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The Role of Artificial Intelligence in Criminal Investigations and Justice: Ethical, Legal and Practical Implications

Mohammad Hussein Mohammad AL-Ahmad[1], Zaid Ibrahim Yousef Gharaibe[2], Tayseer Ali Khalaf Al-Momani[3], Farouq Ahmad Faleh Alazzam[4], Emran Abdulsalam Alzubi[5], Baker Akram Falah Jarah[6]

Abstract

This study aims to systematically evaluate the ethical, legal, and practical implications of integrating Artificial Intelligence (AI) into criminal investigations and the justice system. By employing a mathematical modeling approach, we seek to provide insights that assist policymakers and stakeholders in making informed decisions about AI deployment in these sensitive areas. The research focuses on assessing four AI applications within the criminal justice system. A Multi-Criteria Decision Analysis (MCDA) framework was utilized to evaluate the AI applications. Each criterion was assigned a weight reflecting its relative importance. The AI applications were scored against these criteria on a scale of 1 (lowest) to 5 (highest). Weighted scores were calculated by multiplying each criterion's score by its assigned weight and summing the results for each application. The MCDA revealed that Natural Language Processing for Document Analysis (NLPDA) is the most favorable AI application, achieving the highest weighted score of 4.5 out of 5. NLPDA demonstrated a strong balance between high effectiveness and adherence to ethical and legal standards, along with positive public trust and cost efficiency. Predictive Policing Algorithms (PPA) and Automated Decision-Making Tools (ADM) both scored 2.75, indicating moderate effectiveness but significant ethical and legal challenges. Facial Recognition Systems (FRS) scored the lowest at 2.65, primarily due to substantial ethical and legal concerns that diminish public trust despite high effectiveness.

Keywords: *Artificial Intelligence, Criminal Investigations, Justice System, Ethical Implications, Legal Compliance, Multi-Criteria Decision Analysis, Natural Language Processing, Predictive Policing, Facial Recognition, Automated Decision-Making.*

Introduction

The Emergence of Artificial Intelligence in Criminal Investigations and Justice

The advent of Artificial Intelligence (AI) has revolutionized various sectors, and the criminal justice system is no exception (Alshehadeh et al., 2025). AI technologies are increasingly being integrated into criminal investigations and judicial processes to enhance efficiency, accuracy, and effectiveness (Hailat et al., 2023). Law enforcement agencies employ AI-driven tools to analyze vast amounts of data, predict crime hotspots, identify suspects, and even assist in judicial decision-making (Jarah, 2024). For instance, Predictive Policing Algorithms (PPA) analyze historical crime data to forecast potential criminal activities, allowing for proactive deployment of resources (Jarah et al., 2025). Facial Recognition Systems (FRS) aid in identifying suspects by matching facial features against databases (Jarah, 2025; Obeidat & Al-Shammari, 2023). Automated Decision-Making Tools (ADM) assist judges

[1] Assistant Professor of Criminal Law, Faculty of Law, Amman Arab University, Amman, Jordan, mmohammadalahmad1985@gmail.com, m.alahmad@aau.edu.jo.,
[2] Faculty of Law, Jadara university. Irbid, Jordan, z.garaibeh@jadara.edu.jo - https://orcid.org/0000-0002-3143-7753..
[3] Accounting Department, Faculty of Business, Ajloun National University, Ajloun, Jordan, Momani555@yahoo.com.

[4] Associate Professor of commercial law, Department of private law, United Arab Emirates University, Al-Ain, United Arab Emirates, falazzam495@gmail.com, farouqafa@uaeu.ac.ae, https://orcid.org/0000-0001-7407-4828.

[5] College of Business Administration, Law Department, Northern Border University, EMRAN.ALZUOBI@nbu.edu.sa.

