



وزارة التعليم العالي و البحث العلمي

جامعة منتوري قسنطينة 1

كلية الحقوق

مخبر الدراسات القانونية التطبيقية

فرقة البحث دراسات مستحدثة في التشريعات العقابية

بالتعاون مع فرقه بحث التكوين الجامعي PRFU مبدأ الإختصاص القضائي العالمي كآلية للقضاء

على الإفلات من العقاب



إشهاد

تشهد الأستاذة الدكتورة كريمة محروق ، رئيسة مخبر الدراسات القانونية التطبيقية ،
أن المؤلفين المرفق أسماؤهم قد شاركوا بمقال في الكتاب الجماعي الموسوم بـ : دور
الذكاء الاصطناعي في تطوير النظم القضائية : بين التيسير و التحديات ، تحت إشراف
و إعداد الدكتورة : رميساء كحول و الأستاذ الدكتور: هشام بوحوش ، و الذي يحمل
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وزارة التعليم العالي والبحث العلمي
جامعة قسنطينة 1_الاخوة مشتوري



كلية الحقوق

مخبر الدراسات القانونية التطبيقية

بالتعاون مع فرقه بحث التكوين الجامعي prfu

فرقة البحث دراسات مستحدثة في التشريعات العقابية

المبدأ الاختصاص القضائي العالمي كأداة ل القضاء

على الأفلات من العقاب

استكمال جماعي ذو ترقيم دولي تحت رقم

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دور الذكاء الاصناعي في تطوير النظم

القضائية: بين التيسير والتحديات

المشرف العام:

اد. كريمة محروم

رئيسة مشروع الاستكمال

د. ريم ساء كحول

اد. هشام بوحوش

تأليف مجموع من الباحثين

اكتوبر 2025



وزارة التعليم العالي والبحث العلمي
جامعة قسنطينة 1 - الإخوة منتورى

كلية الحقوق

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وبالتعاون مع فرقة بحث التكوين الجامعي prfu

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المشرف العام: أ.د. كريمة محروق

أ.د. هشام بوحوش

رئاسة المشروع: د. رميساء كحول

تأليف مجموع من الباحثين

أكتوبر 2025

الكتاب : دور الذكاء الإصطناعي في تطوير النظم القضائية: بين التيسير و التحديات

المشرف العام: أ.د. كريمة محروق

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رئاسة المشروع: د. رميساء كحول

تأليف: مجموعة من الباحثين الأكاديميين

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جميع الحقوق محفوظة

ملاحظة: الأفكار المنشورة في الكتاب تعبر عن آراء أصحابها و لا يتحمل الناشر بالضرورة وجهة نظرهم.

كلمة مدير مخبر الدراسات القانونية التطبيقية / البروفيسورة كريمة
محروق

الناشر/ مخبر الدراسات القانونية التطبيقية
جامعة قسنطينة 1 الإخوة منتوري – كلية الحقوق

بسم الله الرحمن الرحيم وبه نستعين، السادة أعضاء لجنة القراءة،
السادة الباحثين، السادة القراء الأفاضل، السادة المهتمين بقضايا البحث
العلمي ونشره وتوسيع قاعدة انتشاره عبر ربوع المعمورة.

يهتم مخبر الدراسات القانونية التطبيقية كثيراً وينبذل قصارى جهده من
أجل ترقية وتطوير البحث العلمي، وتقديم الدعم اللازم للباحثين ومساعدتهم
في نشر الأوراق العلمية إلكترونياً وورقياً.

وإيماناً منا بحاجة مؤسساتنا العلمية إلى نشر الثقافة القانونية، ووعياً منا
بالدور الذي يلعبه مخبر الدراسات القانونية التطبيقية في إفساح المجال
للطاقات الخلاقة التي يتتوفر عليها الأساتذة والطلبة والتي تزخر بها الجامعات
الجزائرية في شتى التخصصات.

يسعى مخبر الدراسات القانونية التطبيقية ليكون منبراً لتأسيس الأعمال
الجادة وجسر التواصل العلمي الأكاديمي ومشتلاً لإثبات قيم الروح العلمية
الحقة التي تزوج بين النظري والتطبيقي.

وإننا نهدف من خلال هذه الإصدارات العلمية المتنوعة إلى الارتقاء بالجودة
وخلق رياضة ناجعة والتدبير المبني على الحنكة الرصينة، والتي سوف تمكن هؤلاء
الباحثين من عرض بحوثهم وأرواهم العلمية أملأاً في الوصول إلى من يتبنى هذه
البحوث والأوراق وتلك النتائج لتوظيفها في خدمة المجتمعات، فأرق المجتمعات
هي التي تبني نهضتها على العلم والمعرفة.

وبالتالي تكون كل هذه العناصر بمثابة رئبة سليمة تستنشق عبر الإبداع
والعطاء العلمي للباحثين الأكاديميين والمهنيين.

وفي النهاية هدفنا الأسمى هو الارتقاء بمؤسساتنا الجامعية إلى مصاف
المؤسسات الدولية والحرص على هبتها وأن تتبواً مكانة علمية مرموقة.

ولا يفوتي في هذه المناسبة الطيبة أن أتوجه بالامتنان والتقدير والشكر
الجزيل إلى من كان سبباً في إخراج هذا الإصدار إلى حيز الوجود وسهر على
التنسيق والإخراج، واللجنة العلمية الموقرة وكل الباحثين الذين ساهموا بنشر
بحوثهم العلمية القيمة، داعية من الله أن يثقل بهذا العمل موازيننا، ويكتبه في
سجل صالحاتنا، وأن يوفقنا لتحقيق رسالة العلم والبحث الهداف الوعي.

