verdicts, underscoring the profound impact of technology on the legal landscape. AI in the 2015, Maharashtra Police pioneered the use of Artificial Intelligence (AI) in India's law enforcement by introducing predictive policing software to enhance crime control. Additionally, the department acquired advanced Universal Forensic Extraction Devices (UFED) from renowned global brands to strengthen digital forensic capabilities and investigation. Such devices can retrieve data, even deleted data, from mobile phones, social networking sites, hard disks, and various other devices. They can also recall audio-visual data from drone and CCTV cameras. The integration of Artificial Intelligence (AI) technologies into the criminal justice system has become a subject of increasing interest and debate. This research paper examines the integration of Artificial Intelligence (AI) in the criminal justice system, highlighting its advantages, obstacles, and moral implications. The study provides an in-depth analysis of AI's role in multiple stages of the justice process, spanning police investigations, court judgments, and correctional services. Additionally, it discusses the impact of AI on fairness, transparency, accountability, and the protection of individual rights within the criminal justice system.

KEY WORDS

Criminal Justice, Artificial Intelligence, Justice System.

INTRODUCTION

Artificial intelligence (AI) is a form of machine intelligence that enables computers to do tasks significantly faster than humans. Some authors suggest that artificial intelligence is the imagining computer software that mimics the human brain and has an integrated learning mechanism as artificial intelligence. To put it another way, experts from Russian science and practice concur that artificial intelligence is necessary for machines to take the place of people in solving complex problems, which will undoubtedly enhance the quality of criminal justice system.

Also by using AI tools in the criminal proceedings make them more transparent, impartial, and fair. This is done in acknowledgement of artificial intelligence's growing significance in the field of law.

Artificially intelligent research platforms can drastically reduce research time to mere seconds, while maintaining quality and cost-effectiveness, regardless of the law firm's size. AI-powered tools can also empower lawyers to provide more effective counsel and litigation support. Indian legal tech innovators, such as SpotDraft, CaseMine, and others, are pioneering NLP-based solutions, offering next-generation legal research platforms that enable law firms to move beyond basic keyword searches and optimize their time.

What is AI (Artificial Intelligence)

Artificial intelligence is a phrase coined by *John MC carthy* who was an American computer scientist in 1956 he used this word artificial intelligence in a conference and told everything about it. The oxford dictionary definition artificial intelligence as the capacity of a computer, robot, programmed device, or software application to perform operations and tasks analogous to learning and decision making in humans, such as speech recognition or question answering. Ora computer, robot, programmed device, or software application having this humanlike capacity: : AI, the branch of computer science involved with the design of computers, robots, programmed devices, and software applications having the capacity to imitate human intelligence and thought.

Some Examples of Artificial Intelligenceis

Siri, Alexa device, Google Assistant (Gemini) & Windows Cortana

Application of AI for criminal justice and public safety -AI's influence on public safety and security is multifaceted, impacting both the nature of criminal activities and the methods used to combat them. The escalating use of Artificial Intelligence (AI) by criminals has led to more complex and evasive cyber attacks, enabling them to bypass security systems and exploit vulnerabilities. AI-driven malware, for instance, can adapt to new environments, rendering traditional security measures less effective. Moreover, deepfake technology, which utilizes AI to generate convincing fake multimedia content, has been exploited for malicious activities such as identity theft, financial fraud, and disinformation campaigns, highlighting the need for innovative solutions to combat these emerging threats. Numerous methods of using AI as a tool for public safety are being investigated. In both the public and private sectors, facial recognition is one particular AI application that is widely used. For instance, intelligence analysts frequently use face photos to determine a person's identify and whereabouts. It takes a lot of time and effort to thoroughly review the enormous amount of potentially important photographs and videos, and there is a chance that human error will occur because of exhaustion and other circumstances. Machines, unlike people, never get tired. The application of AI algorithms in medicine to analyse radiological images may have significant ramifications for the fields of criminal justice and medical forensics for determining the cause and manner of death. AI algorithms have also been explored in various disciplines in forensic science, including DNA analysis. AI is also rapidly emerging as a key fraud detection technology. Internet corporations like PayPal prevent fraud attempts by regularly training their fraud detection algorithms with large amounts of data to identify and forecast abnormal patterns and pick up on new patterns.

NIJ'S (National Institute of Justice)

Artificial Intelligence Research Portfolio

The National Institute of Justice (NIJ) primarily funds AI research in four key areas: public safety video and image analysis, DNA analysis, gunshot detection, and crime forecasting. Video and image analysis is a crucial tool for law enforcement and criminal justice, enabling the collection of information on individuals, locations, and behaviors to aid investigations. However, manual video and image analysis is time-consuming, labor-intensive, and prone to human error due to the vast amount of data and rapid technological advancements. AI-powered video and image algorithms can learn complex tasks, create facial recognition features, and identify objects, faces, and events with greater accuracy and speed. To address the needs of law enforcement and criminal justice, NIJ has invested in various initiatives to enhance data collection, imaging, and analysis, as well as contextual information quality, ultimately improving public safety.

