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Wrongful Convictions in the Age of Artificial Intelligence: Perspectives, Challenges and Research Directions

Rafał WIELKI
Univeristy of Opole
ORCID: 0000-0002-0703-5367
E-mail: rwielki@uni.opole.pl

Abstract

Wrongful convictions pose a significant challenge to the criminal justice system, undermining public trust and exposing systemic flaws. Previous experiences, notably the DNA revolution, have demonstrated the importance of technological innovation in mitigating the risk of such convictions. Currently, Artificial Intelligence (AI) emerges as the next stage in this evolution, offering tools for analyzing large datasets, detecting patterns of errors and biases, and supporting decision-making processes. This article discusses the potential of machine learning algorithms and language models in reducing the risk of wrongful convictions, as well as the barriers to their implementation, such as the necessity of digitizing case files, standardizing systems, and ensuring algorithmic transparency. We highlight the need for interdisciplinary research and the creation of a regulatory framework that will enable the deployment of AI in a manner consistent with the principles of due process. This technology has the potential to become a crucial tool in the future for minimizing the errors that lead to the conviction of the wrong person.

Keywords

criminal justice, forensic science, Artificial Intelligence, evidence, algorithms

Introduction

Wrongful convictions remain one of the most complex problems facing modern justice systems, with consequences that are both individual and systemic. Previous experiences, including the evidentiary revolution associated with the use of DNA testing, have demonstrated the fundamental importance of introducing technological innovation into criminal procedures for the protection of individual rights. We are currently on the threshold of another transformation Artificial Intelligence (AI) is becoming a driving force for change that can reshape the paradigm of criminal proceedings by offering data analysis capabilities on an unprecedented scale.

The development of machine learning algorithms, including Large Language Models (LLMs), opens up the prospect of automating analytical processes, such as interpreting case files, detecting patterns of procedural errors, or identifying biases within law enforcement practices. Technologies based on

Natural Language Processing (NLP) allow for the processing of thousands of pages of legal documents, protocols, and transcripts, making it possible to detect subtle, repetitive patterns that lead to judicial errors. In this context, AI emerges as the potential engine for a second evidentiary revolution this time in the area of procedural and systemic evidence.

The objective of this article is to delineate the directions of change brought about by the implementation of Artificial Intelligence in the analysis of criminal cases, with a particular focus on its role in minimizing the risk of wrongful convictions. This study attempts to assess both the opportunities presented by AI in improving the efficiency and quality of adjudication, and the barriers related to its implementation ranging from the necessity of full file digitalization and standardizing IT systems, to ethical, legal, and social issues, including the problem of algorithmic transparency and maintaining human oversight over the decision-making process. These considerations contribute to the broader discourse on the future of the criminal justice system, where technology can be both an opportunity to enhance fairness and efficiency and a source of new challenges requiring profound reflection.

The Core of the Problem

It is necessary, first, to clarify the definition of wrongful conviction, a term which will frequently recur in the following discussion. In academic theory, the most common terms used are wrongful conviction or miscarriage of justice. It appears that the former phrase is more appropriate due to its neutrality. Speaking of miscarriages of justice may suggest that the primary cause of the problem lies solely with the judiciary, whereas, in reality, every actor in the criminal process can contribute to the occurrence of this negative phenomenon. A wrongful conviction can be defined as a situation in which a person is convicted who is not the actual perpetrator of the crime, or where a person is convicted for a crime that never took place. The primary challenge lies in the nature of wrongful convictions themselves. Significant difficulties exist in determining precisely when a wrongful conviction has occurred, how to reconstruct the evidentiary reasoning that led to the conviction, and legal practice often approaches the reopening of legally concluded cases with resistance[1].

