

Artificial Intelligence Applications for Criminology and Police Sciences

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IJMER

Volume. 8, Issue. 1

March, 2025

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Abstract

The gradual adoption of artificial intelligence (AI) in criminology and police science is revolutionizing investigative processes by enhancing efficiency and complex data analysis. AI enables pattern identification, anomaly detection, and crime prediction through large data analysis, offering new crime prevention possibilities. Its evolving applicability requires ensuring reliability, auditability, and accountability. Insights from neural networks in other disciplines, like economic trends or disease modeling, show AI's ability to predict events using seemingly unrelated data. Unlike traditional statistical methods, AI provides advanced tools for crime prediction, requiring proper validation of its use to ensure effectiveness in diverse investigative scenarios.

Keywords: Artificial Intelligence; Criminology; Crime prediction; Police Sciences.

1. Introduction

The gradual introduction of artificial intelligence (AI) solutions in the disciplines of criminology and police science constitutes a true revolution in the way we carry out daily work, understand how to approach information and understand any data-based minutiae within the process research. This starting point generates a new paradigm in the consideration of new key aspects such as resource efficiency or in complex police intelligence analysis activities where the effectiveness of the activities is crucial.

The capabilities provided by AI to analyze large data sets, identify patterns, make comparisons, search for anomalies, establish trends and make predictions offer new possibilities for preventing and detecting crimes by facilitating thorough investigations by a multitude of methods. any detail with the objective of solving crimes, whatever their nature. The applicability of AI-based analysis methods is in constant evolution, which requires taking into account the present and future challenges of their use within a framework that guarantees reliability, auditability and accountability.

2. Main Use Cases and Applicability of Artificial Intelligence in Criminology and Police Sciences

2.1. Predictive Analysis of Criminal Behavior

The predictive analysis of crimes through the use of methods based on artificial intelligence (AI) has become a fundamental area of research, with part of the research focusing on the intersection of the applicability of artificial intelligence (hereinafter AI) and the study of the characteristics of crime (Campedelli, 2019).

The universe of capabilities that are opening up in crime prevention thanks to AI solutions and the transversality of its methods developed in other prediction scenarios, are a testing field where applied research in criminology and police sciences will have very prolific results in the coming years with an evident need for studies related to the effectiveness of methods based on artificial intelligence for crime prediction (Martino, 2024; Martino and Merenda, 2021)).

The application of classical machine learning models and joint methods for crime prediction is emerging as two of the most important fields of applicability, indicating a growing interest in the use of classical machine learning algorithms for crime prediction (Giacomello et al., 2024; Divyasri and Saranya, 2023). However, it is important to highlight that in other fields of development of complex predictive methods there has been substantial evolution compared to initiatives related to

crime prevention, as is the case, for example, in the field of prediction in the financial sector (Díaz, 2013; 2016).

Although the application of machine learning in predictive processes linked to criminal activities is a relevant AI-based method, there are other AI-based mechanisms that can generate a high impact on the analysis results, if sufficient data is available to apply more advanced applied predictive methods in specific use cases of criminology and police science.

An example of applicability based on experience of these predictive methods is the research carried out on the use of the clustering method and artificial intelligence based on neural networks for the projection of violent crimes in Colombia (Fontalvo et al., 2023) which, according to the results of the study itself, provided a predictive classification capacity of 97.7% for crimes according to their type and impact, which allows it to be considered a predictive tool to be considered for serious criminal activities. . It is important to highlight that the predictive classification percentages in the aforementioned study are based on discrete criteria contemplated in the study itself, and different ones may be contemplated that apply, for example, to the realtime preventive detection system.

In any case, the exposed percentages of effectiveness that emanate from crime predictive studies have to be assessed according to the specific scenario where they were applied to avoid it being understood that success in prediction is applicable only with the application of the method with another data selection. The complexity in the selection of data for prediction does not reside only in those that are likely to directly affect criminal events and requires that much more dispersed data that affect the key factors of criminal activity can be obtained. In this regard, there remains much to investigate in the universe of related data that directly or indirectly influence the commission of crimes.

Understanding that discrete data such as the decriminalization in a certain territory of activities considered criminal in other places or the impact received on police capacity due to the lack of resources to prosecute certain crimes can create interference on the results is key to understanding that prediction crime cannot be exclusively based on crimes recorded in history for prediction (Luque and Liz 2021). Crime prediction is not without challenges such as the varied and unpredictable nature of crime data, which emphasizes the complexity involved in analyzing and predicting crimes accurately (Khairuddin et al., 2019).