[6] Faculty of Business, Department of Accounting, Ajloun National University, Ajloun, Jordan, B.Jarah@anu.edu.jo, https://orcid.org/0000-0001-5257-0118, (Corresponding Author)

and parole boards by providing risk assessments of offenders (Tubishat et al., 2024). Additionally, Natural Language Processing for Document Analysis (NLPDA) streamlines the examination of legal documents and evidence, expediting case resolutions. The role of artificial intelligence (AI) in criminal investigations and justice has become increasingly significant. Here are four main aspects of how AI is shaping these fields (table 1).

Table 1. Main Role of Artificial Intelligence in Criminal Investigations and Justice

Main role	Characteristics
Data Analysis and Pattern Recognition	AI excels in analyzing vast amounts of data quickly and identifying patterns that might be missed by human investigators. This capability is used to sift through data like phone records, emails, and social media to detect suspicious activities or connections. AI algorithms can also help in predictive policing by forecasting crime hotspots and potential future offenses
Facial Recognition and Surveillance	AI-driven facial recognition technology is employed extensively by law enforcement agencies to identify individuals in crowds or match faces to a database of suspects. This technology can enhance real-time surveillance capabilities, thereby speeding up the process of catching criminals and preventing crimes
Forensic Analysis	AI aids in various forensic applications such as fingerprint analysis, DNA sequencing, and enhancing video and audio evidence. AI algorithms can automate the labor-intensive processes of matching fingerprints or analyzing genetic material, thus providing faster and more accurate results than traditional methods
Decision Support Systems	AI is increasingly being integrated into decision support systems within the justice system. These systems help in assessing the risk associated with releasing individuals on parole and predicting the likelihood of reoffending. Additionally, AI can support judges and juries by providing simulations and reenactments based on evidence or by offering detailed analytics about past cases with similar circumstances

The integration of AI into the justice system promises numerous benefits. It offers the potential to reduce human error, minimize biases inherent in human decision-making, and process information at speeds unattainable by humans alone (Alrashdan et al., 2025; Rawls, 2023). By leveraging machine learning algorithms and data analytics, AI can uncover patterns and insights that might remain hidden in traditional investigative methods. This technological advancement aims to enhance public safety, optimize resource allocation, and ultimately contribute to a more efficient justice system (AlJabali et al., 2025; Alqudah et al., 2024).

Ethical, Legal, and Practical Implications of AI Integration

Despite the promising advantages, the deployment of AI in criminal investigations and justice raises significant ethical, legal, and practical concerns (Mousa, 2023). Ethically, there is apprehension about the potential for AI systems to perpetuate or even exacerbate existing biases (Rshdan et al., 2025; Messarra, 2023). For example, if a predictive policing algorithm is trained on historical data that reflects biased policing practices, it may continue to target certain communities disproportionately (Dahiyat, 2007; Twam & Khalil, 2023). Facial Recognition Systems have faced criticism for inaccuracies, especially in identifying individuals from minority groups, leading to wrongful accusations and infringements on civil liberties (Alazzam et al., 2026; Al Zou'bi, 2023).

Legally, the use of AI introduces complex challenges regarding compliance with existing laws and regulations (Gharaibeh et al., 2024). Questions arise about accountability when AI systems make erroneous decisions whether the responsibility lies with the developers, users, or the AI itself (Alhashel & Alsabah, 2023). Privacy concerns are paramount, particularly with systems that collect and analyze personal data (Abdulnabi et al., 2025). There is a pressing need to ensure that AI applications adhere to legal standards such as the rights to privacy, fair trial, and protection against unlawful searches and seizures (Jarah et al., 2025; Bataineh, 2023).

Practically, the implementation of AI technologies requires substantial investment, not only financially but also in terms of training personnel and establishing new protocols. The cost-efficiency of AI tools must be weighed against their benefits (Alkhawaldeh et al., 2025; Al-masri et al., 2024). Moreover, public trust plays a crucial role in the acceptance of AI in the justice system. Skepticism and

fear of surveillance can undermine the effectiveness of AI initiatives. Ensuring transparency in how AI systems operate and make decisions is essential to maintain public confidence (Gharaibeh, 2024; Hawamdeh, 2023).