وأخيراً نسأل الله العظيم أن يوفقنا وإياكم لما فيه خير للجميع... اد. كريمة
محروق

Applied legal studies laboratory

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**Speech by the Director of the Applied Legal Studies
Laboratory, Professor Karima Mahrouk**

In the name of God, the Most Gracious, the Most Merciful, and in Him we seek help, gentlemen members of the reading committee, gentlemen authors of published articles, gentlemen researchers, gentlemen distinguished readers, gentlemen interested in issues of scientific research, publishing it, and expanding the base of its spread across the globe.

The Applied Legal Studies Laboratory cares greatly and makes every effort to promote and develop scientific research, provide the necessary support to researchers and help them publish scientific papers electronically and on paper.

We believe in the need of our scientific institutions to spread legal culture, and we are aware of the role played by the applied legal studies laboratory in making room for the creative energies of professors and students that Algerian universities abound in various specializations.

The Applied Legal Studies Laboratory seeks to be a platform for establishing serious work, a bridge for academic scientific communication, and a nursery for demonstrating the values and true scientific spirit that combines theory and practice.

Through these various scientific publications, we aim to improve quality, create effective leadership, and management based on sober wisdom. Which will enable these researchers to present the results of their research and scientific papers in the hope of reaching those who will adopt these researches and papers and those results to employ them in the service of societies, as the finest societies are those that build their renaissance on science and knowledge.

Therefore, all of these elements are like a healthy lung that is inhaled through the creativity and scientific contributions of academic researchers and professionals.

Ultimately, our ultimate goal is to elevate our university institutions to the ranks of international institutions and to

ensure that they are endowed and that they assume a prominent scientific position.

On this good occasion, I cannot fail to extend my gratitude, appreciation, and sincere thanks to those who brought this publication into existence, and I mean Professor who ensured coordination and directing, the esteemed scientific committee, and all the researchers who contributed to publishing their valuable scientific research, calling May God make this work heavy on our scales, write it in the record of our good deeds, and grant us success in achieving the mission of knowledge and conscious, purposeful research.

Finally, we ask God Almighty to help us and you to do what is for the good of everyone, and God is behind the intention.

Prof. Karima Mahrouk

توظئة للكتاب:

يعتبر الذكاء الإصطناعي تقنية جد متقدمة اجتاحت جميع المجالات بما في ذلك قطاع العدالة بإعتباره دعامة أساسية لضمان تحقيق الأمن التكنولوجي في ظل هذا التطور خاصة بعد ظهور خورزميات الذكاء الإصطناعي التي تقوم بمحاكاة الذكاء البشري، و التي يمكن إستغلالها في النظم القضائية و ذلك بالإعتماد على العديد من الأنظمة المتقدمة، فهو يتيح التنبؤ بوقوع الجريمة وتحليل عدد كبير من البيانات القانونية من خلال خورزميات الذكاء الإصطناعي التي تسهل عمل الجهات القضائية للرفع من كفاءة العدالة الجنائية الحديثة.

نهايا عن إنتشار الوسائل المعلوماتية بسرعة هائلة في مختلف المجالات لذلك أصبح يزيد من فرصة إنتشار مجموعة من الجرائم المستحدثة تمس بخصوصية الأفراد و المؤسسات و الدول، و بذلك فإن هذا الإعتداء يؤدي إلى نشوء مشاكل قانونية جديدة تسوجب وجود إجراءات متابعة تتناسب و خصوصية الجريمة و تعتمد بطبيعة الحال على آليات قانونية جديدة لمكافحتها، و من تمة إمكانية تفعيل الدور الإيجابي لذكاء الإصطناعي داخل النظام القضائي.

أهداف الإستكتاب:

يسعى هذا الإستكتاب إلى تحقيق جملة من الأهداف أهمها تحديد موقف رجال القانون و المختصين و الباحثين من الذكاء الإصطناعي لأجل إيجاد الحلول المناسبة لقمع الجريمة و مكافحتها بتقنية متقدمة و يكون ذلك من خلال سن تشريع و قواعد قانونية تنظم دور الذكاء الإصطناعي داخل قطاع العدالة و ذلك في إطار تشريعي يحمي البيئة الرقمية داخل منظومة العدالة الجزائية بالنظر إلى القانون المنظم لهذه التكنولوجيا.

الإشكالية:

بناءً على ما سبق تتمحور الكتابات حول الإشكالية الرئيسية التالية:

- مامدى فعالية الذكاء الإصطناعي كآلية قانونية داخل قطاع العدالة؟

محاور الدراسة:

المحور الأول : استعمال تقنية الذكاء الإصطناعي في النظم القضائية

- الإطار المفاهيمي لذكاء الإصطناعي .

- الأساس القانوني لاعتماد الذكاء الإصطناعي في التشريعات الوطنية والدولية.

- التمييز بين النظم التقليدية و الذكاء الاصطناعي في القضاء .

المحور الثاني: مبررات اعتماد الذكاء الإصطناعي في القطاع القضائي

- أهم تطبيقات الذكاء الإصطناعي في القضاء .

- استشراف مستقبل القضاة و المحامين في ظل الذكاء الاصطناعي.

- التوازن بين التكنولوجيا و ضمانات المحاكمة العادلة .

المحور الثالث: التحديات و المخاطر الناتجة عن الذكاء الإصطناعي

- حجية الذكاء الاصطناعي في إتخاذ القرارات القضائية.

- مدى الإلتزام بأخلاقيات و الخصوصية أمام القضاء.

- الإشكاليات الناجمة على برامج الذكاء الإصطناعي.

