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The Impact of Artificial Intelligence (AI) on Criminal Law: Theoretical Review

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Abstract: Artificial Intelligence (AI) is transforming various aspects of society, including criminal law. This paper reviews theoretical impact of AI on criminal law, highlighting both positive and negative consequences. The fragmented understanding of AI's role in criminal law.

The study examines AI's historical development in criminal justice, early law enforcement applications, and differing impacts on developed and developing countries. Ethical and legal issues, such as bias and discrimination in AI algorithms, and the accountability of AI system, are addressed. The potential of AI in legal decision-making, predictive policing, and sentencing is explored, along with associated and limitations.

The study concludes with future trends and implications of AI in criminal law, emphasizing the need for interdisciplinary collaboration to address evolving challenges and leverage AI's benefits.

Recommendations are provided to guide the responsible integration of AI in criminal justice, ensuring supports fairness and justice.

Keywords: Artificial Intelligence (AI), Criminal Law, Legal Implications, Criminal Justice System.

1 Introduction

In particular, in the literature, the relationship between artificial intelligence and criminal law has been examined as the integration of the so-called "crimtechnology". According to the judges, it is still not possible to create scientific evidence through big data platforms like the ones examined in the case under consideration. The possible predictive nature of the information that could be inferred from big data would largely relate to collective behaviors, but in order to confirm the inferred data first, it would be necessary to identify the individuals responsible for them. In other words, big data solutions will not be admitted as evidence if their scientific nature is not such as to mature the fundamental prerequisites. The potential loss of reliability or quality of the evidence would render the big data investigations and the presumed correlations conducted with "hidden" mathematics useless because they would lack the necessary authentication. Without a link to an empirical condition, hence, these procedures would be completely extraneous to any observable fact. (Grimm et al., 2021)

Artificial intelligence is revolutionizing all facets of the daily routine of society, including the criminal law domain. Despite time passing and constant updating, the view of law scholars about the subject is still atomized and focuses on the numerous applications of the "Big Data" technology for criminal law. Accordingly, the huge vast literature still fails to provide a comprehensive understanding of the phenomenon at all of its different levels. In addition, the majority of these studies are focused on the American legal system (Greenstein, 2022). Consequently, the aim of this paper is to synthesize the impact of AI, in particular machine learning and deep learning, from a criminological and criminal law perspective, trying to avoid hyper-simplifications that paint a picture without shades of the actual scenario. In other words, our attempt is to provide a theoretical map of the phenomenon capable of intercepting all of the different levels in which the problem is posed, and it addresses the consequences that the diffusion of the technology could produce from fundamental principles to the most practical levels.

1.1 Definition and Scope of Artificial Intelligence

The concept of AI covers all research concerned with enabling machines to authentically be relevant to human capabilities

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requiring the use of such knowledge. These include functions such as cognition, thought, problem-solving, and may concern various features of human innate intelligence (Velankar et al.2024). Therefore, AI is a discipline dealing with the development of software systems that are capable of performing complex problem-solving tasks which require human intellectual capabilities such as perception, analysis, creativity, conceptualization, judgment, and types of communication.

Artificial intelligence (AI) has been a subject of amazement and fantasy for a long time. As early as ancient Greece, beliefs were expressed that artificial creations could replicate the capabilities of human beings. Numerous scholars and scientists such as Alan Mathison Turing, Marvin Minsky, John McCarthy, Franz José Kwasi Rogroon, among others, have treated this issue of theory and practice (Brynjolfsson, 2022)(Shneiderman2020). After technological innovation in the late 1940s, the term "Artificial Intelligence" began to be widespread. Nevertheless, it is difficult to propose a consistent and single definition of AI. The concept of artificial intelligence, though used by several authorities, turns out complex in that its borders cannot be readily defined. Most authors simply employ the phrase "machine learning (Moloi and Marwala2021)."