It is worthwhile to examine the main factors contributing to wrongful convictions. One such factor may be the conducting of an investigation aimed at securing a conviction rather than identifying the guilty party. This phenomenon can be caused by, for instance, the premature closure of the investigation, pressure from superiors, prejudice, or the so-called tunnel vision effect. Crucial factors also include the unconscientious interrogation of witnesses and crime victims, where the interrogator focuses on receiving the testimony itself, without due concern for the credibility of the information obtained (e.g., statements qualified by the functor "I think that" are treated as statements of the type "it was the case that" or selective emphasis is placed in transcripts/protocols), as well as the overinterpretation of expert examination results, particularly the toleration of categorical individual opinions without defining their area of uncertainty[2].

[1] M. Zalman, Measuring Wrongful Convictions [in:] G. Bruinsma, D. Weisburd (eds.), Encyclopedia of Criminology and Criminal Justice, New York 2012, p. 3047.
[2] J. Konieczny, Kryminalistyczny leksykon śledztwa, Opole 2020, p. 196.

Furthermore, the literature indicates that other contributing factors may include eyewitness testimonies where facts are poorly recalled, erroneous identification during live line-ups[3], false confessions, informants motivated by extraneous circumstances, such as an emotional relationship with the individual, or defense attorneys themselves, if they possess significant professional deficiencies[4]. It is also pointed out that cross-racial identification can be a problem sociological studies suggest that identifying individuals of a different race is particularly susceptible to the risk of error[5].

Moreover, researchers commonly hold the view that wrongful convictions are also influenced by questionable police practices, including the abuse or incompetence of some officers, manifested by poor treatment of victims and their families, lack of communication skills, or the use of dubious procedural practices such as cross-examination of witnesses (confrontation). Consequently, the authors point to another important concept beyond the aforementioned wrongful convictions and miscarriages of justice they add the failure to act appropriately and not doing enough[6].

The nearly thirty years of experience of non-governmental organizations dealing with wrongful convictions have allowed for the collection of significant data concerning cases where a wrongful conviction occurred. According to this data, the average age of a convicted person is 27 years. At the time of release, the average age of the wrongfully convicted is 43 years, meaning they spent an average of 16 years in correctional facilities. Among the wrongfully convicted, approximately 5% of individuals confessed to committing the acts, even though they did not actually do so. Additionally, about 10% of the wrongfully convicted were awaiting the execution of the death penalty. Case analysis showed that in 63% of cases, there was erroneous eyewitness identification. Errors related to forensic examinations occurred in 52% of cases, and false confessions appeared in 26% of cases. It should also be noted that over 25% of the released individuals did not receive any financial compensation for the time spent incarcerated[7].

In the context of analyzing the causes, attention should be drawn to the cascading nature of error, where an initial omission at the investigative stage increases the risk of improper conduct in subsequent phases of the process. The tendency to conduct an investigation aimed at quickly confirming a predetermined hypothesis, instead of establishing objective truth, often results not so much from bad faith as from the deep-seated presence of confirmation bias in the individuals conducting the proceedings. This cognitive error, combined with pressure from superiors to close the case quickly, generates the phenomenon of tunnel vision, which deliberately or unconsciously ignores evidence excluding the guilt of the accused. Furthermore, excessive reliance on forensic experts is a systemic problem. Tolerating the categorical opinions of experts, devoid of a definition of their area of uncertainty, masks a methodological gap and paralyzes the adversarial nature of the process, which is particularly dangerous when

[3] S. Poyser, J.D. Grieve, Miscarriages of Justice: What Can We Learn? [in:] A. Griffiths, R. Milne (eds.), The Psychology of Criminal Investigation: From Theory to Practice, Abingdon 2018, p. 20-21.

[4] S. Armbrust, S. Friedman, Causes of Wrongful Convictions [in:] G. Bruinsma, D. Weisburd (eds.), Encyclopedia of Criminology and Criminal Justice, New York 2012, p. 304.

[5] B.Garett, Judging Innocence, „Columbia Law Review" 2008, Vol. 108, p. 79.

[6] S.P. Savage, J. Grieve, S. Poyser, Putting Wrongs to Right: Campaigns against Miscarriages of Justice, „Criminology & Criminal Justice" 2007, Vol. 7, no. 1, p. 88.