It is important to highlight that the information collected for the prediction of crimes cannot constitute an incriminating element in the majority of legal systems of democratic countries since analyzes based on large volumes of data available for predictive analysis of crime can be complementary to the police activities and facilitate decision-making in investigation processes or in the allocation of police resources for prevention (Gummadidala et al., 2020).

Some analyzes based on neural networks allow us to influence specific aspects of crime prediction, such as the study of the trend of kidnapping victims in Colombia, demonstrating the viability of the criteria in predicting specific criminal events through the use of related massive data with contextual factors of the crime (Giraldo et al., 2020).

Applied research on the use of neural networks in other disciplines allows obtaining additional information on key processes for characterization, modeling and prediction from other fields of application, such as economic time series (Olmedo et al., 2007) or the proliferation of diseases have made it possible to understand that, for processes based on neural networks for predicting trends, new use cases can be established due to their transversal application in complex data analysis, which requires having expanded contextual information. contemplating sources of information that, a priori, do not seem to have a direct relationship between them, but constitute to a certain extent dependencies that must allow the prediction of complex events such as the prediction of crimes. Although, in some cases, the use of machine learning as the only instrument for predictive analysis may be confused, it is necessary to highlight that the capabilities of AI for the predictive analysis of crimes are opening up new ways of contextualizing, analyzing and preventing behavior crime, leaving behind statistical methods and other classic study mechanisms in social sciences (Palacios and Liz, 2022; Fernandez et al., 2023; Rodríguez et al, 2023).

Within the new universe of predictive analysis capabilities based on AI through deep learning and neural networks that, properly applied to the context of appropriate information with sufficient

coherence in the context data, can determine key factors that are beyond the human capacity to analysis.

Artificial neural networks (ANN), a type of machine learning algorithm inspired by the human brain, offer a promising alternative for analyzing complex data sets and identifying patterns that traditional methods may miss. An example of applications with high predictive success in criminal investigation is the use of the aforementioned interconnected artificial neural networks (ANN) that process information through weighted connections. By training the artificial neural network with historical crime data, along with emerging trends that influence crime commission (including characteristics of offenders, the environment, crime types, and spatial patterns), the ANN can learn complex relationships within the data establishing different conclusions that, through adequate supervision, can facilitate predictions applied to other scenarios thanks to properly learning the different relationships between the data. This allows them to identify subtle correlations that might not be evident using traditional statistical analysis or traditional machine learning mechanisms.

ANN training can be used to predict the probability of future criminal activity for individuals based on a set of input characteristics with a much broader context than the data associated with a specific individual. Since ANNs dedicated to the prediction of criminal behavior can capture non-linear relationships between variables, they will allow a more accurate representation of the complex real world that affects criminal behavior through the recognition of hidden data patterns and correlations within large sets of data, potentially revealing risk factors not previously recognized in other data analysis methods.

Training being the basis of ANN learning, the adequacy of the training method and frequency allow prediction results to be better adapted when there is coherence when there is an approach to continuously improve with new training data, adapting to behavioral patterns criminal patterns and the evolving profiles of criminals (individuals, groups, by origin, by location or through hidden patterns susceptible to validation in human supervision of learning).

One of the fields of application of predictive methods related to criminology and police science is the facilitation of criminal risk analysis processes, taking into account factors of recidivism of a criminal, which allows authorities to make more informed decisions about the probation, rehabilitation and social reintegration. These applications can pose a serious social risk if they do not have the appropriate safeguards in terms of ethics, integrity, auditability, accountability, among other notable factors.

2.2. Criminal Investigation

The implementation of technological advances within criminal investigation in recent decades has meant the creation of new work methods accompanied by facilitators of the processes of registration, analysis and interpretation of criminal information.

Although the mentions of the digitalization of processes, the automation of information extraction and the maintenance of research and analysis evidence environments through computerized systems may be evident, it is worth noting that the evolution of technological capacity for criminal investigation requires attention permanent in the decisions of efficiency and effectiveness of criminal investigation processes (Payá, 2023).

Within this search for efficiency and effectiveness, artificial intelligence allows us, among other possibilities, to carry out the application of specific cases of criminal investigation study through some specific objectives that substantially reduce investigation times and guarantee greater reliability of the investigation process criminal.