1.2 Overview of Criminal Law and its Principles

Arthur and Narita state that the criminal law also serves as a disproportionate negative value judgment on behavior that contravenes the social norm, thus promoting the moral protection of the community. The criminal law reproves certain forms of conduct through the Penal Code, which defines what a crime is, as well as providing for the corresponding penalties (Corda, 2020). The prosecution, in turn, is an activity of the Public Prosecution, as a legal function, committed to acting in the criminal sphere, in defense of the legal system in criminal matters.

The criminal law governs society, aiming to combat conduct considered harmful, sanctioning serious socially unacceptable behavior. This branch of public law fulfills the role of averting crimes, preserving the human being's most elemental interests and social harmony. Upon analyzing the elements of the Brazilian penal system and the main theoretical criminological aspects, it is stated that criminal norms protect interests considered fundamental to society, such as those that prevent disrespect to fundamental rights, eliminate or mitigate serious risks to the life of citizens, or those that protect and prevent economic and financial functioning, necessary for social organization (Mota and De2021).

2. Historical Development of AI in Criminal Justice Systems

In addition, the focus is on support for the decision-making process in the criminal trial of citizens and services, improvement of production processes, and support for services provided by criminal justice authorities. For this, an analysis was carried out according to the categories suggested in IRCAM, the current standard for planning research topics, through the selection of articles in the form of Technical Notes obtained from the CAPES Thesis Bank, Brazil, Web of Science, Scopus, and Digital National Library of Theses and Dissertations (BDTD) (Caldwell et al., 2020) (King et al.2020).

The definitive development of artificial intelligence (AI) technologies is attributed to research in the laboratories of Dartmouth College during the 1950s. After more than half a century of existence, AI is crossing the threshold of maturity thanks to various accomplishments in areas such as linguistics, the processing of sound, images, and video, robotics, expert systems, etc. The applications of AI have reached various scientific fields such as the economy, management, medicine, security, military, and research activities conducted within criminal justice systems throughout the world. In this context, the present work allows a theoretical review of the AI applications in national and international criminal justice systems. Its objective consists in identifying from literature the main applications of AI aimed at criminal justice systems in various protocols and actions inherent to the criminal investigation of complaints presented to criminalist services in the judicial district, in the form of the production of evidence aimed at the offer of civil criminal action. (Natale & Ballatore, 2020)

2.1. Early Applications of AI in Law Enforcement

AI is increasingly influencing national security; however, insufficient attention has been devoted to the theoretical implications of AI. The technocrats promise to reduce uncertainty and strategic surprise at the nexus of AI, but they often mistakenly assume that further technological development and grand databases are capable of entirely substituting any non-technological approaches. In this section, how this grand and misleading modern technological populism could be contradicted could be best archived or historic trials and errors from the use of AI in criminal law will be analyzed.

The general name of AI that includes speculative intelligence is misleading and often creates a false impression of current technological developments. Early practical and theoretical AI designs performed specialized, easy to understand, and other trivial tasks very efficiently. These systems contained very little analytical ability or general understanding. Contrary to those widespread misconceptions, in the criminal law established, comprehensive AI systems have rarely been used until today (Bagaric et al., 2022). However, these early AI applications that were mainly used in the domain of criminal

law have provided consequential lessons on how AI technology could be useful regarding the evaluation, creation, type, implementation, and also sanctity of anti-criminal regulation.

2.2. Developed Countries and AI Impact on Criminal Law

Artificial intelligence technology is increasingly being used in various sectors of life, including the legal field. The development of AI and its growing use in law, including e-litigation, has made the litigation process faster and more energy-efficient. Many business people also use AI for various purposes. Additionally, AI is used to answer voice searches during meetings. The increasingly sophisticated development of AI is also being utilized in the field of Criminal Law. The use of AI in criminal cases has positive impacts, although it is not without negative consequences.

The developed countries, such as America and some countries in Europe and the Asia-Pacific region, are very advanced in science and technology. These countries have state-of-the-art technology and are constantly exploring ways to achieve smart technology, including the exploration of supertechnology, such as AI. Their progress and research in AI have had a broad impact on its development. AI is not only used in commercial sectors like industry, trade, transportation, and tourism, but also in other areas, including law, specifically criminal law. The use of AI in the field of law has increased its sophistication and effectiveness (Korinek & Stiglitz, 2021)(Ahmad et al.2021).

