The place of artificial intelligence and its effects (on the quality of criminal investigations)

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Abstract: In today's technological world, artificial intelligence has launched the fourth revolution with its proven efficiency and capabilities, and like a great and powerful wave, it has covered all areas of human life and has arisen with the help or replacement of many tasks. One of the areas of application of artificial intelligence is in criminal investigations, which deals with the discovery of crimes, identification of the accused, proof of guilt, and identification of victims.

This will help improve and accelerate police performance, increase the accuracy of criminal investigations, and play an effective role in preventing crime and high-risk behaviors in society. It will also play an effective role in implementing preventive justice, creating security in society, and improving judicial decisions to provide relief to institutions.

In this article, the capabilities and capacities of artificial intelligence in criminal investigations and similar examples used in the world have been presented and analyzed in order to prove the need for the use of artificial intelligence in criminal investigations and to take the necessary steps and planning by policymakers and government officials in this field.

The most important topics discussed include the role of artificial intelligence in crime detection and prediction, the risk-taking capabilities of criminals, and the operational capabilities of law enforcement agencies and the introduction of artificial intelligence programs implemented in the field of criminal investigations around the world.

Keywords: *Criminal Investigations, Police, Artificial Intelligence, Prediction, Prevention.*

Introduction

Artificial intelligence refers to systems that can respond to complex situations, mimic human thought processes and reasoning, and respond appropriately to them. In other words, artificial intelligence refers to the intelligence that a machine exhibits in a variety of situations.

Artificial intelligence is a branch of computer science that studies the computational requirements of applications such as perception, reasoning, and learning, and provides systems for performing such operations. Artificial intelligence systems work on the data that today's world is immersed in, and comprehensive decisions are reached by mining and analyzing them.

The main discussion in this article is to examine the capabilities and effectiveness of artificial intelligence in the better performance and quality of criminal investigations. In fact, in today's complex and crowded world in terms of population, crimes and social harms, and information and data, it is not possible to master it for analysis and reaching the desired conclusion with traditional methods and reliance on human reason and experience, and today, humanity recognizes the need for an existence beyond its capabilities in various fields.

Criminal investigations are a science that deals with a large amount of known and unknown data and, like a puzzle for practitioners in this field, has many complexities and difficulties; a subject that is further complicated by the sensitivity and concern of society and the pressure to make decisions as quickly as possible; a field where even the smallest mistake can sometimes result in irreparable trauma and damage.

Criminal investigation is the process of discovering, collecting, preparing, identifying, and presenting evidence to determine what happened and who the perpetrator is, and to propose and commit to crime prevention strategies. This process would certainly be better handled by machine power, free from the concerns, limitations, and problems of human thought, spirit, emotion, and personality.

In criminal investigations, the use of inductive reasoning requires examining and examining the reasons for the crime and the contents of the case file, and using this information as the basis for logical conclusions about the manner in which the crime was committed.

In inductive reasoning, the investigator first formulates explanations about the crime and then compares them with existing

information in the field, which is best done with artificial intelligence systems analysis through machine learning, deep learning, natural language processing, and so on.

Therefore, the emergence of artificial intelligence, which has proven its effectiveness in various sciences and has caused great interest among scientists in that field and has created serious developments, has also been welcomed in criminal investigations; especially since, due to the background of criminal statistics and the use of geographic mapping software and understanding of their effectiveness, there has been a correct understanding of the greater effectiveness of these tools with the presence of artificial intelligence and the intelligence of the systems derived from it.

One of the areas of application of artificial intelligence in criminal investigations, from the stage of investigation and arrest to competency assessment for the implementation and implementation of social institutions and post-prison care, is discussed in this article.

The question is whether artificial intelligence is effective and even necessary for the better efficiency of criminal investigations. The author believes that the use of artificial intelligence will change the rules and methods of investigations and move towards a different world.

A world that may be more controlled and monitored, but will be safer and closer to the dream of a crime-free society. The achievement that artificial intelligence provides to criminal investigators in this field will make their work in the prevention of social harm and crime, urban planning, and the creation of a serious deterrent to crime and, in fact, the prevention of crime at the source more efficient and objective, which will be effective in reducing human error and protecting the lives of innocent people at risk. Therefore, the applications and effectiveness of artificial intelligence in the stages of criminal investigations have been examined and explained in this article.