المحور الرابع : المسؤولية المترتبة على استخدام الذكاء الاصطناعي في القضاء

- طبيعة المسؤولية المترتبة على استخدام الذكاء الاصطناعي.
- حدود استجابة نظام المسؤولية لتعويض أضرار الذكاء الاصطناعي
- الإصلاح التشريعي لقواعد المسؤولية لمواجهة الأضرار الناجمة عن الذكاء الاصطناعي.

شروط المشاركة:

- يستهدف هذا الإستكتاب الأستاذة و طلبة الدراسات العليا و كل الفاعلين في هذا المجال.
- يجب أن يكون المقال متعلق بمحاور المبنية في المطوية.
- تقبل البحوث الفردية و الثانية فقط مع إلزامية توضيح أسماء المؤلفين كاملة.
- أن يتسم العمل المقدم بالأصالة و أن لا يكون قد سبق المشاركة به أو نشره في أي عمل علمي مع الإلتزام بأخلاقيات البحث العلمي.
- تحرر المقالات باللغة العربية و الإنجليزية على أن لا يزيد عدد صفحات البحث عن 20 صفحة و لا يقل عن 15 صفحة .
- يجب أن ترسل الأعمال العلمية بصيغة word مع الإلتزام باستخدام النموذج في القالب المرفق في ضبط الدراسة شكلا.
- يجب أن يرفق العمل بملخص باللغة العربية و الإنجليزية مع الكلمات المفتاحية.

المشرف العام: أ.د. كريمة محروق

أ.د. هشام بوحوش

رئاسة المشروع: د. رميساء كحول

تنسيق الكتاب الجماعي: د. رميساء كحول

رئيسة اللجنة العلمية للاستكتاب الجماعي

أ. د. هشام بوجوش

أ. د. كريمة محروق

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Artificial Intelligence in Judiciary: Ethics, Risks, and Governance

الذكاء الاصطناعي في القضاء: الأخلاقيات، المخاطر، والحكمة



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Abstract:

The integration of Artificial Intelligence (AI) into judicial systems promises efficiency and consistency but raises critical ethical, legal, and governance challenges. While AI can streamline case management and reduce backlogs, risks include algorithmic bias, lack of transparency, and threats to due process. Ethical concerns center on accountability, fairness, and the erosion of human judgment in morally complex decisions. Effective governance requires robust regulatory frameworks, bias mitigation tools, and human oversight to ensure justice remains equitable. Case studies from Estonia, the U.S., and India highlight both potential and pitfalls. A balanced approach—augmenting, not replacing, human judges—is essential to harness AI's benefits while safeguarding judicial integrity and fundamental rights.

Keywords: Artificial Intelligence; Judiciary; Ethics; Governance.

يعد استخدام الذكاء الاصطناعي في القضاء أداة واحدة لتحسين الكفاءة وتقليل التأثير في التقاضي، لكنه يطرح تحديات أخلاقية وقانونية جادة. فعلى الرغم من فوائده في تحليل البيانات وإدارة القضايا، فإنه يحمل مخاطر التحيز الخوارزمي وغياب الشفافية، ما يهدد مبادئ المحاكمة العادلة. تبرز إشكاليات أخلاقية حول المساءلة وضمان العدالة، خاصة في القضايا المعقدة التي تتطلب حكما إنسانيا. تشير تجارب دول مثل إستونيا والولايات المتحدة إلى ضرورة وضع ضوابط صارمة، بما في ذلك إشراف بشري وأطر تنظيمية، لضمان توازن بين فوائد التكنولوجيا وحماية حقوق الأفراد ونزاهة القضاء.

الكلمات المفتاحية: الذكاء الاصطناعي؛ القضاء؛ الأخلاقيات؛ الحكومة.

1. Introduction

The rapid integration of Artificial Intelligence (AI) into judicial systems worldwide presents a transformative shift in legal processes, offering unprecedented efficiency, consistency, and accessibility. However, this technological advancement raises profound ethical dilemmas, systemic risks, and governance challenges that demand rigorous scrutiny. AI tools—from predictive policing algorithms to automated sentencing—promise to reduce case backlogs and eliminate human bias, yet they also risk reinforcing discrimination, eroding due process, and undermining judicial accountability.

Study Objectives

This research aims to:

1. Examine the ethical implications of AI in judiciary systems.
2. Assess the risks associated with algorithmic decision-making.
3. Propose governance frameworks to ensure transparency, fairness, and human oversight.

Significance

The study is critical as AI adoption in courts could redefine justice delivery, affecting fundamental rights, legal precedents, and public trust in institutions. Without proper safeguards, AI may deepen inequalities and compromise judicial independence.

Problem Statement

The central dilemma is: *Can AI enhance judicial fairness without violating ethical and legal principles?* Key tensions include:

- Bias vs. Objectivity: Can AI overcome human prejudices, or does it perpetuate systemic biases?
- Efficiency vs. Due Process: Does automation sacrifice defendants' rights for speed?
- Accountability Gaps: Who is responsible for AI errors—judges, developers, or governments?

Research Questions

1. How does AI impact judicial transparency and fairness?
2. What are the major risks of AI-driven legal decisions?
3. How can governance models mitigate these risks while preserving AI's benefits?

Hypotheses

1. AI in the judiciary amplifies existing biases if trained on flawed datasets.
2. Hybrid human-AI systems ("augmented intelligence") outperform fully automated courts in safeguarding rights.
3. Strict regulatory frameworks reduce risks more effectively than self-governance by tech firms.

Methodology

The study employs:

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- **Comparative Analysis:** Case studies (e.g., Estonia's AI judge, U.S. sentencing algorithms).
- **Qualitative Review:** Ethical frameworks (e.g., EU AI Act, UN principles).
- **Quantitative Data :** Bias audits of AI tools (e.g., COMPAS recidivism algorithm).