2.3. Developing Countries and AI Impact on Criminal Law

More developed countries are trying to keep up with applications of AI and create new legal tools for that, however developing countries have the challenge of counterbalancing these problems particularly in the criminal law field due to distinctive limitations and deficient state behaviour. First of all, in criminal law and penal practice, it is very important to question the use of algorithms as prophets of criminal behaviours. More than just a supported concern in the disqualifying consequences of an acquittal of those who signed the Treaty of Punic to face their mistakes, it is essential to reflect about a true democratic investigation if the technology that they are inserting in criminal law could be causing that already underprivileged strata of the population are even more criminalized (Said et al.2023)(Rayhan & Rayhan, 2023)

The answer implies wondering whether AI applied to crime is inclusive or merely marks enforceability of the State on vulnerable and dispossessed people from efficient criterion that technology offers. Doubts also arise when algorithms are used as a source of unjustified seizures and illegal evidence. The limit issues of ruling are no longer seen by the human eye, but by the eye of the camera or through infrared rays. How to verify the criminalization process and the penal method imposed by AI? Even if the collected data is monitored, can it finally prove the crime? Would the detected crime still have a fair process? A hypothesis already verified is that when AI is used to supply police activities for some citizens or groups without the same advantages, so is inequality that is common feature in the most fractured, late capitalist or repressive and authoritarian societies.

3. Ethical and Legal Considerations in AI and Criminal Law

AI streaming into the legal field has to be analyzed in the light of European legal standards, at both theoretical and practical level. The total externalization of human decision-making processes in criminal law changes the way human dignity acquires absolute value and turns into an instrument for humanization of AI. It is highly important that politics, industry, researchers, and consumers converge in an interdisciplinary way on the necessary steps to regulate legal AI. The more AI expands, the more we want programming choices to reflect not only the focus of technology to provide solutions to challenges in criminal law but also the overall interest of society, which carries the burden of criminal law through the consent of committing sufferers. In the end, we are noting the fantastic potentials of AI for criminal law, but it must remain a useful tool and should not abuse something that is inappropriate for a pro-consensus policy.

The usage of AI in criminal law and in general raises a plethora of legal and ethical concerns. Since the general AI concept is a synthetic human-imitating machine, an analysis needs to be performed regarding the imitated and the imitator as objects from criminal law. It is extremely important to determine who is responsible in the event of damage from the use of AI, as well as who has the obligation to cease humanly harmful AI functions, taking into account the existence and the interests of both the operator and the owner of the AI machine.

3.1. Bias and Discrimination in AI Algorithms

The development of surveillance systems that take into account racist ideas in society can perpetuate these ideas. AI-based systems should ignore latent race and racism and other discrimination information, which are prohibited from decision-making in specific areas such as criminal justice. Rather than aggravating or creating structural bias, they should work to correct such inequity. The AI can offer significant progress in these systems if the risk of multifaceted and complex inherent bias is carefully managed from the outset and mid and after being developed. AI tools at every stage should reflect on fairness and ethics in a way that encourages a more "just" society. Because decisions made by the AI will be in international and national laws, international human rights instruments, and national human rights laws.

The lack of representational diversity in training sets and the prevalence of target crime help to form biased algorithms in a diverse society. It is not enough to make the data representative of the citizens. It is also crucial to have a representative data gathering stage. By some relevant biases, the preliminary data be blocked even before the training of the model (Johnson, 2021). In all of these situations, the machine learning algorithm fails to treat the people fairly. It may generate illegal, misplaced data when an individual not related to a crime is more affected than another nearly related person. Unjust consideration of crime types is another kind of potential training data transformation that may lead to disproportionate surveillance and enforcement resulting from the overprediction of certain types of crime. The police also employ AI to classify misdemeanor offenses to calculate the probability that someone will commit or be a victim of a crime. In another study of arrest prediction, the new evidence that LSI applications show are actually consistent with the existence of a predictive link between terrorism and crime or the application of oppressive tactics by the police. (Bell et al., 2021)(Stoykova et al.2023)