Artificial Intelligence in Crime Scene Investigations

It seems that the goal of criminal investigations is to detect crimes and find the perpetrator. Achieving this goal in practice is not simple, and determining whether a crime has occurred, obtaining information and evidence to identify the person responsible, arresting suspects, controlling crime, predicting the behavior of criminals, and so are difficult and important that human effort is often subject to error. Both speed and accuracy are very important and vital in these matters.

Criminal investigations are in two dimensions: the art of criminal investigations in the discovery and identification of crime, to the forensic and scientific police for conducting investigations, evidence, and crime detection, and identifying criminals and evidence (Shiri, 2018, p. 115), which, considering the capabilities of artificial intelligence in data mining, machine learning, deep learning, and even robotics, can analyze and analyze all data on cases, crimes, and criminals, and the input data of cameras and control and surveillance systems. Analyze and classify, identify areas of risk and potential crime and the behavior of suspects and criminals, and participate in armed, dangerous, and terrorist operations through police robots to stop operations and arrest or eliminate criminals.

Criminal investigators can use data analysis to diagnose a set of problems rather than isolated incidents. Once the problems in question are identified, police departments can develop secondary approaches To reduce or eliminate the occurrence of specific crimes. Today, predictive policing tools based on big data have taken another evolutionary step forward.

First, advances in artificial intelligence promise to make sense of large amounts of data and extract meaning from scattered data sets.

Second, these tools represent a shift from a decision support system to a primary decision maker.

Third, the goal of these tools is to regulate society, not Only fighting crime.

As these tools become more advanced and intelligent, artificial intelligence models work on information obtained from closed-circuit cameras and smart device records. Whenever police officers need to track criminals, they prefer to use artificial intelligence as an assistant to closely monitor their movements. Facial recognition systems help understand the last location of each victim and also identify the behavior of the criminal or kidnapper.

Today, with the help of artificial intelligence systems, in many cases the police use crime prediction programs that process information about an individual's past crimes and predict where and how the individual's next crime is likely to occur.

In addition to being used in data archiving and statistical analysis, artificial intelligence has become increasingly important in criminal investigations for analysis, decision-making, and processing, which provides rapid access to And it has become efficient with existing information, including fingerprint records, DNA tests, facial recognition of suspects, storing and transferring information, and analyzing data in algorithms (Bennett and Hess, 2006, p. 65).

Artificial intelligence has gained access to a large amount of data and information from each citizen (based on information received from identity systems, personal data, criminal records, registration, and access to analysis obtained from images of the individual in the city, in daily life and lifestyle). His life (and also with the access to smartphones) has become a reality with predictions and near-field identifications that can now be used to identify potential targets for police intervention and prevent crime.

These predictions are also used to plan police patrols (based on location) and identify individuals who are likely to be victims or perpetrators of crime (based on person), which helps to achieve crime and violence reduction policies.(Purcell &Zaia, 2020, p.520)

Police can more easily monitor crime-prone areas and the likely behavior of high-risk individuals and criminals with prior criminal records with artificial intelligence programs. The process of detecting criminals and pursuing, monitoring, and patrolling police operations has traditionally been very time-consuming, tedious, costly, and sometimes inefficient, especially with the growth and development of metropolises and the spread of apartment and cybercrime that collects and Analyzing them is not possible in the traditional way, but it can be done well with artificial intelligence systems and software designed in this field.

Artificial intelligence technologies are used in public safety and security, including surveillance cameras, drones, and predictive police programs that identify patterns that indicate potential crimes.

Police can use AI tools to penetrate deep into the pre-trial phase of crimes that have not yet been committed, as well as to closely investigate crimes that have already been committed. Given the previous preventive measures, the automation tool for detecting criminal conspirators who have not yet committed a crime is discovered through a large amount of data.