Some of these crucial processes for criminal investigation have been applied to specific cases of use of the capabilities of artificial intelligence, accompanied by other established technologies that facilitate an appropriate scenario for each criminal investigation process.

Within the use cases applied and contextualized in criminal investigation, it is necessary to highlight:

- Detailed analysis of static images and comparisons thereof.

- Detection of details and minutiae in video sequences instantly.

- Treatment of audio recordings for subject identification and noise analysis.

- Analysis of voice tones and interactions between subjects for the identification and sequencing of criminal situations.

Precise details of combined image or sound, such as the analysis of nonverbal language in the context of interviews.

Language type identification and automatic transcription of natural language sentiment analysis in voice recordings.

Detection of content in messages on social networks and other scenarios to detect encrypted messages or language behavior patterns that enable crime prevention capacity.

Identification of patterns of radicalization or emerging threat both in the content of the language used and in the tone of voice, behavior or any other element of analysis available.

The objectives of using artificial intelligence related in each case differ substantially, and there is no single approach to applicability. The constant evolution of technology capabilities has made it easier for criminal investigators to analyze enormous amounts of structured and unstructured data in order to obtain detailed information on processes that are unthinkable through human means. This allows us to have an optimal scenario of efficiency of the investigation processes that must be complemented with mechanisms to validate the suitability of the technology for the specific criminal investigation scenario.

In addition to the capacity of methods based on artificial intelligence for criminal investigation, the possibility of accessing information in real time from different locations with the necessary guarantees of reliability and security has generated efficiency in the media management process of evidence and its registration have a high positive impact on efficiency, when we talk about capacity for action and its value for accountability in the legal processes associated with criminal investigations. Thus, artificial intelligence applied to criminal investigation must be contextualized within a technological ecosystem that guarantees the overall effectiveness and efficiency of the investigation processes and not in a discreet manner.

A study published on the value of artificial intelligence in the administration of justice (Manrique and Vargas, 2019) demonstrates the importance of the application of artificial intelligence in criminal investigation, directing the need for use to those aspects that enhance efficiency in activities and the reduction of errors in order to guarantee that legal processes can have the necessary certainty, Their auditability is not questionable and they are reviewable by judicial authorities at all times.

Specifically applied to the framework of criminal activities in cyberspace, there are studies that review the advances of intelligence against crime, focusing on the vision of new threats and opportunities of the criminal intelligence system in the face of the disruption of new processes as a consequence of the use of hyperconnected technology (Payá and Luque, 2021; Payá, 2023). Likewise, the opportunities determined in the corresponding study have a high impact on the use of artificial intelligence due to its close relationship between the processes carried out in criminal intelligence to obtain accurate results, and the processes of institutional collaboration through intelligent systems that correlate accurate information with guarantees of security and reliability of information sources.

The high effectiveness of the supervision means based on computer vision indicates that technological advances in the discipline are aimed at making such detections in real time by combining different preventive technologies using automatic alert interfaces and human supervision that They are key to adequate training in each real-time video supervision and video surveillance application scenario, guaranteeing greater effectiveness in the validity of the minutiae associated with video, image and sound analysis.

The use of computer vision applications is an emerging discipline that is allowing comparisons to be made between different sources of images and videos. Although we can say that it is not a new discipline as such, there is a significant advance in its effectiveness thanks to being able to use these systems in the prediction and verification of image/video, recognizing minutiae associated with the behavior of subjects in said images complemented with analysis that, facilitated Through processes that are not possible through human observation due to their low efficiency, they obtain excellent results.

The detection of objects, movements, characteristics of differential patterns allows identification through video information sources with a wide possibility of making correlations, searching for anomalies or automatically identifying certain image patterns such as, for example, detecting a firearm in video sequences where human resources would have been ineffective. In a

recent multidisciplinary study on computer vision applied to firearms detection (Houser et al., 2024) we find that algorithms like YO-LO facilitate object detection by 94%. Keep in mind again that this effectiveness is focused on the set of specific data established for the test and not as a universal value of effectiveness.

The application of photodiode-based vision sensors with in memory computing capabilities, using sensitive memo devices, has opened up new possibilities in computer vision (Vasileiadis et al., 2021). Despite advances, there remains a need to identify and assess specific challenges in developing robust, high performance computer vision systems (Turk, 2004) that guarantee that the results obtained have consistent criteria to be able to convert said products of the AI process into sufficient incriminating evidence in criminal investigation processes.