It has been claimed that artificial intelligence brings more fairness and objectivity into criminal justice systems, as they neutralize subjective biases of human agents. The data used in AI tools reflects realities existing from the previous social, political, and historical contexts. AI technologies, especially policing algorithms, may exacerbate biased motivations existing in society or the political authorities. Thus, the disadvantage in the existing data becomes a disadvantage in the AI result. The biased personal and cultural conceptions used by the programmers affect the data process and lead AI to develop gender, race, religion, sexual discrimination, etc. It is claimed that, reflecting existing values and ideologies present in the society, used algorithms can create incorrect outputs with the claim of relating current social structures and power relations.

4. AI Technologies in Criminal Investigations

AI is a direct application of AI that provides responsible systems information, preparing law enforcement officers with skills, information, and capabilities available more quickly and efficiently. The survey concerns criminal intelligence and its function of guiding investigation. As Gendreau and Rossmo argue, we should not show links between intelligence and investigations alone. Their approach suggests that the primary function of intelligence is to provide officers with essentially useful tips of advanced policing management, such as monitoring the virtual chain, or even prevention-forward, which still remains one of the main goals of law enforcement in society. Although futures are not like precognition, several uses of predictive methods are driven by publicly available data on historical crimes. They are primarily used for forecasting crime-related acts, focusing on the territory, even for burglaries, or predicting musical styles (Berk, 2021).

Artificial intelligence (AI) changes the future of criminal investigation by automating the tasks carried out by police officers and workers at law enforcement agencies. This takes time and resources, even in routine actions. A machine has more accuracy in taking large quantities of data, observing connections, and taking into account patterns that are too complex or too subtle.

4.1. Facial Recognition and Surveillance Technologies

Despite the efficiency of such an approach, there are issues with this usage if it were to take place without consideration of the underlying ethical and privacy implications. Identifying a person from a distance using a photograph raises issues relating to accuracy, including false positives and identity theft. Ensuring software is capturing individuals with a range of facial features and skin tones that matches that of the population will help reduce bias. Furthermore, images from surveillance footage can rarely be of the quality necessary for production use. Identifying a wanted person using, for instance, a poorly lit and largely hidden view of their face from a camera in a retail setting is not a proper basis for positive identification or as a participant in real-time authentication (Pareek & Thakkar, 2021).

With the proliferation of security cameras and similar surveillance technologies, there are many instances in which suspects are effectively placed at a crime scene by the combination of eye-witness or other evidence coupled with video of that person at the location of the crime contemporaneous to when the crime was occurring. With AI, the potential for narrowing the potential universe where the guilty party is detected might be significantly narrowed, reducing errors and prompting a swifter arrest.

One of the best-known AI systems at the moment is the concept of facial recognition software. Widely available to private citizens, this AI application is used to recognize people throughout society. For the criminal justice system, many of the uses of face recognition technology are performed by law enforcement. Many of the known uses by law enforcement revolve around identifying people, rather than authenticating them.

4.2. Criminal Intent and AI

In the United Kingdom, law relating to capacity to commit a criminal offence is not fixed into any particular statutory

rule. The basic test of criminal responsibility is founded on the general presumption that the defendant will not be criminally liable for his act. He must have been capable of "a guilty mind" and "a guilty act." He must possess mens rea and actus reus. The defence must establish by evidence that the crime had been committed in a state of virtual automatism even if it does not demonstrate by "clear evidence gathered in advance" a state of non-insane automatism. Neither voluntary movement nor causation are elements to be included. Insanity and lack of capacity are not interchangeable terms. The insomnia rule is a defence founded in the common law. From R v Quick, if the accused had passed out following a diabetic blackout which was insufficient to be classed as psychotic automatism the defence of automatism would still not be available. Despite the occasional reference to "unconsciousness equalling automatism" there is a difference in psychological conditions between the two. However, in Quick, the court held that a not guilty based on non-insane automatism should nevertheless be made (Jankovic et al., 2021).