In summary, while AI holds the potential to transform criminal investigations and the justice system positively, it is imperative to address the ethical dilemmas, legal challenges, and practical considerations that accompany its integration. A balanced approach that maximizes benefits while mitigating risks is necessary for the responsible use of AI in this critical domain.

Literature Review

Ethical And Legal Foundations Of Ai In Criminal Justice

The ethical and legal dimensions of AI integration into criminal justice systems are critical areas of study. Shevchuk et al. (2023) examine the potential of information systems to support the combat against iatrogenic criminal offenses, highlighting the need for clear ethical guidelines and robust legal structures to oversee these technologies. Similarly, Kaplina et al. (2023) delve into the application of AI in criminal procedure, discussing the alignment of AI systems with fundamental human rights and the various legal challenges that arise, such as privacy concerns and the potential for systemic bias.

Further exploring the legal landscape, Buribayev et al. (2020) focus on the legislative regulation required for environmental crimes, demonstrating how AI can both aid and complicate legal processes. Altunjan (2021) and Darcy (2021) discuss international law's engagement with AI, particularly in handling cases of sexual violence and aggression, stressing the gap between current legal frameworks and the capabilities offered by AI. On the practical side, Zhyvtsova (2023) outlines the development prospects of AI within the legal field, forecasting significant advancements in document analysis and case management. Dakalbab et al. (2022) review the effectiveness of AI in crime prediction, noting both the potential for increased efficiency and the risks associated with predictive policing, such as reinforcing existing societal biases.

Merkulova et al. (2024) provide a specific example of AI's application in criminal liability related to road safety and transport operations, indicating how AI can enhance the accuracy and speed of legal processes in specialized areas. Additionally, Koenig et al. (2021) and Wang et al. (2024) explore the use of new technologies in international crime investigations, suggesting that AI can play a pivotal role in enhancing the effectiveness of international justice systems but requires careful management to avoid undermining legal principles.

The Discussion of AI In Criminal Justice

The discussion of AI in criminal justice must address the balance between technological innovation and ethical constraints. The literature reveals a consensus on the necessity for transparency and accountability in AI applications to maintain public trust and adherence to ethical norms. The work by Al Azzam et al. (2023) on e-commerce development suggests that economic principles of security and efficiency could inform similar approaches in AI-driven criminal justice systems, ensuring that technological advancements do not override ethical considerations.

Furthermore, the international perspective, as discussed by Altunjan (2021) and Darcy (2021), underscores the need for international legal standards to evolve in response to AI's capabilities, particularly concerning crimes that transcend national boundaries.

Enhancing legal frameworks is essential to support the effective integration of AI into criminal justice. Kmetyk-Podubinska (2020) argues for the importance of legal modeling as a modern method in constitutional and legal research, which could be pivotal in developing AI-specific regulations. The studies by Buribayev et al. (2020) and Wang et al. (2024) emphasize the necessity for legal reforms that specifically address the unique challenges posed by AI, such as data privacy, algorithmic transparency, and the potential for biased outcomes.

In conclusion, the literature suggests a multidimensional approach to integrating AI into criminal justice, combining ethical oversight, legal adaptation, and practical deployment to maximize benefits while minimizing risks. This requires ongoing dialogue among policymakers, legal experts, technologists, and the public to ensure that AI serves as a tool for enhancing justice rather than compromising it.

Methodology

Overview of Multi-Criteria Decision Analysis (MCDA)

This study employs the Multi-Criteria Decision Analysis (MCDA) framework to evaluate the ethical, legal, and practical implications of integrating Artificial Intelligence (AI) into criminal investigations and the justice system. MCDA is a decision-making tool that facilitates the assessment of alternatives based on multiple, often conflicting, criteria. It is particularly useful in complex scenarios where decisions cannot be made based on a single criterion, such as cost or effectiveness alone.