In the forensic field, we can highlight as an example of specific use, the developed algorithm such as PALINOVIC that uses computer vision techniques and geotechnologies to support, through human supervision, criminalistic analyzes (Gonçalves et al., 2022). One of the most prolific fields in the use of AI currently in applied research is cybercrime. Techniques to counter cybercrime based on artificial intelligence make it possible to detect and prevent cyberattacks, analyze malware, identify the spread of illegal content on the Internet, among other use cases (Payá, 2023).

However, applicable use cases have proliferated exponentially in recent years, guaranteeing better results in effective prevention due to the ability to identify possible threats and in the automation of cybersecurity protection mechanisms. The study of Ocaña et al. (2019) highlights how artificial intelligence can simulate human intelligence capabilities, which is essential in the fight against cybercrime. We can understand that, additionally, it allows the automation of tasks and the reproduction of successful behavioral patterns in prevention, detection and response activities to criminal activities in cyberspace (Delgado, 2024; Liz 2024). This allows human resources to be dedicated to activities of high analysis value, requiring that these resources be capable of understanding and applying the methods provided by artificial intelligence.

2.3. Forensic Data Analysis

Advances in data analysis using artificial intelligence have a broad expectation of applicability in the analysis of forensic data, allowing investigators to access conclusions that are not achievable through statistical or observational methods by human means. Although the literature widely explores the field of application in the forensic analysis of digital evidence in the collection phase (Anushka et al., 2024) It should be noted that the field of application of forensic data analysis using artificial intelligence contemplates a wide variety of possibilities and, therefore, use cases that can facilitate the maximization of the capacity of artificial intelligence to be able to make correlations, find anomalies, compare scenarios or simulate new scenarios that facilitate the review and hypotheses of criminal investigation through different comparative methods in real time. The application of artificial intelligence in forensic data analysis can allow, among other applications:

- Establish trends and deviations from expected results.

- Make comparisons of situations, scenarios, evidence and other important minutiae for the criminal investigation.

- Analyze large data sets where humans do not have comparable capacity.

- Identify patterns and trends of behavior related to crime.

- Look for anomalies within the behavioral patterns in the sequence of evidence.

- Establish evidence verification mechanisms (digital or not) for the chain of custody of evidence.

- Make predictions about general or specific aspects of the criminal investigation process.

- Automatically audit details of processes carried out using beacon systems or similar evidence tagging mechanisms.

The great value that constitutes the automation of processes related to these objectives allows the deadlines in which criminal investigation activities are carried out to be substantially reduced, as long as they are based on proven processes based on experience and whose auditability is a fundamental criterion. to be able to carry out these automations.

It is important to highlight that, for the effectiveness of applied artificial intelligence to be sustainable, it requires a continuous evaluation of its suitability to the specific scenario of criminology and police sciences, considering its evolution and trends. In this way, data-based automation

processes can be considered within the framework of auditability and accountability related to forensic processes, whatever their nature; they must have the appropriate safeguards to generate an appropriate forensic investigation environment. to the real need of each case (Neri et al, 2023).

2.4. Data Visualization

Data visualization based on artificial intelligence has a wide spectrum of application in criminology and police sciences, enhanced thanks to the ability to create data visualizations that allow criminologists and other subjects participating in criminal investigation to better understand the crime trends and the factors that influence them, among other use cases.

Using artificial intelligence in data visualization in the field of criminology can offer significant benefits in the management and analysis of information related to public safety and crime prevention. In principle, it is evident that it allows visual presentation with different approaches to the same information, being able to generate new working hypotheses, obtain simulations of possible scenarios and, above all, actively collaborate between the different actors involved in the research processes for the formulation and sharing of criminal investigation hypotheses(Delgado, 2024; Liz 2024; Martino, 2024) . In short, this joint visualization allows increasing the effectiveness of collaborative work in criminal investigation, guaranteeing common knowledge of researchers that facilitates the exploration of hypotheses and generating an increase in the speed of information exploitation, generating coherent investigations with different points of view to provide complex data-driven information analysis and processing using artificial intelligence.

Within data visualization, the concept of data governance requires that consistent rules be available in practice for the collection, analysis and interpretation of data, as well as its visualization, which high-lights the relevance of artificial intelligence in management of data in the field of criminology and criminal justice (Serna, 2021).

This approach to data governance applied to criminal information management allows for a deeper understanding of crime patterns, trends and factors that influence criminal behavior.