[7] Innocence Project, Explore the Numers: Innocence Project's Impact, https://innocenceproject.org/exonerations-data/ [access: 12.11.2025].

professional deficiencies also exist on the side of defense attorneys. In this context, questionable police practices, such as abuse, lack of competence, or the use of witness confrontation, constitute not only a violation of standards but also a significant element that the authors describe as failure to act appropriately, actively contributing to systemic injustice.

The Genesis of the Fight for Justice

In 1992, at the initiative of Peter Neufeld and Barry Scheck, the Innocence Project was founded as a law clinic at the Cardozo School of Law (Yeshiva University in New York). The statutory goals of the organization are related to the effort to free individuals incarcerated who, in reality, did not commit the crimes for which they were convicted, to co-create reform of the justice system, and to prevent future errors in legal practice[8]. The organization's founders learned about DNA profiling methods through their work in the 1980s on the case of Marion Coakley a man wrongfully convicted of rape and robbery. Although the biological material was lost after his conviction, the team proved Coakley's innocence using other means and realized the power of DNA testing[9]. In essence, it is impossible to overlook that the utilization of achievements from the natural sciences, and thus genetic testing in criminal cases, was a milestone for forensic science and the administration of justice.

The beginnings of a broader consideration of the problem of wrongful convictions were not easy, due to the approach of decision-makers at the highest levels of state authority in the United States. As K.A. Findley points out, this is reflected in the words of Attorney General Edwin Meese, who served during the presidency of Ronald Reagan. He stated that "there are not many suspects who are innocent of a crime. If a person is innocent of a crime, they are not a suspect". Similarly, in the early 1990s, skeptics seemed to ignore the gravity of the problem and rejected the need for justice system reform aimed at preventing wrongful convictions. Views were prevalent that the risk of executing an innocent person was too small to constitute a significant voice in the debate on this form of punishment. It was also argued that the public had a high degree of confidence in criminal trials, partly because the Constitution offered unparalleled protection against the conviction of the innocent[10].

Over time, it began to be recognized that scientific evidence could serve not only the prosecution but also the defense, although this is certainly more visible in systems employing the adversarial model of procedure. Since the popularization of DNA testing in judicial practice, it has gradually begun to contribute to the overturning of final judgments in criminal cases where there were justified suspicions that the individual did not commit the crime and a high probability of wrongful conviction existed[11]. It is also worth noting that even if DNA testing does not provide an unambiguous answer to one of the "golden" questions

[8] Innocence Project, About, https://innocenceproject.org/about/ [access: 12.11.2025].
[9] I. Zakirova, Forensic Evidence in Wrongful Conviction Cases: From Being a Right-Hand Man to Becoming a Snake in the Grass, „Albany Law Review" 2018, Vol. 81, p. 882.
[10] K.A. Findley, Innocence Found: The New Revolution in American Criminal Justice [in:] S.L. Cooper (eds.), Controversies in Innocence Cases in America, Farnham 2014, p. 3-4.
[11] S.M. Kassin, D. Bogart, J. Kerner, Confessions That Corrupt: Evidence from the DNA Exoneration Case Files, „Psychological Science" 2012, Vol. 23, no. 1, p. 41-45.

of the investigation[12], it can still hold significant value in the context of factual findings[13]. It should be added that in the United States, 25 years of utilizing DNA testing led to the revision of 325 criminal cases[14].

As it turned out, the scale of the problem was (and remains) truly significant. The multitude of cases revealed by the Innocence Project led to the idea of expanding activities and creating a network of non-governmental organizations dealing with this issue. This was formalized in 1998 during a scientific conference at Northwestern University School of Law, attended by nearly thirty individuals exonerated from death row and over a thousand lawyers, scientists, and social activists. It was observed that universities should leverage the potential of law students, who could gain real, practical experience by conducting investigations to examine whether a wrongful conviction had occurred in a given case. The Innocence Project, established at Cardozo Law School, was presented as a model example of how law schools could train students in discovering new facts and evidence, allowing for the reopening of criminal proceedings[15]. This led to the significant growth of NGOs, which began to exert an increasing influence on the American justice system, gradually expanding their influence beyond the borders of the USA.