This multidisciplinary approach bridges law, ethics, and computer science to evaluate AI's role in shaping the future of justice. The article will explore AI's applications in law enforcement and criminal justice, highlighting both its promises in crime prevention and the significant perils related to bias, privacy, and evidentiary standards. A dedicated section will synthesize overarching ethical principles and regulatory frameworks, offering a comparative analysis of global approaches.

2. Artificial Intelligence in Law Enforcement and Criminal Justice: Promises and Perils

2.1. Applications of AI in Policing and Crime Prevention

Artificial intelligence is increasingly integrated into law enforcement strategies globally, aiming to enhance efficiency, optimize resource allocation, and fundamentally shift policing from a reactive to a proactive crime prevention model. These applications leverage AI's capacity for sophisticated pattern recognition and rapid data processing to analyze vast datasets and identify trends that are often imperceptible to human cognition.

1. Predictive Policing: Data-Driven Forecasting and Resource Allocation

Predictive policing tools utilize data analytics and machine learning algorithms to identify crime hotspots and forecast potential criminal activities before they occur.¹ By analyzing

¹ Nayar, Spencer and Michael I. Cooper. "Foreword: The 'Why' & How' of Artificial Intelligence in Legal Scholarship." *Texas A&M Journal of Property Law*, Vol. 11, No. 4 (2025): 543-572. Texas A&M University School of Law, United States.

historical crime data, demographic information, and real-time inputs, these systems aim to enable more efficient allocation of police resources, allowing law enforcement agencies to deploy officers strategically to areas with a high probability of crime. The goal is to shift law enforcement from a reactive stance, where they respond to crimes after they occur, to a proactive or preventive approach. Proponents argue that this data-driven approach can reduce crime rates and enhance public safety.

2. Facial Recognition Technology: Identification and Surveillance

Facial Recognition Technology (FRT) employs AI to capture, analyze, and compare facial characteristics with vast databases of images for identification and surveillance purposes. This technology has transformed the landscape of both private and public law enforcement investigations, allowing for rapid identification of suspects. However, its rapid adoption, particularly in the U.S., has outpaced comprehensive federal regulation, leading to a fragmented and inconsistent patchwork of state and local laws governing its use. Concerns about privacy violations, racial biases in misidentification, and potential for abuses have been widely documented.¹

3. Acoustic Gunshot Detection Systems: Real-time Response

Systems like ShotSpotter are designed to detect and pinpoint the location of gunshots in real-time using acoustic sensors, subsequently alerting police for rapid response. The intended benefit is to reduce response times to gun violence incidents.

¹ Lee, Jeongmin. "Legal text classification in Korean sexual offense cases: from traditional machine learning to large language models with XAI insights." *Artificial Intelligence and Law* (forthcoming 2025): 1-22. Springer Nature, Netherlands.

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However, the reliability and effectiveness of these systems in accurately identifying gunshots, uncovering actual crimes, or significantly reducing gun violence have been questioned in numerous academic evaluations. Some studies suggest that citizen-initiated calls are far more efficient in leading to actionable police work than ShotSpotter notifications.

4. Risk Assessment Tools (e.g., COMPAS)

AI-powered risk assessment programs, such as the Correctional Offender Management Profiling for Alternative Sanctions (COMPAS), are increasingly used in criminal cases to inform critical judicial determinations, including pretrial detention decisions and post-trial sentencing. These tools estimate the risk of recidivism by analyzing an offender's criminal history and other demographic information. While proponents argue they can make decisions quicker, cheaper, and more consistently by mitigating human bias, their methodology and impact have been subject to intense scrutiny.¹

2.2. Ethical and Legal Challenges in AI-Driven Law Enforcement

The deployment of AI in criminal justice, while offering promises of efficiency, raises significant ethical and legal challenges that threaten fundamental rights and the integrity of the justice system. The pursuit of enhanced efficiency and proactive crime prevention through AI tools in law enforcement often creates a fundamental paradox: these technological gains frequently come at the cost of undermining core principles of justice, fairness, and due process, particularly for vulnerable and marginalized communities. This necessitates a critical re-evaluation of whether the benefits outweigh the risks to civil liberties.

¹ Rohr, Jonathan. "Smart Contracts in Traditional Contract Law, Or: The Law of the Vending Machine." *Cleveland State Law Review*, Vol. 67, No. 1 (2019): 67-101. Cleveland State University, United States.

Algorithmic Bias and Its Impact on Fairness and Equity

A critical and widely documented concern is algorithmic bias, where AI systems, if trained on biased historical data, can reinforce and exacerbate existing societal inequalities, leading to discriminatory outcomes. For instance, predictive policing algorithms, trained on data reflecting past discriminatory policing practices, can disproportionately flag certain neighborhoods or demographic groups as high-risk, leading to over-policing and a "racist feedback loop". Similarly, risk assessment tools like COMPAS have been shown to disproportionately misclassify Black defendants into higher-risk categories, even when overall error rates are similar across racial groups, thereby perpetuating racial bias in pretrial and sentencing decisions. Facial recognition technology has also been criticized for higher rates of misidentification among women and people of color, leading to wrongful arrests. This perpetuation of bias directly conflicts with the principle of fairness and equity, undermining public trust in law enforcement and the justice system. The efficiency gained by AI is thus often achieved at the expense of fundamental rights and equitable treatment, creating a direct conflict between the stated goal of public safety and the imperative of a fair justice system.¹

The Imperative of Transparency, Explainability, and Accountability

Many AI tools utilized in law enforcement operate as "black boxes," lacking transparency in their decision-making processes. This opacity makes it exceedingly difficult to understand how these systems arrive at their conclusions or to challenge their outputs effectively. For instance, the proprietary nature of algorithms like COMPAS means that the methodology behind

¹ Grimm, Paul W., Maura R. Grossman, and Gordon V. Cormack. "Artificial Intelligence as Evidence." *Northwestern Journal of Technology and Intellectual Property*, Vol. 19, Iss. 1 (2021): 9. Northwestern University, United States.

