

The Legal Actor In Crimes Involving Smart Systems.

الفاعل في جرائم الأنظمة الذكية

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Abstract :

The remarkable development in the field of artificial intelligence and intelligent systems, which originally aimed to improve performance, enhance efficiency, and reduce human errors through various means such as self-driving cars, industrial robots, and medical diagnostic systems, has now become a significant threat as it could lead to severe damages that may reach the level of crimes. Herein lies the importance of studying the topic: "**The Legal Actor In Crimes Involving Smart Systems**". It has become essential to establish a clear legal framework that defines : who is responsible for these actions in case these systems fail or cause varying degrees of criminal outcomes ?

Keywords: Actor – Crimes – Smart Systems

ملخص:

إن التطور المذهل في مجال الذكاء الاصطناعي والأنظمة الذكية ، و الذي استهدف في الأصل تحسين الأداء، ورفع الكفاءة، وتقليل الأخطاء البشرية عبر وسائل متعددة مثل السيارات ذاتية القيادة، والروبوتات الصناعية، وأنظمة التشخيص الطبي؛ أصبح يشكل تهديدا كبيرا لأنه قد يؤدي إلى أضرار جسيمة قد تصل إلى مستوى الجرائم. وهنا تبرز أهمية دراسة موضوع: "الفاعل في جرائم الأنظمة الذكية". فقد أضحت من الضروري وضع إطار قانوني واضح يحدد المسؤول عن تلك الأفعال في حال فشل هذه الأنظمة أو تسببها في نتائج إجرامية متفاوتة الخطورة. وتتمحور الإشكالية الرئيسية لهذا البحث في: من يتحمل المسؤولية الجزائية في الجرائم التي قد تنتج عن الأنظمة الذكية ؟

الكلمات المفتاحية: فاعل – جرائم – الأنظمة الذكية.

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Introduction:

The rapid advancement of artificial intelligence and smart systems has made these technologies an integral part of our daily lives. While they were originally designed to enhance performance, improve efficiency, and minimize human errors through various applications—such as self-driving cars, industrial robots, and advanced medical diagnostic systems—these technologies are not infallible. In fact, their failures can sometimes lead to significant harm, even reaching the level of criminal offenses.

This raises the importance of studying the issue of **"the legal actor in crimes involving smart systems."** It has become essential to determine criminal liability, establish its legal foundations in this field, and assign liability to specific individuals or entities when these systems fail, malfunction, or cause criminally significant harm.

Accordingly, the central issue addressed in this study revolves around how traditional theories of criminal liability can be applied to smart systems, especially given the absence of criminal intent in these technologies and the involvement of multiple parties in their development and operation. Who should be considered the legal perpetrator of crimes committed by smart systems? Can artificial intelligence be held criminally responsible despite lacking consciousness or intent? Or should liability fall on its developers and users instead?

This research aims to explore the legal challenges surrounding this issue and analyze potential solutions for holding accountable those responsible for crimes arising from artificial intelligence.

To comprehensively examine this topic and address its key questions, this study is divided into two main sections:

- 1. Theoretical Framework of Crimes Committed by Smart Systems**
- 2. Legal Framework for Assigning Liability in Crimes Involving Smart Systems**

These sections will be discussed in the following order :

Section One: The oretical Framework of Crimes Committed by Smart Systems.

In this section, we aim to define the concept of smart systems, explore the main types of crimes associated with them, and analyze the varying degrees of severity of these crimes. This will be examined through two key subtopics:

subtitle One: Understanding Crimes Committed by Smart Systems

This subtopic begins with a brief definition of smart systems, followed by an exploration of the types of crimes they may be involved in.