A significant contribution of the NGOs focusing on the issue of wrongful convictions was the establishment of The National Registry of Exonerations in the USA. This project is a collaboration between the Newkirk Center for Science & Society at the University of California Irvine, the University of Michigan Law School, and Michigan State University College of Law. It was founded in 2012 in partnership with the Center on Wrongful Convictions at Northwestern University School of Law. The Registry contains detailed information on all known cases of exoneration in the United States since 1989 cases where a person was wrongfully convicted of a crime and subsequently cleared of charges based on new evidence. The Registry also maintains a more limited database of known exoneration cases prior to 1989. The organization studies wrongful convictions their frequency, distribution, causes, costs, and consequences with the aim of educating policymakers and the public about the scale of the problem. Notably, the Registry is maintained based on publicly available information. The main goal is to reform the criminal justice system and reduce, if not eliminate, these tragic errors in the future. Attempts are also being made to sensitize police officers, prosecutors, defense attorneys, and judges to the issue of wrongful convictions, making them more inclined to reconsider the guilt of defendants who have already been convicted when new evidence emerges[16].

Indirectly, the activities of organizations focused on wrongful convictions have also contributed to the evolution of comparative forensic research. It has been observed that the traditional paradigm in comparative forensic examinations requires extensive reflection and change, as many of these examinations are conducted based on assumptions and methodologies lacking any scientific

[12] K. Ask, Fahsing I., Investigative Decision Making [in:] A. Griffiths, R. Milne (eds.), The Psychology of Criminal Investigation: From Theory to Practice, Abingdon 2018, p. 62.
[13] United States, Congress, Senate, Committee on the Judiciary, The Innocence Procection Act of 2002: Report Together with Minority Views, U.S.G.P.O., Washington 2002, p. 10.
[14] E. West, V. Meterko, Innocence Project: DNA Exonerations, 1989-2014; Review of Data and Findings from the First 25 Years, „Albany Law Review" 2016, Vol. 79, p. 717-795.
[15] J. McMurtrie, The Innocence Network: From Beginning to Branding [in:] S.L. Cooper (ed.), Controversies in Innocence Cases in America, Farnham 2014, p. 23.
[16] The National Registry of Exonerations, Our Mission, https://www.law.umich.edu/special/exoneration/Pages/mission.aspx [dostęp: 13.11.2025].

foundation. It was noted that this approach is largely responsible for wrongful convictions, and simultaneously, it was suggested that practice should be based on objective methods, citing the procedures binding in forensic genetics as a model[17]. For example, forensic odontology has been subjected to particular criticism, as no scientific evidence has been found to confirm that bite marks could serve as a reliable means of perpetrator identification[18]. A stark example justifying the necessity for change is the case of Kennedy Brewer from Mississippi[19]. Brewer was convicted in 1995 and sentenced to death for the murder and sexual assault of Christine Jackson. The body of the three-year-old victim was found in a nearby creek on Tuesday morning, the third day after her disappearance. The forensic odontologist, Dr. Michael West, examined the victim and stated in his report that he found nineteen human bite marks on the body. After taking a dental impression from Brewer, he concluded that the bite marks found on the body were "indeed and without doubt" inflicted by Kennedy Brewer. Most terrifyingly, subsequent investigations revealed that the marks on the body were not human bite marks (sic!), but the result of the actions of fauna in the water reservoir[20]. In light of the above, the previously mentioned need for discourse on the validation of forensic examinations cannot be challenged, primarily to prevent similar errors from contributing to such egregious miscarriages of justice. The creation of registries concerning wrongful convictions is essentially a collection that provides empirical data, which can be immensely important for enacting legislative changes, even in a broad systemic approach, based on scientific evidence. This enables a precise analysis of recurring patterns of error, allowing for a deeper understanding of the causes of errors in the justice system, and the existence of registries may also bring potential benefits from the perspective of a future where advanced Artificial Intelligence models will undoubtedly be used gradually more often for the needs of the administration of justice.