MCDA allows for a systematic and transparent evaluation by:

- Identifying Relevant Criteria: Determining the key factors that impact the decision-making process.
- Assigning Weights: Reflecting the relative importance of each criterion.
- Scoring Alternatives: Evaluating each option against the criteria.
- Calculating Weighted Scores: Aggregating the scores to determine the most favorable alternative.

By incorporating both quantitative and qualitative data, MCDA provides a structured approach to compare AI applications, considering their multifaceted impacts on the justice system.

Application of MCDA in Evaluating AI Applications in Criminal Justice

Five critical criteria were identified to assess the AI applications:

1. Effectiveness (E): The degree to which the AI application improves the efficiency and accuracy of criminal investigations and judicial processes.
2. Ethical Considerations (Eth): Compliance with ethical principles such as fairness, justice, privacy, and non-discrimination.
3. Legal Compliance (L): Adherence to laws, regulations, and legal precedents governing the use of technology in law enforcement.
4. Cost Efficiency (C): The financial viability, including implementation and operational costs relative to the benefits provided.
5. Public Trust (PT): The level of confidence and acceptance by the public regarding the use of the AI application.

Research Results

Defining the Criteria

The integration of Artificial Intelligence (AI) into criminal investigations and the justice system offers significant potential benefits, including improved efficiency and accuracy. However, it also raises ethical, legal, and practical concerns. To systematically evaluate these factors, we will use Multi-Criteria Decision Analysis (MCDA) as our mathematical modeling method. MCDA allows for the assessment of multiple conflicting criteria, making it suitable for this complex issue.

We will evaluate AI applications based on the following criteria:

1. Effectiveness (E): Improvement in solving crimes and reducing investigation times.
2. Ethical Considerations (Eth): Compliance with moral principles, including fairness and respect for privacy.
3. Legal Compliance (L): Adherence to laws and regulations.
4. Cost Efficiency (C): Financial implications, including implementation and maintenance costs.
5. Public Trust (PT): The level of public confidence in the use of AI.

Assign weights to each criterion based on their importance on a scale of 0 to 1, ensuring the total weight sums up to 1.

Effectiveness (E): 0.30

Ethical Considerations (Eth): 0.25

Legal Compliance (L): 0.20

Cost Efficiency (C): 0.15

Public Trust (PT): 0.10

We will evaluate the following AI applications:

1. Predictive Policing Algorithms (PPA)
2. Facial Recognition Systems (FRS)
3. Automated Decision-Making Tools (ADM)
4. Natural Language Processing for Document Analysis (NLPDA)

Modeling Process

Assign scores from 1 (lowest) to 5 (highest) for each criterion (table 2).

Table 2. Scoring Each Application Against Criteria

Criteria	Weight	PPA	FRS	ADM	NLPDA
Effectiveness (E)	0.3	4	5	3	5
Ethical Considerations (Eth)	0.25	2	1	3	4
Legal Compliance (L)	0.2	2	1	3	5
Cost Efficiency (C)	0.15	3	4	2	4
Public Trust (PT)	0.1	2	1	2	4

Explanation of Scores:

- PPA: Effective but raises ethical and legal concerns due to potential biases.
- FRS: Highly effective but has significant ethical and legal issues, particularly regarding privacy and accuracy.
- ADM: Moderately effective with ethical and legal challenges.
- NLPDA: Highly effective with fewer ethical and legal issues.