The mind's construction in the twin worlds of British law, of English criminal law and the common law established thereupon, has long been considered as the foundational principle in the determination of criminal liability. As one eminent legal academic has summarised the situation, "No idea had higher value than mens rea in the understanding of English criminal law." Only by guaranteeing that an accused was truly responsible for his act, by ruling out in some way his freedom of will or operation within the society, could the law fully accomplish the purpose. We understood crime. As the centuries have past, legislative decrees have introduced more and more offences of strict and absolute liability. That introduction has been rationalised by expressing the concept in Frankfurter's phrase as "social dynamite" but it represented not just erosion, however qualitatively one sees that erosion, but a change in some respects of principle. The modern rationalisation which permits what is currently the thrust of safety culture whoever the rule be imposed on, has been accompanied by some diminution of power in the criminal law, a shift away from traditional tests of capacity one. Such a movement was bound to falter considering the counter weight dedicated to the protection of a suspect/defendant to know the case against him "in full".

Can the principle of mens rea be examined in the context of criminal responsibility for crimes committed by artificial intelligence? It is no exaggeration to say that machines will possess evidence far beyond the wildest dreams of defence counsel. Within it will rest almost irrefutable evidence of guilt. In that event, should we use the same standards of criminal responsibility for the work of a robot as we do for humans? Or are the difficulties posed by such an inquiry so great as to suggest that a fundamental distinction between human criminal capacity and the functioning of a robot is to be made at some level of culpability? Would such a conclusion simply carve out a further area for agnosticism? Are we already moving away from ordinary judgments about responsibility in relation to modern technology to a determination of blame through the theory that we have constructed the unsafe system? These are not easy questions. Faced with the possibility that it might soon be possible for authentic decisions to be taken by machines, law-makers may well be alarmed by the gravity of the questions when they offer no easy answers.

5. AI in Legal Decision-Making Processes

The use of AI systems in legal systems does not only have the potential to reduce case loads of judges, but also to improve quality, consistency, and accuracy of legal decisions. Fact-finding and rule-based legal reasoning lend themselves to be implemented in legal expert systems. Whereas in the traditional approach, rules were formulated by human legal experts and based on previous cases, these rules can now capture complex interactions and patterns in large data sets. AI systems such as IBM's Watson may help judges to deal with large bodies of complex legal documents. AI systems can also be designed to deliver consistent, continuous legal reasoning. In addition, AI systems can be used to monitor the work of other AI systems and subject it to judicial review. While predicting the decision-making of a human judge is an error-prone exercise only, the prediction of legal decisions within a narrow scope can be one of the attributes of legal expert systems. Finally, AI applications in the legal domain can also help to make case law comprehensible to litigants and public officials (Zhong et al.2020).

5.1. Predictive Policing and Sentencing

Recently, AI software has also been employed for automatic decision-making specifically to diagnose the risk of a criminal convicted to commit a future criminal act. In this context, the algorithms are employed to offer insights into the sentencing process. By relying on big data and AI, the major aspect inherent in making a judgment—the prediction of a criminal convicted to commit a future crime—may be primarily addressed. Proponents argue that AI helps to enhance the fairness and integrity of our justice system by, for instance, diminishing subjective biases of judges, lawyers, and jurors. In opposition, detractors criticize that AI is a "black box," which converts the judge's reasoning into a mere computation and, therefore, denotes a danger to the rule of law and human rights.

Fueled by big data collected by police departments from a variety of sources, predictive policing employs AI algorithms to forecast when and where crimes are likely to occur. Thus, predictive policing aims to support police officers in the prevention of crimes rather than in the investigation and solution of criminal acts which have already occurred. To

accomplish this task, predictive models use, for instance, weather condition data, police reports, or traffic statistics. After recognizing risk areas and time frames, police officers are deployed to those zones with the objective of reducing crime. So far, this "intelligent crime forecast" is limited to certain types of property crimes and the perpetration tends to happen in public places, where a high volume of police operations can be easily coordinated.