AI as the Next Milestone in Detecting Wrongful Convictions?

The changing economic and social reality, which we cannot avoid, necessitates finding our way in a world where Artificial Intelligence is present in an increasing number of life areas. It appears that we also cannot avoid a situation where the justice system will begin to utilize AI tools, which may be justified by the ease of work automation, relieving staff from the excess caseload "on the desk," and the increasing efficiency primarily of language models, which can provide an increasingly effective tool for verifying procedural complianceacross police, forensic, and legal procedures.

Just as the proliferation of DNA profiling marked an epochal breakthrough, AI today emerges as a technology of similar significance, capable of triggering a second evidentiary revolution in criminal cases. While DNA testing revolutionized the domain of physical evidence, advanced AI algorithms target the analysis of procedural and systemic evidence (i.e., how the error occurred).

[17] M.J. Sacks, J.J. Koehler, The Coming Paradigm Shift in Forensic Identification Science, „Science” 2005, Vol. 309, no. 5736, p. 892-895.
[18] National Research Council, Strengthening Forensic Science in the United States: A Path Forward, U.S. Department of Justice, Washington 2009, p. 175-176.
[19] Brewer v. State, 2002, 819 So.2d 1169 (Miss. 2002).
[20] R.R. Souviron, D.R. Senn, Bitemarks [in:] D.R. Senn, P.G. Stimson (eds.), Forensic Dentistry, CRC Press, Boca Raton 2010, p. 326-332.

The use of Natural Language Processing (NLP) models, capable of interpreting and categorizing legal language, allows for the analysis of vast datasets thousands of pages of case files, transcripts of interrogations, records of procedural actions, etc. This enables the detection of subtle yet recurring procedural patterns that herald the risk of error, such as irregularities related to the execution of specific actions, and perhaps language models will also be able to notice logical errors in the reasoning undertaken by law enforcement or the judiciary. The use of a Large Language Model (LLM) can also be effective in automating the interpretation of relevant data, making legal documents amenable to large-scale analysis.

In this area, the results of current empirical studies on the use of language models in the context of analyzing wrongful conviction cases appear promising, as initial tests have already been implemented. The analytical capabilities of LLMs include analyzing language in legal documents to detect biases, examining patterns in police practices, and cross-comparing details between cases to identify systemic problems even at the current stage of development[21].

Other studies indicate that the application of Machine Learning (ML) and Natural Language Processing (NLP) in the justice system can help optimize the efficiency and accuracy of criminal adjudication. The primary research goal was to estimate whether AI intervention could effectively reduce the duration of trials, minimize errors, and limit wrongful convictions, if the AI were granted access to court files to generate parts of procedural documents and suggest decisions to judges. This implementation aimed at reducing manual labor through the automation of preliminary case processing and evidence analysis. Empirical results showed a significant positive impact of AI technology on the justice system. It was found that AI-assisted trials reduced the average case duration by 40%. Most importantly, a 55% reduction in the rate of misjudgments was noted compared to traditional methods. Furthermore, many errors resulting from judges relying solely on their own experience and knowledge, which could lead to bias in the assessment of case facts or inconsistency in ruling on similar cases, were eliminated. The AI system helps eliminate these errors by providing more comprehensive comparisons of evidence and legal suggestions, thereby reducing the risk of errors resulting from human judgment[22]. The results of these studies confirm previously published assumptions that such tools, which organize work on files, can be useful and increase the efficiency of law enforcement agencies[23].

In yet another work, the potential application of Artificial Intelligence in the justice system is proposed as a strategic mechanism aimed at actively preventing key factors leading to wrongful convictions. AI's potential in reducing miscarriages of justice is based on its ability to evaluate large amounts of information and provide the identification of specific patterns that might be unnoticed by humans, thereby minimizing the impact of subjective biases in the decision-making process. Machine learning algorithms can be applied to criminal case data to systematically search and detect specific patterns and trends that may indicate

[21] A. Ibrahim, H. Dao, T. Shah, Innocence Discovery Lab - Harnessing Large Language Models to Surface Data Buried inWrongful Conviction Case Documents, „Wrongful Conviction Law Review" 2024, Vol. 5, no. 1, p. 104.