2.5. Assistants, Chatbots and Other Resource Management Applications Based on Artificial Intelligence

The ease of implementation and use of some artificial intelligence technologies generate countless application possibilities for criminology and police sciences since they allow their development to be much faster, thus generating an acceleration that is reflected in the ease of adaptation to each discipline and its development environment. On the other hand, the focus on efficiency within police activity has marked the need to support disruptive technologies such as automation within police sciences.

It is worth highlighting, as an important element of final attention, the great boost represented by what are known as automatic conversational agents (hereinafter chatbot) in police intelligence. A clear example of this is the implementation of a chatbot, calledC3-Sex, which allowed the collection of a significant data set including key profile elements related to 7,199 suspects, highlighting the potential of chat-bots in detecting criminals in virtual environments, focusing on crimes of a sexual nature.

The collection capacity of conversational agents allows obtaining a large amount of information that facilitates the criminal investigation process. An example of this is the intentional impersonation of profiles of minors by law enforcement based on the results of conversational agents, making the action aimed at the specific location of subjects on social networks become much more effective thanks to the profiling of potential offenders.

Although the applicability is not limited only to the capacity of chat-bots in the framework of criminal investigation or the simulation of human activities on the Internet, but to a broad scenario of possibilities that can increase the efficiency of police activities, simplifying administrative processes. or assisting those involved in the investigation processes in the documentation of the processes carried out (Mazurier et al., 2019). This facilitation of the process, in some cases, allows the validation of the suitability of the activities carried out in the criminal investigation based on data, thereby facilitating the processing of information in real time, generating established alerts and providing complementary information on alerts police.

AI predictively facilitates resource needs at both a quantitative and qualitative level, facilitating analysis processes that guarantee the suitability of the resources assigned to each police activity. This evaluation element requires specialized treatment that guarantees the efficiency criteria of police activities.

3. Challenges of Artificial Intelligence in Criminology and Police Sciences

It is clear, having carefully observed the different applications of AI in criminology and police science, that this technology facilitates greater efficiency and precision in police activities, guaranteeing transparency, objectivity and accountability, which ensures that the associated legal processes are consistent from the beginning of police investigation activities, even taking into account data sources and their consistency.

Among the challenges of AI in Criminology and Police Sciences, it is important to highlight those that have significant value in the current situation and that, from a perspective of applicability of the solutions, require special attention in the development of said solutions applied to the criminology and police science. It is evident that these challenges will change their form as the interaction of the key factors associated with technology with the transformation processes in the aforementioned disciplines evolves.

3.1. Access to Technology

The use of technology in the field of justice, in a general concept, is crucial to improve police efficiency, improve results and address changing challenges within the different security systems of states (Delgado et al 2023). Understanding that adequate technological provision in terms of artificial intelligence will facilitate greater police effectiveness and greater precision in the processes associated with the study of crime is the clearest justification for the need for investment in the transformation of current police models.

The importance of mobilizing social agents in a multidisciplinary manner is crucial to address the complex needs of members involved in criminal investigation processes and their specific needs in the field of criminal justice, highlighting the need for an action framework to address your needs effectively (Metzger et al., 2017). This under-scores the importance of leveraging technology to facilitate collaboration and provide personalized services to vulnerable populations within the criminal justice system. Delaying, intentionally or not, technological access to these technological resources means an undermining of police capacity that requires an immediate boost to counteract the capabilities of criminal groups whose technological access is much more effective.

It requires special attention to emphasize the importance of addressing the challenges related to the adoption of artificial intelligence technology to improve police operational efficiency and effectiveness in the criminal justice system by enhancing access to technology that facilitates a study of specific cases of each related process, determining adequate resources for the necessary cases that guarantee an acceptable level of introduction of technology in line with the evolution of the crime study environment. This means an important change of focus in research paradigms, with capacity having to be focused on applied research and leaving behind obsolete methods for allocating resources, such as statistics (Martino 2024; Payá, 2023; Caligiuri, 2021).

Regarding access to specific technological elements, we can highlight that algorithms and other technological elements typical of artificial intelligence have study examples on the use of algorithms in the Swiss criminal justice system, pointing out the urgent challenges that the system faces in adopt emerging technologies (Simmler et al., 2022).

The need for a criminal justice system that adequately adapts technological advances to meet the demands of modern challenges and improve overall effectiveness in police sciences. Therefore, the need to prioritize police intelligence, criminology and technological resources activities requires a disruptive approach with an evident need to update technologically based police resources with the aim of increasing the efficiency and effectiveness of police processes, in general, and with greater interest those related to criminal investigation (Martino 2024; Payá, 2023; Caligiuri, 2021).