Calculate the weighted score for each application:

1. PPA:

- Weighted Score = (0.30×4) + (0.25×2) + (0.20×2) + (0.15×3) + (0.10×2)
- Weighted Score = 1.2 + 0.5 + 0.4 + 0.45 + 0.2 = 2.75

2. FRS:

- Weighted Score = (0.30×5) + (0.25×1) + (0.20×1) + (0.15×4) + (0.10×1)
- Weighted Score = 1.5 + 0.25 + 0.2 + 0.6 + 0.1 = 2.65

3. ADM:

- Weighted Score = (0.30×3) + (0.25×3) + (0.20×3) + (0.15×2) + (0.10×2)
- Weighted Score = 0.9 + 0.75 + 0.6 + 0.3 + 0.2 = 2.75

4. NLPDA:

- Weighted Score = (0.30×5) + (0.25×4) + (0.20×5) + (0.15×4) + (0.10×4)

- Weighted Score = 1.5 + 1.0 + 1.0 + 0.6 + 0.4 = 4.5

4.3. Mideling Results

NLPDA scores the highest (4.5): This application is highly effective and has fewer ethical and legal issues compared to others. It also enjoys higher public trust (Fig.1).

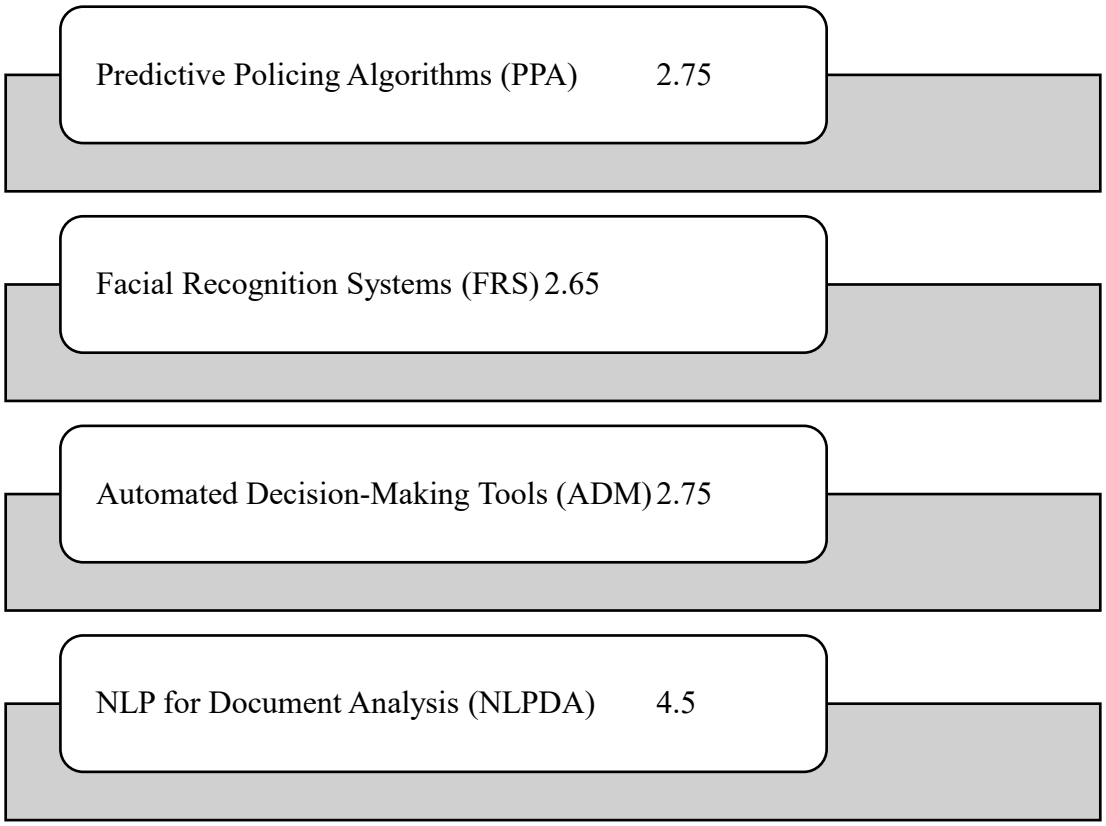

Figure 1. Results Summary

The MCDA model suggests that Natural Language Processing for Document Analysis (NLPDA) is the most favorable AI application in criminal investigations and justice, balancing effectiveness with ethical, legal, and public trust considerations. Policymakers and law enforcement agencies should prioritize AI tools like NLPDA while addressing the ethical and legal challenges associated with other applications.