1. Definition of Smart Systems:

Smart systems are : "technologies that rely on artificial intelligence and machine learning to perform complex tasks without direct human intervention. These include robots, self-driving cars, and AI-powered systems used across various sectors such as healthcare and finance."¹

These systems operate by analyzing vast amounts of data and making decisions based on pre-programmed algorithms. Their ability to learn and adapt over time enables them to execute tasks that were traditionally performed by humans. However, this very capability also raises significant legal and ethical concerns, particularly when these systems malfunction or make erroneous decisions leading to harmful consequences.

2. Types of Crimes Committed by Smart System: "Types of Smart System Crimes ":

Crimes involving smart systems can take various forms, such as accidents caused by self-driving cars, medical errors resulting from AI-powered diagnostic systems, or market manipulation through artificial intelligence algorithms. These crimes differ from traditional offenses as they do not necessarily involve criminal intent from a human actor. The main types of such crimes can be outlined in more detail as follows²:

A. Safety-Related Crimes :

These crimes involve accidents caused by smart systems in fields such as transportation, industry, and healthcare. For instance, self-driving cars may cause traffic accidents due to algorithmic malfunctions or sensor failures in detecting the surrounding environment. Similarly, industrial robots could inflict serious injuries on workers if they fail to perform tasks correctly or malfunction during operation.

B. Financial Crimes :

Financial crimes include market manipulation, electronic fraud, and money laundering facilitated by AI systems. For example, advanced algorithms can be used to analyze financial data unlawfully or to orchestrate sophisticated fraud schemes that are difficult to detect. AI-driven trading systems can also manipulate stock markets by executing high-frequency trades, creating artificial price fluctuations.

C. Privacy and Data Breach Crimes :

These crimes involve the violation of individuals' privacy and the theft of personal data through AI-powered systems. Algorithms can be exploited to breach databases and steal sensitive information, such as phone numbers, addresses, and financial records. AI-driven tools may also be used to conduct mass surveillance or unauthorized data collection, raising serious ethical and legal concerns³.

D. Cybersecurity and Deepfake Crimes ⁴:

- **Cybersecurity Crimes:** These crimes involve cyberattacks targeting computer systems and networks through artificial intelligence. Advanced algorithms can be used to bypass security systems, exploit vulnerabilities, or deploy malware with greater efficiency. AI-powered hacking tools can automate attacks, making them more sophisticated and harder to detect.
- **Deepfake Crimes:** Deepfake technology enables the creation of highly realistic fake videos or images using AI, often for deceptive, defamatory, or fraudulent purposes. For example, a deepfake video can falsely depict a well-known public figure making statements they never actually said, leading to misinformation, reputational damage, or even financial fraud.

subtitle Two: Characteristics of Crimes Committed by Smart Systems :

The diversity of crimes associated with smart systems—including safety-related crimes, financial crimes, privacy violations, cybersecurity crimes, and deepfake-related offenses—has given them distinct characteristics. The most notable of these are outlined below⁵:

1. Digital Nature and Targeting of Information :

A. Digital Nature :

Crimes involving smart systems are entirely digital, meaning they are committed through computers, networks, or smart devices without requiring the physical presence of a perpetrator at the crime scene. This intangible nature makes them difficult to detect using traditional investigative methods. For instance, hackers can launch cyberattacks against government servers or financial institutions without leaving direct traces, complicating efforts to track and apprehend them.

Additionally, the digital nature of these crimes allows them to be executed at incredible speeds and minimal costs. A single individual can use malicious software or viruses to compromise thousands of systems within minutes. This makes such crimes more threatening than conventional offenses, as they do not require physical violence and can be carried out remotely with ease.

B. Targeting of Information :

Unlike traditional crimes, which often aim to seize money or physical assets, cyber-related offenses primarily target information. This includes personal data, such as bank account numbers and passwords, as well as sensitive corporate and government information. For example, cybercriminals may conduct attacks to steal user data from social media platforms or e-commerce websites for financial gain.

Moreover, information is not only stolen but can also be manipulated or disrupted. Some cyberattacks are designed to alter or destroy data, potentially damaging corporate reputations or causing the collapse of critical systems, such as financial and healthcare infrastructures. As a result, cybersecurity has become a top priority for organizations worldwide .