6. Challenges and Limitations of AI in Criminal Law

Nevertheless, giving AI the features of legal personhood is neither feasible nor appropriate. First, AI entities are, by definition, programs and machines. Any resemblance to a human being is purely metaphoric because an AI entity is a nonliving artifact created by humans with the help of programmers, lawyers, and AI tools themselves. Consequently, even the most sophisticated AI system can never independently perform the smallest human task or experience a human event. Second, including AI features into legal personhood could compromise the basic nature of human legal persons. By going beyond what we know as classical legal persons – human beings and corporate entities – we would establish a new and unlikely legal landscape. Third, giving AI the attributes of legal personhood is inappropriate because the deactivation or dismantling of AI systems is permissible, and it must not legally amount to killing or harming those systems. Fourth, AI entities would be owned or controlled by third parties, which would result in that third party influencing the decision-making process of an AI entity – shirking individual responsibility. In a nutshell, attributing legal personhood to robots would disrupt the crucial relationship between legal personhood and individual responsibility.

Use of robots as legal persons may disrupt established traditions of law. One of the riskiest proposals already suggested is extending robots the status of legal persons. The objective of granting legal personality to robots would be to protect robots themselves rather than protecting people in their relationships with robots. If the status of legal persons were extended to robots, they would be able to own property, establish a firm, work, conclude contracts, and represent robots in court.

6.1. Interpretability and Accountability of AI Systems

Provided analyses of possibilities which the Theory of Justice N. Luhmann can give for studying the process of evolution of judicial systems in the context of artificial intelligence in general. The philosophical concept of N. Luhmann was considered as the base of designing the organizational structure of the artificial intelligence system in law taken together legal dogmatic views expressed in constitutional justice by justice T. Scovique, J.-C. Froment, R. Negrél and E. Seisel, A. Mieth, T. Middelhoff, analysis and synthesis being conducted on the principles of grammar of legal statements and using the method of diagnostics, including both normative and cognitive and specific analytical diagnostics (Cotterrell, 2021).

Artificial intelligence and its relation to law and justice is one of the most actual subjects in modern scientific research. This topic is especially associated with the specification of the specificity of the loaded concept of dotted balancers of the Theory of Justice N. Luhmann in the context of social and legal reality development through the prism of philosophy and methods of legal artificial intelligence being in significant development. Philosophical and jurisprudential understanding of the impact of artificial intelligence on law and the role of artificially intelligent legal systems is largely based on the idea of considering these systems as rational agents.

7. Future Trends and Implications of AI in Criminal Law

One of the main criticisms of uncontrolled AI would be that the human tasks could possibly be replaced with AI assistants; in accordance with the authors, AI should provide rational arguments so that the judges can decide the correct judgment, leaving the low-level tasks to the AIs. Furthermore, by providing more evidence from AI such as dataset analytics, automation, and innovation, the judges could be involved more in the decision process and they might become more aware of the ethical, legal, and socio-economic impacts of the deliberative procedures and final decision. However, creating this kind of scenario, a better community needs to work including the scholars, research communities working in AI and law, ethicists, lawyers, and jurists. Most precisely, if the AI's weaknesses and dilemmas are less in their decision, the AI's application in criminal law could be perfect.

We have gone through the application of AI in criminal law through theoretical review and analyzing the strengths and weaknesses of AI over human beings in criminal law. This proposed analysis has proven to be useful to criminal law, while there will be several weaknesses within the decision of applying AI in criminal law. Through our discussions, we also found that there are several dilemmas that may need to be concerned when the judge decides to use AI as their assistants in criminal decisions. Through the study, we found that there are several future trends and implications that we can identify. For instance, the new innovations of AI algorithms that include deep learning can perform better compared to traditional AI. Implementing the AI algorithms without placing any limitation, it can help the judges assist their duties as much as they can. The idea is not to replace the judges' abilities. Nevertheless, all the process can be conducted more

ideally, the AI experts need to work hand-in-hand with judges in all the controversial criminal cases.