Therefore, a distinction is made between tools focusing on "dangerous" individuals ("hot lists", i.e. lists generated by an algorithm that identifies individuals who are more likely to commit a crime) and tools focusing on high-risk locations ("hot spot policing").

Given the secondary and subsequent uses of the automation tool, there have been many success stories in the fight against human trafficking. In Europe, INTERPOL manages the International Child Sexual Exploitation Image Database to combat child sexual abuse. This database can facilitate the identification of perpetrators and victims by analyzing, for example, furniture and other objects in the background of offensive images – such as matching carpets, curtains, furniture and room fixtures – or recognizable background noise in the video. Chatbots that act as real people are another advance in the fight against "sex tourism" via the web. In Europe, the Dutch children's rights organization De Tres Hommes was the first human rights organization to combat child sex tourism via webcam using a virtual persona called Sweety.

Sweety's avatar, which posed as a 10-year-old Filipina girl, was used to identify criminals in chat rooms and online forums and was run by an agent of the organization. The goal was to collect information about individuals who had contacted the Sweeney and requested sex via webcam. In addition, Ter des Holmes began engineering an artificial intelligence system that could image Sweeney without human intervention, in order to identify not only repeat offenders, but also first-time offenders. (Završnik, 2020, p.573)

Predictive policing has other uses as well. During the Boston Marathon bombings in 2013, the city was equipped with experimental surveillance and predictive cameras. The AI infrastructure in Chicago and Washington, D.C., began to train "normal behavior" (such as walking naturally down the street) based on surveillance camera images.

On this basis, abnormal behavior associated with crime was also trained; Such as unusually slow or jerky movements that may indicate some kind of anomaly in normal behavior. This infrastructure can then detect unusual behavior based on images from surveillance cameras and send the result to the authorities. Obviously, this system has raised security concerns, but supporters argue that this method can prevent damage before the crime occurs and is better than creating checkpoints.

Also, software for detecting potential criminal behavior, as intelligent image surveillance, is implemented by installing cameras in streets and squares, scanning people's behavior and automatically processing and issuing warnings, without the police having to constantly review the images and only the warnings are reviewed, so that Chebsa can play an effective control and preventive role.

Crime prediction algorithms allow police to intervene before a crime is committed. Facial recognition systems will also be very effective in identifying convicted criminals and serial criminals who appear in society with a changed face or are entering or leaving the country. Recent advances in facial recognition algorithms have made it possible to extract recognizable images from blurry images.

The US National Security Agency has also announced that it will use speech-to-text technology to convert the audio content of phone calls into text for further investigation. (Froomkin, 2015, p.7) Police are particularly interested in using artificial intelligence in predictive surveillance. Of course, why the police should only enter the scene after a crime has been committed is a question and concern in police efficiency. The results of the analysis of a set of spatial and temporal crime data by the American company Predpol have shown that crime is within predictable limits over the next thirteen hours. A study published by the company in October 2015 showed that the algorithm was able to predict 4.7 percent of crimes in Los Angeles, compared to 1.2 percent for experienced analysts. Studies have shown that this forecast will reduce police deployment in some areas, resulting in savings of about $9 million per year (Mohler et al., 2015, p.1410).

Therefore, the use of artificial intelligence in police and urban control systems will be effective in preventing crime and maintaining public order. Although this will raise privacy and human rights concerns (McGregor et al., 2019, p.160), the capabilities and efficiency of using artificial intelligence and creating rules to require data retention will raise these concerns.

Therefore, police AI algorithms can predict the probability of a crime occurring at a specific geographic location and time with great accuracy based on previous patterns of behavior, some of which are mentioned below:

Geographic investigation software and systems use different techniques from conventional crime mapping and, using the location of previous crimes and complex mathematical algorithms, estimate the probability of a criminal's residence in a specific location. Some software has a warning system and geographic display that is used to report crimes, victim locations, and danger situations. Such as ExpertCrop, a software for training police officers in allocating forces to different areas based on the level of crime and the risk assessed by the system, with the aim of preventing crime (Vasconcelos, 2007, p.57) & Furtado.