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how risk scores are calculated is often a trade secret, preventing full scrutiny by defense attorneys or judges. This lack of transparency undermines accountability, as it becomes challenging to attribute responsibility for erroneous or biased outcomes. It also impedes the ability to ensure due process, as affected individuals cannot fully comprehend or contest the algorithmic basis of decisions impacting their freedom or rights. The need for continuous human oversight and clear governance frameworks is therefore paramount to ensure that AI systems in law enforcement are not only effective but also fair and accountable.¹

1. Protecting Privacy and Civil Liberties in an AI-Enabled Surveillance Landscape

The extensive data collection and surveillance capabilities afforded by AI tools, particularly facial recognition systems, raise substantial privacy concerns and potential infringements on civil liberties. Companies like Clearview AI have amassed massive databases of facial images scraped from the internet without consent, leading to significant legal challenges in jurisdictions like the EU for failing to comply with data protection rules. The widespread deployment of such technologies, often without comprehensive federal regulation in the U.S., allows law enforcement to "pry into our private lives to an unprecedented degree". The Fourth Amendment, which protects against unreasonable searches and seizures, is particularly implicated by these technologies, as they can facilitate suspicion-less surveillance and lead to stops or arrests based on potentially unreliable information. The balance between enhanced public safety and the protection of individual privacy rights and civil liberties remains a contentious and unresolved issue in the era of AI-driven law enforcement.²

¹ Guo, Xue, Yuting Huang, Bin Wei, Kun Kuang, Yiquan Wu, Leilei Gan, Xianshan Huang, and Xianglin Dong. "Specialized or general AI? a comparative evaluation of LLMs' performance in legal tasks." *Artificial Intelligence and Law* (forthcoming 2025): 1-37. Springer Nature, Netherlands.

² Grimm, Paul W., Maura R. Grossman, and Gordon V. Cormack, Op-cit, 9.

2.3. Admissibility of AI-Generated Evidence in Judicial Proceedings

The admissibility of AI-generated evidence in both criminal and civil cases is a complex and rapidly evolving area of law, posing significant challenges for courts. Judges must determine the validity and reliability of AI applications, considering critical factors such as algorithmic bias, the lack of transparency in their internal workings, and the sufficiency of objective testing conducted before their deployment.

Evidentiary rules, such as the Frye Standard (which requires scientific methods to be "generally accepted" in the relevant scientific community) and various Federal Rules of Evidence (e.g., Rule 403 concerning undue prejudice, and Rule 901 on authentication), demand that AI evidence meet rigorous standards of scientific validity and reliability to be admitted. The "black box" nature of many AI systems, where their computational methodology is opaque, poses a significant hurdle to meeting these transparency requirements. For instance, if the underlying algorithms are proprietary trade secrets, it becomes difficult for opposing parties or the court to assess their accuracy, potential biases, or the consistency with which they produce results.¹

The stringent evidentiary standards for admitting AI-generated evidence in judicial proceedings thus serve as a crucial, *de facto* regulatory lever. By demanding transparency and rigorous testing for AI tools to be admissible, the courts effectively compel AI developers and law enforcement agencies to prioritize ethical design and robust validation, thereby shaping the development and deployment of AI in criminal justice even in the absence of comprehensive statutory regulation. Courts, acting

¹ Washington, Ryan. "Ethical Implications of AI in Criminal Justice: Balancing Efficiency and Due Process." *Research Review International Journal of Multidisciplinary*, Vol. 9, No. 7 (2024): 93-105.

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as gatekeepers of evidence, require proponents of AI evidence to disclose underlying information, including training data and details of the AI system's development and operation, sufficient for the opposing party to challenge its validity and reliability. This judicial scrutiny means that for AI tools to be practically useful in the legal system (i.e., for their outputs to be used as evidence), they

must meet these high standards of transparency, explainability, and demonstrable accuracy. This creates a powerful market incentive for AI developers to build ethical and auditable systems, effectively regulating AI's design and deployment through the judicial process, even where legislative frameworks are nascent or incomplete. Without this judicial insistence on explainability and verifiable reliability, the risks of biased or erroneous AI outputs influencing legal outcomes would be substantially higher.¹

2.4. Regulatory Frameworks Governing AI in Criminal Justice

The regulation of AI in criminal justice is a rapidly developing area, characterized by differing approaches globally, reflecting varied legal traditions and societal values.

1. The European Union's AI Act: A Risk-Based Benchmark

The EU AI Act, adopted in June 2024, represents a landmark regulation and the world's first comprehensive AI law. It adopts a risk-based approach, classifying AI systems used in law enforcement and criminal justice as "high-risk" due to their significant potential impact on fundamental rights. For these high-risk systems, the Act imposes stringent requirements regarding data quality, human oversight, transparency, robustness, and accountability. It explicitly prohibits certain AI practices deemed to pose an "unacceptable risk," such as social scoring (classifying people based on behavior or personal characteristics) and

¹ Abdullah, B. and A.M. Omar. "Smart Contracts and their Implications for Conventional Contract Law." *Research Papers*, Vol. 3, No. 1 (2025): 22-35.

indiscriminate real-time remote biometric identification in public spaces, with limited exceptions for serious crimes and judicial approval. The EU AI Act aims to foster safe, transparent, and non-discriminatory AI systems and is widely expected to serve as a global benchmark, influencing AI regulation in other jurisdictions.