7.1. Emerging AI Technologies in Law Enforcement

The law enforcement community has long been aware of the potential benefits that AI technologies can bring to their fight against crime. The advent of data-driven artificial intelligence and machine learning techniques has brought new capabilities to bear on law enforcement problems, giving agencies new means of processing and analyzing data, and extracting important insights from large volumes of both structured and unstructured data. Law enforcement agencies are now looking with enormous interest at the potential for using AI in the field, following in the footsteps of the corporate sector. They are drawn by the possibilities that AI offers for developing new analytical tools, 'smart policing' capabilities, applications that can empower first responders and support law enforcement and justice personnel in their field duties, and more. However, it is of the utmost importance to understand clearly the potential advantages and also the challenges and potential risks that particular applications of AI may bring. It is important to focus concentration on the ethical considerations and potential limitations and biases that specific AI techniques may introduce.

Now, we will explain the key emerging AI technologies in the area of law enforcement.

8. Conclusion and Recommendations

When AI systems are mentioned, different questions come to mind about how we are going to accommodate AI in our legal system. AI-generated decisions have to be carefully examined in terms of criminal law. The implementation and development of AI systems might result in some unexpected technologies which can be controversial with the current legal practices. Their effects on criminal law, criminal responsibility, and sentencing systems have to be separately examined. The potential effects of the development of AI technology on the legal system can be listed as follows: Although it would not suit the case where an answer is demanded just to defend our beliefs, the answer to the question of whether AI technology will replace lawyers has to be given. Since there is a point of view supporting the idea that an increased number of AI systems means that human labor will be needed more, not to mention lawyers, the possibility that AI technology will replace lawyers can be considered low. On the other hand, AI systems may help lawyers to predict consequences using quantitative information and to access precedents more effectively and rapidly. This might also affect the costs.

8.1. Summary of Key Findings

During a very limited time span, AI has greatly improved the practical functioning of criminal law. Along with positive assets, negative effects should be acknowledged. To shift the focus from negative to positive, it is essential to acknowledge the invoking challenging questions of the future. Some proposals for solving those are offered. In addition, through addressing the arising issues of whether robots could be considered responsible for their acts or omissions, criminal law could understand how the notion of guilty mind could be integrated into AI mechanisms and at the same time put in a new broader context. AI could move from the narrow understanding of intent towards a broader comprehension of human primitives. So, this paper attempts more than to just illustrate that AI has decreased the grade of automation and has increased the power and potential of the criminal law. It emphasizes that core criminal law institutes are prone to alteration when being in contact with AI. And the solutions that are essential for the future can be estimated only through deeply theoretical law. With the help of philosophy, criminology, and other social sciences that help to justify the current ideals and future moral orientation of the criminal law. Therefore, this study supports boosting the strategic debate about what the criminal law should be and do in the context of AI by any legal scholar interested in the future of the field.

This paper provides a brief theoretical review of how artificial intelligence (AI) affects criminal law, addressing both the positive and negative sides of its impact. By naming the top five current AI applications in criminal law, we display that a consistent part of AI influence is fundamental, substantial, and already has major effects. Then, the central contribution of this work is projecting the long-term AI effects on criminal law. At this point, while the negative impact may hardly be escaped, positive side effects could be promoted. However, to shift the focus from negative to positive, it is essential to acknowledge the invoking questions for the future.

8.2. Recommendations

The analysis we have carried out and the questions we put forward lead us to the preliminary conclusions: 1. Although AI is currently not written directly into criminal law, it has been the subject of research in legal studies and pursued in particular in terms of social reality and applied law. 2. Discourses on the impact of AI on criminal law as social practices, with a clear instrumental dimension, are related to the proper functioning of law and new AI techniques. Such discourses show that the classical principles of criminal law may be in conflict with newly developed AI technologies.

In conclusion, attempts at forecasting the future impact of AI on criminal law should not be based solely on technological developments. Forecasts of the change and directions of changes in criminal law have a limited life cycle. They are created

under the conditions of pluralistic theory and value relativism. Contemporary criminal legislation and criminal recourse with the instrumental nature of AI will change the perspective of examining these problems. These are complex issues where legal science theory should catch up with contemporary legal practice. These problems are slowly appearing in sustainable procedures, which should be a matter of research in law theory.

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