3.2. Security and Privacy

Integrating AI into criminology and law enforcement has immense potential to improve public safety. However, guaranteeing the security and privacy of the solutions is essential in this

search for capabilities. By addressing security concerns and respecting privacy rights (with the limitations referred to each of the scenarios of information of interest to police) the potential benefits of the application of AI must be taken advantage of while mitigating its risks in the context of criminology and police sciences. Although artificial intelligence applications in general face important challenges in these two aspects, it is worth thinking that the specific scenario of the police field requires the implementation of an analysis of the specific threats that come from the interest of criminal actors against police technologies (Luque and Lenny, 2021).

Beyond mere knowledge of the threat environment, it is necessary to think that artificial intelligence systems can become targets of malicious actors who seek to manipulate data or interrupt operations throughout the life cycle of the solutions, which must be understood in the conceptualization of the threat scenario. That any application based on AI for police use must be kept under a permanent threat evaluation and consider, in any case, the principles of security and privacy from the design and by default (Martino 2024; Payá, 2023; Caligiuri, 2021).

While AI-related regulations and best practices generally address how to address security and privacy concerns, we must pay special attention to the privacy implications of AI in criminology and law enforcement.

The use of AI-powered automated surveillance technologies raises questions about the extent of tracking and the potential for privacy violations during their use. For example, the need for data retention and sharing must have transparency mechanisms regarding the collection, processing, and retention and sharing of data to protect individual privacy rights.

To this end, the mechanisms established for the security and privacy of the AI solutions applied must have transparency mechanisms for the control authorities that are established, facilitating permanent accountability in accordance with the need to maintain public trust (Luque et al., 2023).

To adequately address security and privacy challenges, there must be, from the ideation of the solution, coherent security measures that guarantee the mitigation of risks, whatever their nature. Among the necessary standard measures, we can find the implementation of end-to-end encryption, process isolation, protection of technological infrastructures, access controls and periodic security audits to strengthen fundamental aspects of privacy and security.

3.3. Reliability, Explainability, Ethics, Algorithmic Biases and Accountability

The general concepts applied to artificial intelligence systems require a specific approach for the applications of criminology and police science due to their important impact on society and their high value when it comes to being an element of guarantee of the judicial system and, therefore, of the rights of citizens. Although the regulation and emerging good practices broadly collect the different elements conceptually, we refer to the important aspects that we consider fundamental for the use cases of criminology and police sciences.

Going deeper into the concept of reliability of AI, a concept that embraces different elements related to the guarantee framework of AI solutions, it is necessary to highlight that in applications related to criminology and police sciences they cannot refer exclusively to the reliability in the use of specific algorithms or in strengthening supervisory capabilities of a specific process but requires a sufficient approach to guarantee that the conceptual and practical aspects of AI solutions for accountability are addressed in the reliability study. Just as the ethical principles and other conceptual elements of the use of artificial intelligence allow for great debate in conceptual frameworks, the applied approach to reliability requires practical consideration based on general principles applied to the specific scenario. There is currently no specific approach to practically address the mechanisms necessary to ensure the explainability of algorithmic models, bias mitigation measures, established criteria for accountability to supervisory bodies, and their implications for judicial systems.

It requires special attention that reliability mechanisms are consistent with reality throughout the life cycle of the artificial intelligence solution. In a theoretical exemplification of reliability risks, we can imagine that an explainability approach based only on the reliability of the algorithm can undermine the reliability in the system by attempting to address an element of accountability applied to the theoretical framework of the algorithm and failing to side the reality of the set of elements of the artificial intelligence application. This could mean that the methods used, without timely or

focused accountability in the theoretical framework, pose a serious risk to the rights of citizens by using mechanisms that do not have adequate supervision measures.

Ethical considerations surrounding AI systems, including issues of bias and reliability, have been the subject of extensive research, highlighting the importance of ensuring fairness and accountability in AI applications (Thiebes et al., 2020; Ryan, 2020).

The research has not intended to carry out an exhaustive analysis of the elements of reliability but to highlight those elements that are essential in the indicated context and that require special attention in the selection of artificial intelligence applications due to their special nature of application in criminology and police science. Without a doubt, related to criminology and police science, the elements of reliability are a field to explore from practical research that will require extensive attention.

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