2. Anonymity and Difficulty of Tracking :

Cybercriminals can easily conceal their identities compared to traditional offenders by using advanced encryption techniques, virtual private networks (VPNs), and proxy servers. These tools make it difficult for law enforcement agencies to trace the source of an attack. For instance, a hacker might use the **Tor (The Onion Router) network** to mask their identity, routing their activity through multiple servers before launching an attack.

Moreover, criminals often exploit fake accounts and stolen identities to carry out illegal activities without revealing their true identity. Unlike traditional crimes, where physical evidence such as fingerprints or eyewitness accounts can help identify perpetrators, digital crimes leave minimal traces. Sophisticated software can erase digital footprints, further complicating investigations.

3. International Scope and Continuous Evolution :

A. International Scope :

Cybercrimes transcend geographical boundaries, allowing perpetrators to target victims or organizations in different countries without ever leaving their own. This global reach complicates legal prosecution, as laws vary from one jurisdiction to another, making international cooperation crucial. For example, a cyberattack on a U.S. bank may be orchestrated by hackers in Eastern Europe, requiring cross-border collaboration to track and apprehend the culprits.

Additionally, the rapid nature of cybercrimes makes real-time responses from law enforcement challenging. Some nations even serve as safe havens for cybercriminals, lacking strict regulations or enforcement measures against such activities. This enables offenders to operate with minimal fear of legal consequences.

B. Continuous Evolution :

Cybercrimes are not static; they evolve constantly to keep pace with technological advancements. Attackers continuously refine their techniques to bypass even the most sophisticated security measures. As new cybersecurity technologies emerge, cybercriminals develop innovative strategies to exploit vulnerabilities. For instance, **AI-powered phishing attacks** have become more sophisticated, leveraging artificial intelligence to craft highly convincing fraudulent emails.

Additionally, innovations such as the **Internet of Things (IoT)** have introduced new vulnerabilities. Many IoT devices lack robust security measures, making them prime targets for hackers. Cybercriminals can exploit these weaknesses to cause significant harm, such as hijacking critical infrastructure or conducting mass surveillance through compromised personal devices.

4. Widespread Impact :

Due to the pervasive nature of digital technology, cybercrimes can affect large numbers of individuals and organizations in a very short time. A single cyberattack can cause widespread damage, as seen in the infamous **WannaCry** and **NotPetya** ransomware attacks, which infected thousands of systems worldwide within hours.

Moreover, cybercrimes can pose serious threats to **national security**, targeting vital infrastructure such as power plants, hospitals, and airports. Recognizing these risks, governments and major corporations are heavily investing in cybersecurity strategies to protect digital systems and mitigate the threats posed by these crimes.

Second Section: Legal Frameworks for Holding Perpetrators Accountable in Smart System Crimes :

Given the diverse and unique nature of smart system crimes, along with their distinct characteristics, they pose numerous legal challenges. This necessitates the establishment of legal frameworks to define and construct criminal liability for those responsible.

subtitle One: The Legal Framework of Criminal Liability and Its Application to Smart System Crimes :

This subsection provides an overview of traditional theories of criminal liability and examines their applicability to crimes committed by smart systems, as follows:

1. Traditional Theories of Criminal Liability :

Criminal liability serves as the foundation for legally holding individuals accountable for committing offenses. Several traditional theories define the conditions and principles of criminal liability, providing a framework for assessing an individual's culpability for criminal acts. Below, we explore the key traditional theories of criminal liability⁶:

(A) Free Will Theory (Choice Theory) :

This theory is based on the idea that individuals possess free will, allowing them to choose between good and evil. Accordingly, a person who deliberately chooses to commit a crime is held criminally responsible for their actions.