Divergent Approaches in US Federal and State Regulations

In contrast to the EU's comprehensive and prescriptive approach, the U.S. regulatory landscape for AI in criminal justice is more fragmented and decentralized. It generally relies on a mix of existing sector-specific laws (e.g., consumer protection, civil rights legislation), non-binding guidance from federal agencies like the Federal Trade Commission (FTC), and varying state-level initiatives. There is a notable lack of comprehensive federal laws specifically governing AI use by law enforcement, leading to inconsistent oversight and enforcement across jurisdictions. Some states and cities have implemented their regulations, including bans on specific technologies like facial recognition, but enforcement can be challenging due to the outsourcing of queries to neighboring jurisdictions. While the U.S. approach emphasizes human agency and responsible innovation, this fragmented landscape can result in legal uncertainties and uneven protection of civil liberties compared to the EU's more unified framework.¹

This table is highly valuable because it shifts from abstract discussions of "AI in law enforcement" to concrete examples of specific tools and their direct, documented impacts. By listing applications alongside their precise ethical and legal challenges and linking them to notable cases or criticisms, it grounds the theoretical concerns in real-world consequences. This specificity enhances the academic rigor and practical relevance of the report,

¹ Stanford Law. "A Human Rights-Based Approach to Transatlantic AI Governance: The Case of Biometrics Development." (2024).

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making it easier for the reader to understand the nuances and stakes involved in each AI application. It also serves as a quick reference for the arguments against unchecked AI deployment in this sensitive domain.

3. Overarching Ethical and Regulatory Frameworks for AI in Law

3.1. Core Ethical Principles for Responsible AI Development and Deployment

Across various jurisdictions and expert bodies, a clear consensus is emerging around a set of core ethical principles that should govern the responsible development and deployment of AI systems, particularly within the legal domain. These principles serve as foundational guidelines to ensure that AI's transformative potential is harnessed in a manner that upholds human values and societal well-being. Key among these principles are: human oversight and control, ensuring that AI systems remain subject to human authority and decision-making; accountability for AI consequences, holding organizations responsible for harm caused by their AI systems unless reasonable preventative steps were taken; transparency and traceability, necessitating documentation of AI system design, risks, datasets, procedures, and outcomes; prevention of discrimination and bias, requiring proactive efforts to ensure AI complies with anti-discrimination and privacy laws; and the fundamental tenet that legal responsibility for AI's actions remains with human individuals and legal entities, rather than being shifted to algorithms.¹

The concept of Explainable Artificial Intelligence (XAI) is central to achieving the principles of transparency and accountability, particularly in high-stakes legal applications. XAI aims to make AI models' predictions and decisions understandable and interpretable to humans. This is crucial for legal professionals and affected individuals to assess the fairness of AI-driven

¹ Donn, Th. D. Lamappulage. "Smart Contracts and International Trade: European Legal Strategies for Managing Challenges." *Law Journal Digital*, Vol. 2, No. 4 (2024): 311-325.

outcomes, identify and mitigate potential biases, and ensure due process. XAI moves beyond merely providing accurate predictions to offering insights into the "why" and "how" of AI's outputs, fostering trust and enabling effective human oversight in legal contexts where even slight mistakes can have severe consequences for individuals' lives and freedoms.¹ The consistent emphasis on these ethical principles underscores a global recognition that AI innovation must be balanced with robust safeguards for human rights and societal values.

3.2. Data Governance: Ownership, Intellectual Property, and Cross-Border Data Flows

The proliferation of AI systems, which are inherently data-driven, necessitates the establishment of robust data governance frameworks. This involves addressing complex legal questions about the ownership of data, the protection of intellectual property (IP) rights in AI-generated content or models, and the intricate challenges posed by cross-border data flows.

Regarding data ownership, the landscape is nuanced, often categorized into user-created data (e.g., attorney work product), servicer-created data (data created before uploading to a cloud service), and "mixed data" (data resulting from modification or processing within the cloud). Clarifying ownership rights for each category is crucial, especially for derivative works produced by AI, to protect confidentiality, privilege, and work product. Lawyers must ensure that contractual protections in license agreements with AI service providers explicitly define data ownership, location, privacy, and usage, particularly for confidential client information.

¹ Terzidou, Kalliopi. "Generative AI systems in legal practice offering quality legal services while upholding legal ethics." *International Journal of Law in Context*, First View (2025). Cambridge University Press, United Kingdom.

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The issue of intellectual property rights in AI-generated content is also a significant concern. As AI systems become capable of creating text, images, and other outputs, determining who holds the copyright—the AI developer, the user, or no one—is an evolving legal question. Current judicial practice tends to emphasize human agency in creative works, suggesting that AI is a tool rather than an author.

Furthermore, managing the complexities of cross-border data flows is critical. AI systems often operate globally, processing data across multiple jurisdictions with differing data protection laws. Laws such as the EU's General Data Protection Regulation (GDPR), which aims to give individuals control over their data, and the U.S. CLOUD Act (Clarifying Lawful Overseas Use of Data Act), which addresses data sovereignty issues, are pivotal in shaping these considerations. For multinational law firms, conflicting data storage regulations across regions necessitate careful review of cloud service provider agreements and data licenses to avoid violating non-disclosure agreements or incurring heavy fines. The challenge is amplified as AI synthesizes information and presents new positions, potentially impacting the accuracy and even the state of legal market practices if unchecked.¹ Effective data governance is therefore essential to mitigate legal risks, protect client interests, and ensure compliance in an increasingly interconnected and AI-driven legal ecosystem.