[22] Q. Chen, Improving the Trial Efficiency of Criminal Cases with the Assistance of Artificial Intelligence, „Discover Artificial Intelligence" 2025, Vol. 5, no. 1. p. 1-14.

[23] R. Wielki, Use of Artificial Intelligence in Law Enforcement and Criminal Justice [in:] A. Gryszczyńska (ed.), Legal Aspects of Artificial Intelligence, Warsaw 2024, p. 165-169.

areas of higher risk for erroneous verdicts. Furthermore, advanced ML computations allow for insights into overlooked evidence, including statements gathered from witnesses and data patterns found during forensic investigations. The starting point is the identification of previous wrongful conviction cases and the involvement of key stakeholders in the research process. The results indicate that the greatest opportunities for development lie in improving the accuracy and efficiency of actions in areas such as witness identification, evidence analysis, and supporting decision-making processes. At the same time, it was emphasized that the implementation of AI requires considering both the strengths and weaknesses of the technology and future trends, including issues of data quality, privacy protection, and ethics. The need to develop standards and guidelines regulating the use of AI in the justice system was simultaneously highlighted, including rules concerning data acquisition and processing, and mechanisms for accountability and transparency of decisions[24].

Scientific work on Artificial Intelligence in the study of wrongful conviction cases is also moving toward supporting non-governmental organizations that analyze cases in the post-conviction phase. Their goal is to support and streamline decision-making processes because as estimates indicate innocence organizations receive between 20 and 2,400 requests for assistance annually, and therefore must strategically allocate limited resources to cases with the highest chance of successful exoneration. Research efforts aim to utilize data from the National Registry of Exonerations to leverage patterns of features associated with successful, previous exoneration cases for decision-making. As observed, the use of this data and the creation of decision trees based on it can potentially detect previously unobserved trends and facilitate more informed decisions about accepting a case with the greatest chance of success, thereby streamlining the functioning of innocence organizations[25].

Of course, this does not mean that the implementation of Artificial Intelligence tools in criminal proceedings should be approached uncritically and overly optimistically, even if the goal is noble and aims to reduce cognitive errors and the risks associated with wrongful conviction. The risks associated with the implementation of algorithms in criminal proceedings would warrant separate consideration, which could form the basis of a separate article; however, due to the framework limitations of this text, as well as the objectives set for this study, attention must be limited to a few remarks. The observation of many limitations fully deserves approval. Risks related to the implementation of Artificial Intelligence in the justice system include the problem of the so-called justice gap between human and AI, which raises questions about compliance with the right to due process. Research suggests that human judges demonstrate greater fairness than the forecasted decisions of AI systems, which may stem from a lack of communication and understanding between the parties and the technology. This deficit may weaken the sense of procedural justice, which is just as critical as the outcome of the proceeding. The introduction of AI into court processes may shift the emphasis from the flexible assessment of circumstances to standardization and data correlation, leading to "codified justice". Automated

[24] A.L. Bhatti, S.A. Shah, A.R. Bhatti, S.A. Jamali, Preventing Miscarriage of Justice Using Artificial Intelligence in Pakistan, „Qlantic Journal of Social Sciences" 2024, Vol. 5, no. 3, p. 256-257.

[25] K. Kostyszyn, C.J. Wiedemann, R.M. Bermejo, A. Paige, K.W. Kalb-DellaRatta, S.E. Brennan, A Computational Decision-Tree Approach to Inform Post-Conviction Intake Decisions, „The Wrongful Conviction Law Review" 2024, Vol. 5, no. 1, p. 80-103.

systems lack the capacity to understand values, motivations, and social context, which is crucial in criminal cases. Challenges also include high costs of technology implementation, the risk of excessive judicial dependence on AI recommendations, and the "black box" problem, which hinders the assessment of algorithmic credibility. The lack of transparency can undermine confidence in the legal system; thus, trust in AI in the judiciary requires maintaining a balance between innovation and the protection of human rights[26].