Recommendations

Based on the findings of the Multi-Criteria Decision Analysis, several strategic recommendations emerge for integrating Artificial Intelligence (AI) into criminal investigations and the justice system. Firstly, it is advisable for law enforcement agencies and judicial bodies to prioritize the adoption of Natural Language Processing for Document Analysis (NLPDA). This AI application has demonstrated high effectiveness with minimal ethical and legal concerns, offering a favorable balance between efficiency and compliance. By investing in NLPDA technology and providing adequate training for personnel, agencies can enhance their ability to process legal documents and evidence more efficiently, thereby improving case resolutions without compromising ethical standards or public trust.

Secondly, there is a pressing need to enhance the ethical and legal frameworks governing Predictive Policing Algorithms (PPA) and Automated Decision-Making Tools (ADM) before considering their broader implementation. While these AI applications offer potential benefits in improving efficiency and predictive capabilities, they present significant ethical and legal challenges, particularly concerning potential biases and transparency issues. It is crucial to develop and enforce robust ethical guidelines to prevent biases and ensure fairness in AI-assisted decision-making processes. Additionally, ensuring

these technologies operate within clear legal boundaries is essential to uphold justice and protect individual rights. This can be achieved by incorporating explainable AI techniques to improve transparency and conducting regular audits to ensure compliance with ethical and legal standards. Engaging with stakeholders, including community groups and civil rights organizations, can also help build public trust and acceptance by addressing concerns and demonstrating a commitment to ethical practices.

Thirdly, exercising caution with the deployment of Facial Recognition Systems (FRS) is recommended due to substantial ethical and legal concerns associated with their use. Issues such as privacy infringements, potential for surveillance abuse, and misidentification risks, especially among minority groups, necessitate limiting the use of FRS until technological advancements and regulatory frameworks can adequately address these challenges. Law enforcement agencies should consider halting the deployment of FRS in sensitive areas and instead invest in research aimed at improving the accuracy and reducing biases of these systems. Developing clear legal frameworks that govern the use of FRS, ensuring transparency in their operation, and obtaining public consent where applicable are essential steps to mitigate risks and maintain public trust.

To support the responsible integration of AI in criminal justice, several operational recommendations and policy guidelines are proposed. Developing comprehensive ethical guidelines is imperative to govern AI use in this context. Establishing clear ethical principles promotes fairness, accountability, and respect for human rights, thereby preventing misuse and abuse of AI technologies. This involves forming ethics committees comprising legal experts, technologists, ethicists, and community representatives to create guidelines that address bias mitigation, transparency, and accountability. Mandating ethical training for AI developers and users within the justice system is also essential to ensure adherence to these principles.

Strengthening legal compliance mechanisms is another critical recommendation. Updating and enforcing legal regulations ensure that AI applications comply with existing laws and adapt to new challenges posed by technological advancements. Reviewing current laws to identify gaps related to AI use and enacting new legislation addressing data protection, algorithmic transparency, and accountability are necessary steps. Implementing oversight bodies to monitor compliance further reinforces legal adherence and provides a framework for addressing violations.

Enhancing transparency around AI use and involving the public in decision-making processes are vital for building public trust and acceptance. Public engagement can be fostered through forums and consultations to gather input, address concerns, and educate citizens about the benefits and limitations of AI technologies. Publishing reports and findings related to AI use and its impacts contributes to transparency and allows for informed public discourse. Making AI algorithms and decision-making processes as transparent as possible, without compromising security, helps demystify AI technologies and alleviate public apprehension.

Investing in training and capacity building ensures that all stakeholders involved in AI implementation are equipped with the necessary knowledge and skills. Providing comprehensive training programs for law enforcement officers, legal professionals, and AI developers—which include modules on ethics, legal compliance, and technical proficiency—is essential. Promoting continuous learning enables stakeholders to keep pace with technological advancements and apply AI technologies effectively and responsibly.