(B) Causation Theory (Theory of Causality) :

This theory focuses on the existence of a causal link between the perpetrator's act and the resulting criminal consequence. In other words, there must be a direct connection between the act committed and the harm caused in order to establish criminal liability.

(C) Fault Theory (Negligence Theory) :

This theory asserts that criminal liability arises when the offender acts negligently or carelessly, leading to a criminal outcome. The fault can be either intentional or unintentional.

(D) Personal Liability Theory (Personality Theory) :

This theory emphasizes the offender's personality and psychological and social conditions. Under this framework, criminal liability is assessed based on the offender's predisposition to criminal behavior and their potential threat to society.

(E) Objective Liability Theory :

Under this theory, criminal liability is established based solely on the occurrence of a criminal result, regardless of the offender's intent or awareness of the act's consequences. This theory is applied in specific cases, such as involuntary manslaughter.

2-Application of Traditional Theories to Smart System Crimes :

Traditional theories of criminal liability provide the theoretical foundation for determining an individual's liability for their criminal actions. These theories differ in their emphasis on free will, causation, fault, personal characteristics, or criminal outcomes. Understanding these theories ensures fair and just application of criminal law.

Moreover, traditional criminal liability relies on two key elements: **criminal intent and negligence**. Criminal intent requires proving that the offender had the intention to commit the crime, whereas negligence pertains to careless or reckless behavior that fails to meet the required standards of conduct⁷.

2-Applications of Traditional Theories to Smart Systems Crimes :

Applying traditional criminal liability theories to smart systems presents significant challenges, particularly due to the absence of criminal intent in these systems. For instance, in the case of an accident involving a self-driving car, how can criminal intent be established if the system operates based on complex algorithms?

Smart system crimes pose unique challenges due to their complexity. Below is an analysis of how these theories can be applied in the digital context⁸:

A. Theory of Free Will (Choice Theory) :

In crimes involving smart systems, determining "free will" can be difficult, especially when the crime results from an error in an artificial intelligence algorithm or an autonomous system. For example, if an AI system makes a criminal decision without direct human intervention, applying this theory becomes highly complex.

Thus, liability may be assigned to developers or operators if it is proven that they acted negligently in designing or operating the smart system.

B. Causation Theory :

In smart system crimes, the causal link between the act and the outcome is often unclear, particularly when multiple parties are involved (e.g., developers, operators, and users). For instance, in the event of a cyberattack on a smart system, identifying the true perpetrator may be challenging. Under this theory, causation must be analyzed meticulously to determine liability, which may be distributed among several responsible parties.

C. Negligence Theory :

This theory can be applied to smart system crimes when it is proven that developers or operators failed to adequately secure or test the system. For example, if a smart system is hacked due to a known security vulnerability that was not addressed, negligence can be established. Accordingly, liability may be imposed on parties who failed to exercise due diligence in securing the system.

D. Subjective Liability Theory (Personality Theory) :

In crimes involving smart systems, the assessment may focus on the perpetrator's personality (if human) or the inherent risks of the smart system (if autonomous). For instance, if an AI system is intentionally designed for criminal purposes, developers may be held accountable. Therefore, evaluating the risk level of the system or the perpetrator is essential in determining liability.

E. Objective Liability Theory :

This theory may apply to smart system crimes when the criminal outcome is evident, regardless of the perpetrator's intent. For example, if a smart system causes material harm without intent, liability may still be imposed based on the consequences alone. Thus, liability is assigned solely based on the result, without considering intent.

Given the challenges in applying traditional theories, there is a pressing need to develop a new legal framework that aligns with the nature of smart systems⁹.

This may include establishing a form of "legal personality" for AI systems or imposing greater liability on manufacturers to ensure safer system designs.

Section Two: Potential Parties for Criminal Liability in Smart Crimes and Challenges in Identifying the Perpetrator:

Given the challenges associated with applying traditional legal theories, there is an urgent need to establish a legal framework that aligns with the unique nature of smart systems. This could involve recognizing a form of "**legal personality**" for intelligent systems or imposing greater liability on manufacturers to ensure the safety and reliability of these technologies.