4. Comparative Analysis of Global AI Regulatory Paradigms

The global regulatory landscape for AI is dynamic, characterized by both shared ethical principles and significantly divergent legislative approaches. While there is a global consensus on the fundamental ethical principles that should govern AI (e.g., transparency, accountability, fairness, human oversight), the actual implementation of these principles through

¹ Donn, Th. D. Lamappulage. "The Prospects and Challenges of Enforcing Autonomous Agreements on the Blockchain." *Centre for International Governance Innovation (CIGI) Papers No. 271*, Canada (2020).

legal frameworks varies significantly across major jurisdictions. This divergence creates a complex and potentially conflicting regulatory landscape for global AI development and deployment, necessitating strategic compliance and a continued push for international interoperability.

1. The European Union's AI Act: A Risk-Based Benchmark

The EU AI Act stands as a pioneering example of comprehensive AI regulation, representing the world's first such law. It adopts a risk-based classification system, imposing stringent requirements on AI systems categorized as "high-risk," particularly those deployed in critical sectors like law enforcement and criminal justice. The Act's primary aim is to foster safe, transparent, traceable, non-discriminatory, and environmentally friendly AI systems, with explicit prohibitions on practices deemed to pose an "unacceptable risk," such as social scoring and certain real-time biometric identification systems in public spaces. The EU AI Act's influence is expected to extend globally, potentially serving as a benchmark for other nations seeking to regulate AI. Its prescriptive nature provides clear guidelines for developers and deployers, aiming to create a trustworthy AI ecosystem.¹

2. The United States: Sectoral and Principle-Based Approaches

In stark contrast to the EU's unified and comprehensive regulatory framework, the United States has largely adopted a more sectoral and principle-based approach to AI governance. Rather than enacting a single overarching AI regulation, the U.S. relies on a mosaic of existing laws (e.g., consumer protection, civil rights, privacy statutes like HIPAA), non-binding guidance from federal

¹ Jurs, Andrew W. and Scott DeVito. "Machines Like Me: A Proposal on the Admissibility of Artificially Intelligent Expert Testimony." *Pepperdine Law Review*, Vol. 51, No. 4 (2024): 591. Pepperdine University, United States.

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agencies (such as the Federal Trade Commission), and varying state-level initiatives. This approach emphasizes human agency, responsible innovation, and market-driven solutions, allowing for greater flexibility and adaptability to rapid technological advancements. However, this also leads to a fragmented regulatory environment with inconsistent oversight and enforcement across different states and federal agencies. For example, while some states have enacted laws regulating facial recognition technology, there is a notable lack of comprehensive federal legislation, resulting in a patchwork of rules.

Towards Global Harmonization and Interoperability

Despite these significant divergences in regulatory philosophy and implementation, there is a growing recognition within the international community of the imperative for global cooperation and the establishment of interoperable legal standards for AI. The global nature of AI technology means that isolated national regulations are insufficient, as AI systems can easily transcend geographical boundaries, leading to conflicts of law and regulatory arbitrage. The "regulatory heterogeneity" observed across jurisdictions poses significant challenges for multinational legal operations and technology companies seeking to develop and deploy AI solutions globally. Conflicting data storage rules and differing compliance requirements can stifle innovation, increase legal exposure, and create a complex legal environment. While a fully uniform global AI law may be impractical given diverse national interests and legal traditions, the ongoing tension between prescriptive regulation and flexible, innovation-friendly frameworks highlights the urgent need for "cross-border policy convergence" and "interoperable legal standards".¹ This push for harmonization aims to ensure responsible AI development and deployment without creating unnecessary legal friction or opportunities for regulatory loopholes, ultimately fostering a more predictable and trustworthy global AI ecosystem.

¹ Stanford Law. Op-cit.

This table provides a high-level, structured comparative analysis of global AI regulatory paradigms. It distills the common ethical principles that underpin most AI governance discussions while contrasting the primary legislative mechanisms adopted by leading jurisdictions (EU vs. US). By organizing this information across key regulatory dimensions, it clearly illustrates the convergence on principles and divergence on implementation. This visual comparison is invaluable for understanding the global regulatory environment, highlighting areas of consensus and divergence, which is crucial for navigating the international legal implications of AI and identifying best practices for future policy development.¹

5. The Role of Explainable Artificial Intelligence (XAI) in Legal Decision-Making

The imperative for transparency and accountability, which are cornerstones of any credible legal system, underscores the critical and growing role of Explainable Artificial Intelligence (XAI) in legal decision-making. XAI is a field of AI research that aims to make AI models' predictions and decisions understandable to humans, moving beyond mere accuracy to provide insights into the "why" and "how" of AI's outputs.

In legal contexts, where decisions can profoundly impact individuals' lives and freedoms, the ability to comprehend the rationale behind an AI's recommendation or classification is not merely a technical preference; it is a fundamental requirement for upholding due process and ensuring fairness. When AI systems operate as "black boxes"—meaning their internal workings are opaque—it becomes exceedingly difficult for legal professionals

¹ Vujicic, Jelena. "Global AI regulation and its impact on technology business: A comparative legal framework analysis." *World Journal of Advanced Research and Reviews*, Vol. 24, No. 3 (2024): 3457–3463. Chicago, United States.

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to assess whether a decision is free from bias, to identify potential errors, or to effectively challenge an adverse outcome. For example, if a predictive policing algorithm disproportionately flags certain demographic groups as high-risk, or if a risk assessment tool recommends a harsher sentence, XAI would be essential to reveal the underlying data points and algorithmic logic that led to such a conclusion, allowing for scrutiny and correction.¹

By providing clear, human-intelligible explanations, XAI fosters trust in AI systems within the legal domain. It empowers judges, lawyers, and the public to understand the basis of AI-assisted legal determinations, thereby enabling effective human oversight and ensuring that AI serves as an augmentation to, rather than a replacement for, human judgment and ethical reasoning. The development and integration of XAI techniques are therefore crucial for the responsible and ethical deployment of AI in legal decision-making, ensuring that technological progress aligns with the enduring principles of justice.