Encouraging interdisciplinary collaboration is also recommended to facilitate a holistic approach to AI integration. Promoting collaboration between technologists, legal experts, ethicists, and social scientists helps identify and address the multifaceted challenges associated with AI in criminal justice. Establishing interdisciplinary working groups or task forces, encouraging joint research projects, and integrating diverse perspectives into policy development can enhance the effectiveness and acceptability of AI applications.

Implementing robust oversight and accountability measures is crucial to monitor AI applications and hold entities accountable for misuse. Enhancing accountability deters unethical practices and provides recourse for individuals affected by AI decisions. This can be achieved by setting up independent oversight bodies or regulators, establishing clear accountability structures and consequences for non-compliance, and conducting regular audits and assessments of AI systems to ensure they operate within ethical and legal boundaries.

Finally, promoting responsible innovation and research supports the development of AI technologies aligned with ethical and legal standards. Supporting research that focuses on improving AI fairness, transparency, and effectiveness drives innovation that benefits society while minimizing risks. Funding research projects, collaborating with academic institutions and research organizations, and encouraging the development of open-source AI tools contribute to responsible innovation and allow for greater scrutiny and improvement of AI technologies.

In conclusion, these recommendations emphasize the importance of a proactive and collaborative approach to integrating AI into the criminal justice system. By prioritizing applications like NLPDA, addressing the ethical and legal challenges associated with other AI technologies, and implementing comprehensive operational guidelines, stakeholders can leverage the benefits of AI while upholding the principles of justice and maintaining public trust. This balanced approach ensures that AI serves as a tool to enhance the justice system without compromising the ethical and legal foundations upon which it stands.

Discussions

Addressing Ethical Challenges and Human Rights Considerations

The integration of artificial intelligence (AI) into criminal justice systems continues to be a topic of significant ethical and legal debate. Alazzam et al. (2023) discuss the broader implications of digitalization and legal compliance in e-commerce, which parallels the need for stringent regulatory frameworks in AI's criminal justice applications, as emphasized by Shepitko et al. (2024) in their study on AI in crime counteraction. Additionally, Haltsova et al. (2021) underscore the role of criminal law in protecting human rights, which is critical when considering AI's impact on privacy and individual freedoms.

Kaplina et al. (2023) address AI systems in criminal procedure, focusing on the balance between technological advancement and fundamental human rights, a sentiment echoed by Yemets et al. (2024), who explore the international legal aspects of combating organized crime through cooperation, highlighting the global scale of legal integration needed for AI tools.

On an administrative level, Semeniuk and Horbach-Kudria (2024) articulate the human rights-based approach necessary for police operations, which is crucial for deploying AI technologies ethically. Gridina (2020) focuses on the administrative and legal regulation against gender-based violence, providing insights into how AI can be structured to support sensitive areas without infringing on rights.

Mahaseth and Bansal (2021) discuss the evolution of international criminal law in response to global changes, including technological advancements, suggesting that international legal frameworks must adapt to include AI's capabilities and challenges. Dikhtiievskyi (2022) contributes to this discussion by addressing the legal means to ensure citizens' rights during martial law, underscoring the delicate balance required when AI is used in high-stake legal environments.

The Discussion Around Implementing AI

The discussion around implementing AI within legal frameworks stresses the importance of transparency and explainability. Capuano et al. (2022) delve into explainable AI in cybersecurity, demonstrating the broader application of such principles in criminal justice to maintain public trust and legal integrity. This is crucial for the acceptance and effectiveness of AI systems, as public and professional trust hinges on understanding how AI decisions are made.

Shepitko et al. (2024) provide a comprehensive view of moving from legal regulation to practical implementation, emphasizing the need for clear, executable guidelines that ensure AI tools are used responsibly and ethically in crime counteraction. Kopytko and Sylkin (2023) also reflect on this by modeling information support systems for combating corruption, another area where AI can play a significant role if properly regulated.