Geographical software also helps police officers in combating street harassment against women; such as Protobadi in Bangladesh, where women can press a button to raise an alarm to request police assistance. Send and inform the police of the occurrence of street harassment and their geographical location. (Ahmed, 2014, p. 2698)

Koch has developed a software based on a data bank that collects and classifies information related to murder and sexual harassment using statistics available on websites and police departments and courts, and analyzes it based on the creation of a geographical map and related probabilities, which was designed in 2006 and used by the police.

In Australia, in some family law cases, this Such software is used to create a complete database as a suspect detection system in cases where the accused has not been identified by the prosecutor, including dangerous or recently arrested individuals and individuals with criminal records.

Another computer graphics program4 is used in the identification of missing persons, which predicts what a person will look like in, for example, five years from now, in order to identify them. Another program that monitors and assesses suicide in prisons uses

sensors in the ceiling or walls to monitor the nature of the prisoner's vital signs.

In the United States, legal professionals are making great use of tools related to access to the process. CaseMap is an evidence organization software developed by the American company CaseSoft. The ProPul program is designed to create predictive models from years of crime data and They have used crime pattern mapping and predictive algorithms that use crime data to predict the time and location of the next crime, acting like weather forecasting programs.

Another predictive algorithm is CompaStat 5, which was developed in response to concerns about rising crime in New York City and provided statistics to the FBI. (Weisburd et al., 2006, p.290)

The RTM program is another example of police predictive programming. has detected and prevented many trafficking transactions. The system uses data analysis to predict risks and make recommendations to prevent the crime from happening again.

In early 2020, the Edmonton Police Service launched a program called "Social Facilitator" that uses artificial intelligence and machine learning to predict crime, improve public safety, and identify the root causes of people's behavior, focusing on social challenges such as crime, addiction, homelessness, and mental health. These predicted technologies are accompanied by other capabilities, including biometric software for research purposes, and have reached a pre-crime stage, so there will be the possibility of pre-crime intervention and preventive justice discussions based on the degree of transparency and trustworthiness of artificial intelligence (Pratap, 2020, p.523 & Ramsat).

Artificial Intelligence in the Stage of Arresting and Interrogating Suspects

Traditional criminal investigation methods for arresting perpetrators of crimes and identifying evidence were mainly carried out by collecting physical traces of the crime scene so that the investigating authority could solve the criminal mystery by combining the obtained evidence, which was usually accompanied by many mistakes and difficulties.

But today, the scientific achievements of artificial intelligence in this field are very insightful and precise. It seems that many of these measures, such as recording and evaluating statements, reasons, and documents, maintaining confidentiality, reporting them to superiors and prosecutors, and organizing and informing the public, can be well performed by artificial intelligence systems.

Also, in intelligent systems, it is possible to evaluate the truthfulness and falsity of the statements of the complainant, witnesses, and the accused, to analyze unconscious movements, behavioral and eye reactions, and personality, and to evaluate the truthfulness of the complainant's complaint or the accused's defense, and in a way to effectively assist the police and officers in finding the truth, without the need to take statements by force or torture, or to suspect the innocent without reason, or to release a dangerous and intelligent criminal.

Today, software programs are being developed that assess the likelihood of evidence and witness statements being credible. Law firms also use software that predicts how a judge in a case is likely to rule and how likely a case is to be settled. Artificial intelligence

techniques in speech analysis help interviewers, interrogators, and guards identify deceptive and criminal behavior. As AI systems advance, the tasks that digital systems can perform will expand.

AI will be able to perform professional services that machines previously could not. Of course, people's concerns about the marginalization of the human workforce are misplaced, because AI will likely replace tasks, not jobs. Also, facial recognition software is very effective in verifying the authenticity of voters' identities (to reduce electoral fraud) in official documents and transaction parties, in passports and checking the entry and exit of citizens and foreigners in the country, identifying criminals and serial convicts, marriage, establishing child relationships (based on facial similarities), the mental state of individuals during conversations, confessions and testimony, cyber activities in non-attendance judicial or government services, etc. They will be the way forward.