This raises an essential question: **Who are the potential parties that may bear criminal liability for smart crimes, and what are the key challenges in identifying the actual perpetrator?**

First: Potential Parties for Criminal Liability in Smart Crimes :

Due to the unique and technical nature of smart crimes, multiple parties may bear criminal liability. These typically include **developers, manufacturers, users, corporations**, and, in some cases, **regulatory authorities**. However, accurately determining liability requires a precise assessment of each party's role in the occurrence of harm¹⁰ :

- A. **Developers/Programmers:** Liability may arise from errors in algorithm design or programming that result in harmful system behavior.
- B. **Manufacturers:** Product liability laws may apply if the harm is caused by defects in manufacturing or design.
- C. **End Users:** They may be held accountable in cases of intentional misuse of the smart system or negligence in following operational guidelines.
- D. **Regulatory Bodies:** Liability may arise if there is a failure to establish safety standards or to monitor the proper implementation of smart applications.
- E. **Data Providers:** Supplying inaccurate or biased data can lead to flawed decisions—for example, errors in facial recognition systems¹¹.

subtitle Two: Challenges in Identifying the Perpetrator and Modern Legal Approaches to Establishing Criminal Liability :

1. Challenges in Identifying the Perpetrator:

Countries face several key challenges in determining the liable party in crimes involving smart systems, which can be summarized as follows¹²:

A- The Absence of Free Will and Legal Awareness in Smart Systems :

One of the primary challenges is that artificial intelligence lacks free will and legal awareness. AI systems make decisions based on data analysis rather than criminal intent. As a result, they cannot be held accountable in the same way as human offenders. However, their ability to make independent decisions creates a legal gray area: if an AI system acts beyond the expectations of its developers, who should be held responsible?

B- The Multiplicity of Liable Parties

When a crime is committed using AI, multiple parties could potentially bear liability, such as:

- **Developers and Programmers:** Should they be held accountable for unintended programming errors?
- **Users and Operators:** Should they be liable for misusing intelligent systems?
- **Manufacturers:** Can they be treated similarly to companies responsible for defective products?

These challenges highlight the inadequacy of traditional legal frameworks in addressing the criminal liability of AI systems, necessitating the development of new legal solutions.

2. Modern Legal Approaches to Identifying the Perpetrator and Establishing Criminal Liability :

Different legal systems worldwide have adopted various approaches to address this issue¹³ :

A- The Conservative Approach :

This approach maintains that liability should remain with natural or legal persons, meaning that either the programmer or the company that owns the system should bear liability for any harmful actions caused by AI.

B- The Progressive Approach :

This perspective advocates for legal reforms to recognize AI as a separate legal entity with limited liability, similar to the legal status of corporations.

These differing approaches reflect an ongoing global legal debate on how to determine liability in AI-related crimes. This highlights the urgent need for a clearer legal framework that aligns with technological advancements.

Conclusion :

At the conclusion of this study, it becomes evident that liability in crimes involving intelligent systems cannot be attributed to a single party. Instead, liability is distributed based on the nature of the fault and the stage at which it occurred—whether in design, manufacturing, or usage. Modern legal frameworks increasingly lean towards a model of joint liability between developers and corporations while incorporating electronic evidence as a basis for accountability. The key findings and recommendations can be summarized as follows:

First: Key Findings

1. Applying traditional criminal liability theories to intelligent system crimes reveals that these theories require adaptation to align with the complexity of such crimes.
2. Traditional criminal laws are insufficient for determining liability in crimes committed by intelligent systems, as these systems lack intent or criminal will.
3. There is a global divergence in legal approaches to AI accountability. Some jurisdictions hold users or developers responsible, while others propose establishing a new category of legal liability.
4. The optimal solution may lie in adopting a "shared liability" model, where liability is allocated among different parties based on their role in operating the intelligent system.
5. Liability can be distributed among multiple stakeholders, including developers and operators, with a potential shift toward emphasizing outcomes rather than intent in certain cases.