The international dimension of AI in criminal justice is critically explored by Vartyletska and Shapovalova (2024), who review the legal standards and practices of European countries in combating domestic and gender-based violence. Their findings suggest that international collaboration and standardization of AI applications could enhance the effectiveness of legal systems while respecting cultural and legal diversities.

Furthermore, Yemets et al. (2024) and Mahaseth and Bansal (2021) highlight the importance of international cooperation in developing legal frameworks that can handle the complexities introduced

by AI, particularly in combating organized crime and adjusting to the evolving landscape of international criminal law.

In conclusion, the integration of AI into criminal justice systems demands a multi-faceted approach that addresses ethical, legal, administrative, and international challenges. By fostering an environment of transparency, ethical adherence, and international cooperation, AI can significantly enhance the effectiveness and fairness of criminal justice systems worldwide.

Conclusions

Summary of Key Findings

The comprehensive evaluation using the Multi-Criteria Decision Analysis (MCDA) framework has provided valuable insights into the role of AI in criminal investigations and justice. Among the AI applications assessed, Natural Language Processing for Document Analysis (NLPDA) emerged as the most favorable, achieving the highest weighted score of 4.5 out of 5. NLPDA demonstrated exceptional effectiveness in processing and analyzing legal documents, thereby accelerating case resolutions with minimal ethical and legal concerns. It enjoys higher public trust due to its perceived objectivity and transparency.

Predictive Policing Algorithms (PPA) and Automated Decision-Making Tools (ADM) both scored 2.75, reflecting moderate effectiveness but significant ethical and legal challenges. The primary concerns revolve around potential biases and the lack of transparency in how decisions are made, which can lead to public distrust. Facial Recognition Systems (FRS) received the lowest score of 2.65, largely due to substantial ethical and legal issues, such as privacy infringement and misidentification risks, which overshadow its high effectiveness.

The analysis underscores the complex interplay between effectiveness, ethical considerations, legal compliance, cost efficiency, and public trust. It reveals that high effectiveness does not necessarily translate to overall favorability if ethical and legal standards are compromised. Public trust is significantly impacted by perceptions of fairness and respect for individual rights.

Recommendations and Future Directions

Based on the findings, it is recommended that policymakers and law enforcement agencies prioritize AI applications like NLPDA, which offer high effectiveness with minimal ethical and legal drawbacks. Investments should be directed toward enhancing such technologies and integrating them into the justice system where they can provide the most benefit without compromising ethical standards or legal compliance.

For AI applications that present significant ethical and legal challenges, such as PPA, FRS, and ADM, it is crucial to address these issues proactively. This may involve:

- Developing Robust Ethical Guidelines: Establishing clear ethical frameworks for AI use in criminal justice to prevent biases and protect individual rights.
- Ensuring Legal Compliance: Regularly reviewing and updating legal regulations to keep pace with technological advancements, ensuring that AI applications operate within the bounds of the law.
- Enhancing Transparency and Accountability: Implementing mechanisms that allow for the auditing of AI systems and making their decision-making processes understandable to stakeholders and the public.
- Engaging with Communities: Building public trust through community engagement, education, and involving diverse stakeholders in decision-making processes related to AI deployment.

Future research should focus on longitudinal studies that monitor the long-term impacts of AI integration in the justice system. There is a need to develop methodologies for continuously assessing the ethical and legal implications as AI technologies evolve. Additionally, exploring interdisciplinary approaches that combine technological innovation with legal, ethical, and social sciences perspectives will be essential in navigating the complexities of AI in criminal justice.

In conclusion, while AI offers transformative potential for enhancing criminal investigations and justice, its integration must be approached with caution and responsibility. By addressing ethical, legal,

and practical implications thoughtfully, it is possible to harness the benefits of AI while upholding the principles of justice and maintaining public trust.

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