Today, some software is effective in controlling and identifying crimes and pursuing criminals in virtual space, and can detect and analyze terrorist networks such as the activities of ISIS groups, and predict the possible targets of criminals and suspects.

Therefore, during the interrogation of suspects and the citation of evidence, digital evidence such as recorded audio or films is used as a basis for analysis, which has its own effectiveness, although despite the advantages that can be imagined today and in the world of digital transformation, there are serious ambiguities in their citation, especially with the technology of fake identities and deepfics. 1 This issue should be considered and caution should be exercised in the determination of citation of this evidence.

Police predictive software can identify and track potential criminals and suspects. The most famous example is the Chicago Strategic Issues Index, which assigns scores to individuals that indicate their likelihood of becoming a victim or perpetrator of gun violence.

Based on parameters such as the number of times an individual has been injured by gunfire, the number of previous arrests, especially for violent crimes, illegal use of weapons or drugs, the individual's history of criminal activity, gang affiliation, and the age at the last arrest of an individual who is under police or preventive and social measures, this software analyzes, evaluates, and draws conclusions and makes decisions.

Today, one of the achievements of artificial intelligence is the use of software based on biometric data analysis, which can identify people at any moment from their appearance and manner of movement up to fifty meters away or in films recorded on video surveillance cameras. Biometrics is the automatic identification of people based on their behavioral and biological characteristics, such as fingerprints, palm prints, irises, corneas, palm veins, voice, facial features, etc. These systems first receive the expected data with the intelligent sensor module, then extract and process the raw data, and the results are stored as biographical information in the database.

The biometric system is a suitable tool for narrowing down the police suspect list and plays an important role in managing the identity of individuals in society. In fact, the use of biometrics in criminal investigations has revolutionized and can be the basis for identifying and apprehending criminals and can be considered a substitute or complement to forensic and forensic police measures in many cases. (Kumar, 2021, p. 78) Therefore, the expansion of the variety of criminal activities and advances in biometric

technology mean that biometrics will have a significant impact on crime detection in the future. **(**Kapoor, 2016, p. 6 (&. Saini)

In fact, the use of biometric data analysis will be a comprehensive way to detect crimes and apprehend suspects and criminals. A biometric system is a pattern recognition device that acquires physical or behavioral data of an individual and extracts a set of salient features from the data. It compares this set of features with a set of features stored in a database and presents the result of the comparison. One example of such systems is the Watertrix software in China, which claims to have an accuracy of about 96 percent and can identify individuals even with their faces covered, based on their walking patterns, which is used in criminal investigations such as tracking suspects at crime scenes. (Nagwanshi, 2022, p.5)

Another achievement in the arrest and interrogation of suspects is the use of brain imaging technologies and data analysis based on fMRI. This technology has advanced to the point where, for example, it can be used to determine what an individual has stolen based on neural activity. This technology is a proposed method for determining guilt and criminality.

fMRI detects changes in blood flow that determine which part of the brain is active, and it can also be used to assess whether a person (accused, complainant, or witness) is lying or truthful; Because according to the analyses and tests conducted on this system, when a person lies, the activity of a part of the brain changes. It is claimed that the results of these systems are about 70 to 90 percent accurate and close to the truth.

In the study, subjects were placed next to a criminal suspect who was exposed to fMRI, which they were asked to look at (related to the crime scene); If the image is familiar, his brain lights up in a specific way that will be effective in analyzing his statements. Despite serious drawbacks to these systems in terms of the possibility of error and violation of privacy, fMRI has advantages over eyewitness testimony, which is obviously fallible. (Lewis, 2013)

Another achievement of artificial intelligence is in identifying and apprehending suspects and evaluating their statements in lieu-detecting systems. Indeed, in today's complex and modern society, lie detection has an important impact on various activities, including criminal investigations by law enforcement. Lies can be detected in three ways: by measuring people's physiological responses, by analyzing the content of their speech, and by observing behavior.