Second: Recommendations

1. **Amending Criminal Legislation** – Legal definitions of "the perpetrator" in criminal law should be revised to account for intelligent systems within a specific framework of liability. Clear regulations must be established to determine the liability of various parties.
2. **Adopting the Principle of "Shared Liability"** – Given the complexity of AI operations, a balanced approach would involve distributing liability among programmers, users, and manufacturers, ensuring each entity bears accountability according to its role in the system's operation.
3. **Developing Unified International Legislation** – Since crimes committed by intelligent systems may transcend national borders, it is crucial to establish standardized international regulations to determine legal liability in such cases.

By implementing these recommendations, legal systems can more effectively address the challenges posed by crimes involving intelligent systems while ensuring a fair and just distribution of liability

Citations :

⁽¹⁾ أحمد محمد علي، الذكاء الاصطناعي وتحدياته القانونية، دار النهضة العربية، القاهرة، 2021، ص. 45؛

Stuart Russell and Peter Norvig , Artificial Intelligence : A Modern Approach, Pearson, 2020, p. 32.

- ² خالد عبد الله، جرائم التكنولوجيا الحديثة، دار الفكر الجامعي، الإسكندرية، 2020، ص. 78-80؛ محمد حسنين، "المسؤولية الجنائية في عصر الذكاء الاصطناعي"، مجلة القانون والتكنولوجيا، العدد 12، 2022، ص. 25-27؛ Ryan Calo, The Artificial Intelligence Handbook: Law and Policy, MIT Press, 2019, p. 112-115 Frank Pasquale, The Black Box Society: The Secret Algorithms That Control Money and Information, Harvard University Press, 2021, p. 89-92 ; <https://heinonline.org/HOL/LandingPage?handle=hein.journals/davlr51&div=18&id=47> ; ³ ليلي محمد، "دور المستخدم في جرائم الأنظمة الذكية"، مجلة القانون والتكنولوجيا، العدد 10، 2022، ص. 45-47. ⁴ سامي عبد الحميد، التشريع الحديث حول الذكاء الاصطناعي، دار الثقافة للنشر، القاهرة، 2022، ص. 102-105؛ علي محمود، "تحديات المسؤولية الجنائية في عصر الذكاء الاصطناعي"، مجلة الدراسات القانونية، العدد 8، 2021، ص. 34-36 ; Jack Balkin, The Law of Artificial Intelligence and Robotics, Yale University Press, 2021, p. 67-70.