6. Conclusion

While AI presents unprecedented opportunities, its legal landscape must evolve to effectively address emerging risks. Proactive regulation, ethical considerations, and international coordination will be crucial in shaping a future where AI benefits society while minimizing harm.

Summary of Key Findings

1. AI Applications: AI has demonstrated immense potential in improving efficiency, decision-making, and innovation. However, its deployment raises concerns about bias, privacy violations, and liability

¹ Ibid, 3457-3463.

2. Legal Challenges: Current legal systems struggle to address issues such as algorithmic accountability, intellectual property rights, and the liability of autonomous systems.

3. Regulatory Gaps: Existing regulations often lag behind technological advancements, highlighting the need for adaptive and forward-looking policies.

4. Ethical Considerations: Ensuring AI aligns with human rights, non-discrimination principles, and ethical standards remains a critical challenge.

Key Recommendations

1. Develop Adaptive Regulations: Policymakers should adopt flexible legal frameworks that can evolve alongside AI advancements, ensuring they remain relevant and effective.

2. Enhance Transparency: Mandating explainability in AI systems can help mitigate biases and build public trust.

3. Strengthen International Cooperation: Given AI's global impact, harmonized regulations and cross-border collaboration are essential to address jurisdictional challenges.

4. Promote Ethical AI Development: Governments and organizations should establish ethical guidelines to ensure AI is used responsibly, prioritizing fairness and accountability.

5. Invest in Legal Education: Legal professionals and policymakers must be equipped with the necessary knowledge to navigate AI-related legal complexities.

6. Recommendations for Future Research: Continued academic inquiry is essential to address the evolving challenges at the intersection of AI and law. This includes conducting further empirical studies on the real-world impact of AI in legal decision-

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making, particularly concerning fairness and equitable outcomes. Research into advanced Explainable Artificial Intelligence (XAI) techniques tailored specifically for legal contexts is critical to enhance transparency and accountability. Comparative legal analyses of emerging AI regulations will continue to be vital to identify best practices and foster greater interoperability across jurisdictions. Additionally, future research should explore novel dispute resolution mechanisms for smart contracts that can integrate human judgment and equitable remedies, and investigate the development of AI systems that inherently embed ethical principles from their design phase, rather than attempting to retrofit compliance.

7. Navigating the Future of AI in the Legal Domain

The trajectory of artificial intelligence in the legal domain is one of continuous evolution, promising a future where legal services are transformed into an augmented intelligence model. In this model, human expertise will be significantly amplified by sophisticated AI tools, leading to greater efficiency, accessibility, and potentially more informed legal outcomes. However, the successful navigation of this future hinges on a collaborative and critically reflective effort involving technologists, legal scholars, practitioners, and policymakers. This multi-stakeholder engagement is essential to co-create a legal ecosystem where AI serves justice, consistently upholds ethical standards, and robustly protects fundamental rights, rather than inadvertently undermining them. The ongoing dialogue between the fields of law and technology must remain adaptive, informed by empirical evidence, and critically reflective to ensure that technological progress aligns with societal values and the enduring principles of justice that underpin civilized legal systems. The ultimate goal is to foster an environment where AI enhances the pursuit of justice, making it more accessible, efficient, and equitable for all.

The rapid advancement of Artificial Intelligence (AI) has ushered in transformative applications across various sectors, including healthcare, finance, transportation, and governance. However, this technological evolution has also introduced

significant legal and ethical challenges, necessitating robust regulatory frameworks to ensure accountability, transparency, and fairness.

— هذا الكتاب —

شهد العالم في السنوات الأخيرة انتشاراً واسعاً وسريعاً للوسائل المعلوماتية التي أصبحت تؤدي دوراً أساسياً في مختلف المجالات الاقتصادية والاجتماعية والإدارية والقضائية غير أن هذا الانتشار المتسرع رافقته مظاهر سلبية تمثلت في ظهور أنماط جديدة من الجرائم المستحدثة التي تمس بخصوصية الأفراد والمؤسسات، وتمتد آثارها أحياناً إلى المساس بأمن الدول واستقرارها، وقد أفرزت هذه الجرائم إشكاليات قانونية معقدة تستوجب وضع إجراءات متابعة وتحقيق تتلاءم مع طبيعتها الخاصة، وتعتمد على آليات قانونية وتقنية حديثة قادرة على التصدي لها بفعالية، ومن هذا المنطلق بزت الحاجة إلى تفعيل دور الذكاء الاصطناعي داخل النظام القضائي، نظراً لما يتمتع به من قدرة على تحليل المعطيات بدقة وتسريع مسار العدالة وتطوير أساليب الكشف عن الجريمة.

يهدف هذا الاستكتاب إلى تحقيق جملة من الأهداف أبرزها تحديد موقف رجال القانون والمحترفين والباحثين من توظيف الذكاء الاصطناعي في القطاع القضائي، والسعى إلى استشراف الآليات الكفيلة بإدماجه ضمن منظومة العدالة بما يسهم في تعزيز فعالية القضاء في مكافحة الجريمة والحد من انتشارها، كما يرمي إلى اقتراح إطار تشريعي متكملاً يحدد ضوابط استخدام الذكاء الاصطناعي في المجال القضائي، ويضمن انسجامه مع المبادئ العامة للقانون ومع متطلبات العدالة والإنصاف.

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