Nevertheless, the direction of change in the use of Artificial Intelligence in the justice system points to the growing importance of technology in legal data analysis and supporting decision-making processes. Current empirical research confirms that language models and machine learning algorithms can significantly improve the efficiency of proceedings, reducing case duration and minimizing adjudicatory errors. However, despite promising results, the path to recognizing AI as a milestone in minimizing the risk of wrongful convictions remains long. This requires not only the improvement of algorithms but, above all, the creation of solid infrastructural foundations, such as the full digitalization of court files, the standardization of IT systems, and ensuring data interoperability on a national scale.

The future may bring the use of AI as a strategic tool in identifying patterns leading to judicial errors, both at the investigation stage and in the post-conviction phase. The potential is enormous from the automatic analysis of documents and detection of bias to supporting organizations dealing with wrongful convictions in selecting cases with the highest chances of exoneration. In the longer term, it is possible to implement systems capable of ongoing analysis of thousands of files to detect repetitive procedural errors, which could revolutionize quality control mechanisms for proceedings. However, realizing these possibilities requires the parallel development of legal regulations, ethical standards, and accountability mechanisms that will guarantee transparency and control over AI-assisted decisions.

It seems fair to formulate the conjecture that Artificial Intelligence may become the engine of evolution in matters concerning wrongful convictions, but its effective implementation depends on the comprehensive preparation of the legal and technological system. Research in this area should be intensified, focusing on creating solutions that take into account local legal and social conditions, while simultaneously ensuring high data quality, privacy protection, and public trust. Only after these conditions are met will it be possible to fully utilize the potential of AI in minimizing the risk of wrongful convictions and introducing real post factum detection mechanisms. The research direction itself serves to support efforts to minimize the risk of errors in criminal proceedings, which in extreme situations can lead to the conviction of a person who had nothing to do with the commission of the crime.

Conclusions

Wrongful convictions remain one of the most dramatic manifestations of the fallibility of the justice system, and their consequences extend beyond individual tragedies, impacting public trust in state institutions. Previous experiences, including the evidentiary revolution associated with the use of DNA

[26] A. Alqatawna, Utilizing Artificial Intelligence (AI) in Criminal Justice and Policing, „Comparative Law Review” 2024, Vol. 30, p. 14-17.

testing, have shown that technological innovations can become a tool for real change toward greater reliability in criminal procedure. Today, Artificial Intelligence (AI) emerges as the next stage in this evolution, offering data analysis capabilities on a scale previously unattainable. Its application in identifying patterns of errors, detecting biases, and supporting decision-making processes opens the prospect of reducing the risk of judicial errors both during proceedings and in the post-conviction phase.

However, the path to fully realizing AI's potential is long and requires fulfilling a series of conditions. Digitalization of court files, standardization of IT systems, and the creation of legal and ethical frameworks that ensure transparency and control over algorithms are of key importance. Without these foundations, the implementation of AI in judicial practice may lead to new threats, such as "codified justice", the loss of an individualized approach to cases, or the risk of excessive dependence on technology recommendations. In this context, maintaining human oversight over the decision-making process is essential, as is the development of algorithmic explainability mechanisms that allow for assessing their reliability and consistency with the principles of due process.

Further research should focus on creating AI models capable of analyzing not only quantitative data but also the social and legal context indispensable in criminal cases. It is also important to develop tools that support innocence organizations, which can use algorithms to select cases with the highest potential for exoneration. In the long term, Artificial Intelligence may become part of a preventive system, identifying risk factors at an early stage of proceedings, which would be a step toward minimizing errors before they lead to irreversible consequences. It must be acknowledged (at this stage) that AI is not yet a milestone in the fight against wrongful convictions, but its potential is significant and requires the intensification of interdisciplinary research. Collaboration among lawyers, computer scientists, and forensic experts, combined with the development of regulations and ethical standards, can create the foundation for technology that will not only improve the efficiency of the justice system but also strengthen its core principles justice, reliability, and the protection of human rights.

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