- ⁵ ليلي أحمد، الأمن السيبراني في العالم الرقمي، دار المستقبل، دبي، 2022، ص. 112-114؛ بتالي غانية، "خصائص الجرائم السيبرانية"، مجلة الباحث، جامعة قاصدي مرباح، ورقلة، الجزائر، العدد 9، ص. 123-130 ; Kevin Mitnick, The Art of Invisibility: The World's Most Famous Hacker Teaches You How to Be Safe in the Age of Big Brother and Big Data". Little, Brown and Company, Boston, 2017, Pages 55-57. <https://www.amazon.com/Art-Invisibility-Worlds-Teaches-Brother/dp/0316380504>.
- ⁶ محمود نجيب حسني، شرح قانون العقوبات – الجزء العام، دار النهضة العربية، القاهرة، 2018، الصفحات 123-125؛ أحمد فتحي سرور، المبادئ العامة للقانون الجنائي، دار المطبوعات الجامعية، الإسكندرية، 2017، الصفحات 89-91؛ محمد زكي أبو عامر، أصول القانون الجنائي، دار الجامعة الجديدة، الإسكندرية، 2019، الصفحات 67-69.
- ⁷ فتحي والي، نظرية المسؤولية الجنائية، دار المطبوعة الجامعية، الإسكندرية، 2019، ص. 56
- George Fletcher, The Grammar of Criminal Law, Oxford University Press, 2020, p. 89.
- ⁸ محمد عبد الرحمن، الجرائم الإلكترونية في عصر الذكاء الاصطناعي، دار النشر العربي، القاهرة، 2020، الصفحات 78-80؛ علي محمود، "تحديات المسؤولية الجنائية في عصر الذكاء الاصطناعي"، مجلة الدراسات القانونية، العدد 8، 2021، الصفحة 34. أحمد محمود، التحديات الأمنية في عصر إنترنت الأشياء، دار العلم للنشر، بيروت، 2021، الصفحات 67-69؛
- Kevin Mitnick: "The Art of Invisibility: The World's Most Famous Hacker Teaches You How to Be Safe in the Age of Big Brother and Big Data" Little, Brown and Company, Boston, 2017, Pages 78-80.
- ⁹ ليلي أحمد، *op cit*, pp. 89-91
- ¹⁰ أحمد الفرج، "المسؤولية الجنائية في عصر الذكاء الاصطناعي"، مجلة العدالة السعودية، العدد 45، 2020، الصفحات 33-40 ;
- Ryan Abbott, The Reasonable Robot: The Reasonable Robot Artificial Intelligence and the Law, Cambridge University Press, 2020, pp. 102-110.
- ناصر العتيبي، "حماية البيانات الشخصية في الأنظمة الذكية"، مركز الدراسات القانونية، 2022، الصفحات 55-60؛ زيان ¹¹ سعيدي، الآثار الفقهية لمسؤولية الروبوت والتطبيقات القانونية للألات الذكية، المجلة الجزائرية للعلوم القانونية والسياسية، المجلد 61، العدد 04، السنة 2024، الصفحات 147-159
- السعدون، خالد، "الجريمة الإلكترونية في الفقه والأنظمة القانونية"، منشورات كنوز، 2018، الصفحات 145-160؛ الفرج، ¹² أحمد، "المسؤولية الجنائية في عصر الذكاء الاصطناعي"، مجلة العدل، العدد 45، 2020
- Abbott, Ryan. The Reasonable Robot. IBD.(pp. 88-95).
- خلف الله، فوزي، "مشكلة نسب المسؤولية الجنائية الدولية لأفعال الكيانات الذكية الاصطناعية"، المجلة الأكاديمية للبحوث ¹³ القانونية والسياسية، المجلد 7، العدد 2، الصفحات 178-197؛ مها يسري عبد اللطيف نصار، "المسؤولية القانونية"، المجلة