Criminal investigators are usually trained to detect lies, but it has been proven that their ability to distinguish between liars and truth-tellers is often inaccurate. Traditional methods for lie detection have involved the use of various devices such as polygraphs, sweat and respiratory rate measurements, heart rate sensors, and blood pressure monitors, which have had their drawbacks and difficulties, and ultimately require an experienced human interviewer to conduct the interrogation and interpret the results. The error rate is also significant, and professional and intelligent individuals can deceive the system. Today, with the development of artificial intelligence and cognitive science, there are new findings that show that more objective indicators such as eye movements and speech can be related to lying behavior (Mann, 2006, p.1). (Vrij & Mann, 2006, p.1) Fluency during speech, response time to a question, number of blinks, average diameter of people, maximum and minimum diameter of people, analysis of facial movements such as

opening of people, speech and psychological characteristics, manner of expression and speech For example, lying requires more time to think, and hand movements while lying, which are all physiological and unconscious variables related to deception in the body, are ways to detect lies that have been realized through new technologies in the field of artificial intelligence and social robotics. In this regard, researchers have introduced a humanoid robot in the interrogation position that achieves deep cognitive patterns through machine learning and by analyzing the behavior and speech of the person being interrogated it can detect lies. In fact, machine learning algorithms can be trained and developed on experimental data to build a lie detector. (Gonzalez-Billandon, 2019, pp.10-13)

Taken together, these systems have been the achievements of artificial intelligence in the arrest and interrogation of suspects and its desired effects on the quality of criminal investigations.

Artificial Intelligence in the Fight against Crime and Monitoring the Implementation of Judicial Decisions

Courts hold individuals accountable for their actions. When judges deliver impartial decisions in fair trials, justice is done. However, in the age of big data, our notion of justice needs to be redefined to protect the idea of human agency: freedom means that people can choose their own actions. It's the simple idea that people should be responsible for their own behavior, not their own desires.

Before big data, this basic definition of freedom was self-evident, to the point where it didn't need to be spelled out. This is the way our legal system works: we hold people accountable for their actions based on what they've done. In contrast, with big data, we can predict people's actions with great accuracy. This subject tempts us to judge and control people based on our predictions, not on what they have done.

One of the most important foundations in controlling something is having enough data and information about it and controlling it. In crime control, the more data there is in the field of crime at the micro and macro levels, the more likely it is to analyze and control them. Therefore, comprehensive citizen databases and intelligent systems for image processing, automatic fingerprint matching, data on persons under investigation and conditionally released, etc., will be very effective in crime control.

These measures will ultimately provide society with a large-scale reduction in crime and social harm, which will also reduce the financial burden on societies in crime control programs. Technological advances have enabled even the smallest police units to use crime analysis methods. Digital maps help patrol officers be more flexible and dynamic in their patrols, identify incident patterns, identify the location of individuals who are out on bail, map drug arrests or crime scenes, and pinpoint high-risk areas.

Artificial intelligence will also be very effective in determining penalties and the factors that influence them. Mitigating factors such as the offender's specific situation and age, or aggravating factors such as recidivism and acts of violence, are well-implemented in these systems, and the final verdict given for each case. The sentencing factors are the inputs to the system, and the determination of the sentence is its output. Risk assessment

software helps the police decide whether the offender should be released from prison on parole or not.

Software such as the Correctional Offender Management Profile for Alternative Sentencing is an example of this application. Artificial intelligence will be very effective in predicting the behavior of offenders in order to implement social institutions such as conditional release and suspension. It will also be used in sentencing decisions that are based on the degree of danger of the accused and guarantee his presence at trial.

Whether the criminal, as a result of the application of the rules of procedure, trial, and execution of the sentence, has reformed, repented, or renounced his past and future crimes is a concern for criminal law scholars and criminologists, and views and suggestions have always been put forward in this regard.

Considering the proven and applied capabilities of artificial intelligence in various fields, including criminal investigations, the author believes in its effectiveness in this field, including predicting and analyzing the behavior of criminals. Today, examples of this application are observed in practice. Paroles in more than half of the United States are based on predictions made from data analysis, which is used as a factor in deciding whether to release someone from prison or keep them in prison. In many places in the United States, police have implemented predictive policing:

They use big data analytics to select streets, groups, and individuals for close scrutiny because an algorithm identifies these places and individuals as high-probability crime hotspots. In Memphis, Tennessee, a program called BlueCrash (to reduce crime using historical data) provides police officers with relatively precise information about where (within a few blocks) and when (a few hours during a particular day of the week) crimes occur. The system apparently helps law enforcement make the best use of scarce resources.