DNA analysis

Artificial intelligence (AI) can significantly enhance the legal system, particularly in forensic DNA testing, which has revolutionized the criminal justice system. When a crime is committed, biological material like blood, saliva, and skin cells can be transferred, providing valuable DNA evidence. Advances in DNA technology have increased the sensitivity of DNA analysis, enabling forensic experts to examine previously unusable evidence. This has led to the re-examination of decades-old DNA evidence in serious crimes like sexual assaults and homicides. However, this increased sensitivity also presents new challenges for crime laboratories, such as interpreting DNA mixes and distinguishing between individual profiles. AI can aid in addressing these challenges, enabling law enforcement to generate critical investigation leads and ultimately improve the justice system.

Gunshot Detection

The discovery of pattern signatures in gunshot analysis is another use for AI algorithms. In one project, the National Institute of Justice funded Cadre Research Labs, LLC “based on the observation that the content and quality of gunshot recordings are influenced by firearm and ammunition type, the scene geometry, and the recording device used” to analyse audio files of gunshots from smartphones and other smart devices. The Cadre scientists are developing algorithms that could help law enforcement with investigations by identifying gunshots, distinguishing muzzle blasts from shock waves, determining shot-to-shot timings, counting the number of firearms present, allocating specific shots to firearms, and calculating probabilities of class and calibre.

Crime Forecasting

Large amounts of data are used in the intricate process of predictive analysis to forecast and develop future outcomes. Police, probation officers, and other professionals who work in the field of criminal justice are primarily responsible for this task and must develop their skills over many years. A tremendous quantity of legal precedent, social data, and media data can be used by AI to advise rulings, detect criminal enterprises, forecast and identify those who are at danger from criminal enterprises, and more. The University of Pittsburgh is investigating and developing computational methods for statutory interpretation that may expedite and enhance the accuracy of the work done by judges, attorneys, prosecutors, administrative staff, and other professionals. These researchers are receiving funding from the NIJ. Theoretically, a computer programme can automatically recognise specific language kinds that are significant for legislative interpretation. The goal is to develop an automatic interpretation proof-of-concept expert system for cybercrime.

Artificial Intelligence and Criminal Justice System

It's essential to keep in mind that the use of AI in the Indian criminal justice system is a rapidly evolving field, and new policies or regulations may have been introduced since my last update. Staying informed about the latest legal developments and ethical considerations in the integration of AI into the criminal justice system in India is crucial for a comprehensive understanding of the topic. In conclusion, the integration of artificial

intelligence (AI) into the criminal justice system in India reflects a transformative shift aimed at enhancing efficiency, improving decision-making processes, and addressing challenges associated with case backlogs. The integration of Artificial Intelligence (AI) in law enforcement and the legal system, spanning predictive policing to forensic analysis, has the potential to enhance investigative capabilities and streamline the justice process. However, this technological advancement also raises complex ethical concerns, including algorithmic biases, data privacy issues, and the need for transparency and accountability. To mitigate these risks, it is crucial to strike a balance between harnessing AI's benefits and protecting individual rights, which requires robust legal frameworks, ethical guidelines, and public awareness to ensure responsible AI adoption and ongoing oversight.

Future of Artificial Intelligence in Criminal Justice

New AI criminal justice applications could emerge every day, opening the door to potential future opportunities to support the criminal justice system and, ultimately, increase public safety. Movement and pattern analysis, video analytics for integrated facial recognition, the detection of people in multiple locations using closed-circuit television or across multiple cameras, and object and activity detection may all be used to help solve crimes by identifying suspects and preventing them from happening. Due to the massive amounts of data being produced by technologies like cameras, video, and social media, AI may be able to identify crimes that would otherwise go undetected and contribute to increased public safety by looking into likely criminal actions. Another advantage of AI technology is its potential to provide situational awareness and context to law enforcement, improving officers' safety through more knowledgeable responses to potentially dangerous situations. Additionally, robotics and drone technology could be utilised to monitor public safety, be combined into bigger public safety systems, and provide a safe alternative to endangering law enforcement and the general population. Robotics and drones may perform recovery chores, provide valuable intelligence, and assist criminal justice employees in unanticipated ways.

CONCLUSION

There is no denying that AI is ingrained in every aspect of our life. By using machine learning and AI algorithms, there have already been notable improvements in the areas of healthcare, finance, security, and transportation. It encourages creative decision-making and shortens the backlog in court cases. Additionally, AI helps lawyers and judges conduct fair and open investigations, which has a significant impact on the legal sector. As AI lacks emotional intelligence, it does not follow that it can replace lawyers and judges with modern technology. Prior to AI being widely used in Indian law, it is critical to address worries about potential violations of the constitutionally protected right to privacy. Since there is currently no legal framework for the collecting and protection of data that can be fed into the system for legal and judicial use, a significant amount of data must be fed into the system in order to employ AI. On the practical front, before integrating AI into the judicial system, legal officers and attorneys will need to receive proper training. Any legal database will require regular updates to include the most recent case laws and judicial trends. As a result, applying AI to the judicial system requires proof and a research-based strategy rather than a hit-and-miss one.

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