القانونية، المجلد 17، العدد 07، أغسطس 2023، جامعة القاهرة، الصفحات 1498-1512؛ خالد السيد، "أمن المعلومات والجرائم الإلكترونية"، المركز العربي للبحوث، الرياض، 2019، الصفحات 201-203.

Bibliography:

A. Books:

1. أحمد فتحي سرور. المبادئ العامة للقانون الجنائي. دار المطبوعات الجامعية. الإسكندرية. 2017.
2. أحمد محمد علي. الذكاء الاصطناعي وتحدياته القانونية. دار النهضة العربية. القاهرة. 2021.
3. السعدون. خالد. "الجريمة الإلكترونية في الفقه والأنظمة القانونية". دار كنوز للنشر. 2018.
4. فتحي والي. نظرية المسؤولية الجنائية. دار المطبوعة الجامعية، الإسكندرية. 2019.
5. أحمد محمود. التحديات الأمنية في عصر إنترنت الأشياء. دار العلم للنشر. بيروت. 2021.
6. Frank Pasquale. The Black Box Society: The Secret Algorithms That Control Money. Harvard University Press. 2021.
7. George Fletcher. The Grammar of Criminal Law. Oxford University Press. 2020.
8. Jack Balkin. The Law of Artificial Intelligence and Robotics. Yale University Press. 2021.
9. خالد السيد. "أمن المعلومات والجرائم الإلكترونية". مركز الأبحاث العربي. الرياض. 2019.
10. Kevin Mitnick. The Art of Invisibility: The World's Most Famous Hacker Teaches You How to Be Safe in the Age of Big Brother and Big Data". Little, Brown and Company. Boston. 2017.
11. خالد عبد الله. جرائم التكنولوجيا الحديثة. دار الفكر الجامعي. الإسكندرية. 2020.
12. محمد عبد الرحمن. الجريمة الإلكترونية في عصر الذكاء الاصطناعي. دار النشر العربي. القاهرة، 2020. ١٢.
13. محمود نجيب حسني. شرح قانون العقوبات - الجزء العام، دار النهضة العربية. القاهرة. 2018. ١٣.
14. محمد زكي أبو عامر. أصول القانون الجنائي. دار الجامعة الجديدة، الإسكندرية، 2019. ١٤.
15. ناصر العتيبي. "حماية البيانات الشخصية في الأنظمة الذكية". مركز الدراسات القانونية. ٢٠٢٢. ١٥.
16. Stuart Russell and Peter Norvig. Artificial Intelligence : A Modern Approach. Pearson. 2020.
17. Ryan Abbott. The Reasonable Robot: The Reasonable Robot Artificial Intelligence and the Law. Cambridge University Press. 2020.
18. Ryan Calo. The Artificial Intelligence Handbook: Law and Policy. MIT Press. 2019.
19. سامي عبد الحميد. التشريع الحديث حول الذكاء الاصطناعي. دار الثقافة للنشر. القاهرة. 2022.

B. - Newspaper articles:

- C. أحمد الفرج. "المسؤولية الجنائية في عصر الذكاء الاصطناعي". مجلة العدالة السعودية. العدد 45. 2020. ١.
- D. الفرج. أحمد. "المسؤولية الجنائية في عصر الذكاء الاصطناعي". مجلة العدل. العدد 45. 2020. ٢.
- E. علي محمود. "تحديات المسؤولية الجنائية في عصر الذكاء الاصطناعي". مجلة الدراسات القانونية. العدد 8. 2021. ٣.
- F. بتالي غانية. "خصائص الجرائم الإلكترونية" مجلة الباحث، جامعة قاصدي مرباح، ورقلة، الجزائر. العدد 9، 2013. ٤.
- G. خفالة فوزي. "مشكلة إسناد المسؤولية الجنائية الدولية لأفعال الكيانات الذكية". المجلة الأكاديمية للبحوث القانونية. المجلد 7. العدد 2. 2023.
- H. ليلي محمد. "دور المستخدم في جرائم الأنظمة الذكية". مجلة القانون والتكنولوجيا. العدد رقم 10. 2022. ٦.
- I. ليلي أحمد. الأمن السيبراني في العالم الرقمي. دار المستقبل. دبي. 2022. ٧.
- J. مها يسري عبد اللطيف نصار. "المسؤولية القانونية". المجلة القانونية جامعة القاهرة. المجلد 17. العدد 07. أغسطس 2023. ٨.
- K. محمد حسنين. "المسؤولية الجنائية في عصر الذكاء الاصطناعي". مجلة القانون والتكنولوجيا. العدد 12. 2022. ٩.
- L. زين سعدي. الآثار الفقهية لمسؤولية الروبوتات والتطبيقات القانونية للآلات الذكية. المجلة الجزائرية للعلوم القانونية والسياسية المجلد 61 العدد 04، السنة 2024 الصفحات: 147-159.
- M. 1,327 / 5,000
- N. Websites:

1. <https://www.amazon.com/Art-Invisibility-Worlds-Teaches-Brother/dp/0316380504>.
2. <https://heinonline.org/HOL/LandingPage?handle=hein.journals/davlr51&div=18&id=&=&>