Since the system began in 2006, domestic and violent crime has fallen by a quarter, indicating its effectiveness, although it does not provide a causal explanation (Mayerschonberger and Kokier, 2020, p. 186).

Also, the risk assessment program learns a decision-making pattern based on each individual's past and present history, treating high-risk offenders with appropriate caution and more leniently and lower-risk offenders with greater lenience. (Elrod, 2020, p.1090)

In Germany, researchers at the Institute for Pattern-Based Predictive Methods have created an algorithm for predicting thefts through the concept of "near recurrence." This concept states that in an area where a theft occurs, it is expected that the theft will occur again in a short time. The algorithm predicts thefts within a radius of 250 meters in a 24-hour time window over 7 days. The organization claims that in the 18 months since its implementation in the cities tested, the number of robberies arrested (based on police patrols) has doubled and the number of robberies has decreased by up to 30 percent (Baraniuk, 2015). Such approaches raise ethical questions. For example, if algorithms show that crime is higher in areas populated by specific ethnic groups, will the police conduct more patrols? Is this a new form of racial discrimination? It is expected that these concerns will have their place and appropriate response (Sheridan, 2010, p.128). Of course, these predictive algorithms in potential crimes and arresting potential criminals should not lead to their punishment, because punishment is not for actual behavior and there is a possibility of

injustice and denial of the principles of criminal law, which should be said that the power of governments to prevent potential crimes and police strategies in this area is based solely on predictive algorithms.

For example, preventing the carrying of weapons is to prevent the occurrence of various crimes in society, which although it leads to the restriction of individual freedom, is a cost that is paid to ensure security and peace in society.

Conclusion

Today, due to the complexity of societies and the expansion of urbanization and, of course, the increase in crime in society, the need to prevent and deter the commission of criminal acts has become clear to everyone. The use of scientific achievements and the application of the latest developments and technical advances in the fight against crime and their correct application in the pursuit and detection of crimes are among the necessities of the judicial and administrative apparatuses of every country.

Artificial intelligence is a technology and a breakthrough in human achievements to reduce the problems and tasks of modern human life and work, which can act as an assistant or substitute for humans in many difficult, dangerous, repetitive or precise tasks and tasks, and make modern life easier for humans. The effectiveness of artificial intelligence has been proven and accepted in many fields of engineering, and there have been doubts about its ability for human sciences, which are now diminishing.

In criminal investigations, the use of artificial intelligence will be very effective in making quick, accurate and timely decisions, correctly identifying suspects and taking appropriate action, as well as predicting risks and the likelihood of committing a crime.

Therefore, modern criminal investigations can focus not only on the detection of crime and the legal prosecution of individuals, but also on the prevention of crime and even its prediction. This article discusses similar examples in different countries so that some of them can be implemented and enforced in Iran, which will lead to the use of methods to improve security and combat crime.

Therefore, artificial intelligence helps experts and investigators in criminal investigations by formulating logical evidence, reconstructing crime scenes in 3D, effectively managing evidence, and analyzing and analyzing it to reach logical conclusions at different stages.

Of course, although artificial intelligence is the fourth wave of technology and is inevitable, it seems that before foreign models enter the country's police and criminal investigations in an unwanted and uncontrolled manner, those responsible must provide and anticipate legal regulations and legal platforms, and

domestic specialists in this field must enter the field to benefit only from its positive capabilities in practice, without the fear of providing unprotected big data to the platforms of the World Wide Web. The Internet and its owners are gone.

The author believes that the use of artificial intelligence will change the rules and methods of criminal investigations and move towards a different, safer world, of course, at the cost of greater control and surveillance, which will lead to better police efficiency and performance in monitoring society, identifying crime and social harm for the purpose of urban planning in creating a serious deterrent to crime and suppressing crime in the first place.

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