RESEARCH ARTICLE

Artificial Intelligence Crimes and the Difficulty of Applying Criminal Responsibility to Them

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Doi Serial https://doi.org/10.56334/sei/8.6.46

Keywords Artificial intelligence, Criminal responsibility, Criminal acts, Robot.

Abstract

The world has evolved from a traditional reality, to a virtual reality, to a smart world, led by artificial intelligence, and the uses of the latter have increased in various fields, as it contributed to human assistance, and it had many positives, but its risks became a threat to society as a whole, as it was recorded It has many crimes, such as murders caused by smart robots, where the issue of criminal responsibility for artificial intelligence was raised, and because the rules of criminal law are still traditional and have not kept pace with such intelligent technological development, they are unable to regulate appropriate provisions and criminal acts that are used in them. Artificial intelligence technology, which increases the seriousness of the new situation, and what robots will try to do with humanity in the future.

Citation

Mouna M. (2025). Artificial Intelligence Crimes and the Difficulty of Applying Criminal Responsibility to Them. *Science, Education and Innovations in the Context of Modern Problems*, 8(6), 438-499; doi:10.56352/sei/8.6.46.https://imcra-az.org/archive/364-science-education-and-innovations-in-the-context-of-modern-problems-issue-6-volviii-2025.html

Received: 04.02.2025 | Accepted: 26.03.2025 | Published: 28.05.2025 (available online)

Introduction

Humans once lived in a tangible reality, where everything was physically present and could be experienced daily. However, with technological advancements, a virtual reality emerged—an electronic world that rapidly spread and became an essential part of various fields. As a result, electronic legislation was introduced to regulate this new digital landscape. Yet, technological evolution did not stop there; today, we find ourselves in a more advanced phase—the era of Artificial Intelligence (AI).

Artificial Intelligence refers to computer systems that continuously learn and adapt their applications based on acquired knowledge. AI is evolving at an exceptional rate, becoming increasingly complex every year. Despite its numerous advantages and the services it provides, its risks evoke concerns reminiscent of science fiction films. The fear stems from the possibility that intelligent machines may develop self-learning capabilities and autonomous decision-making abilities in various situations.

The integration of AI into diverse fields has sparked concern among scientists and legal scholars, particularly as AI technology enters the realm of criminal activities. This necessitates an urgent legal assessment to classify AI-related crimes appropriately and determine the criminal liability for such offenses.

Significance of the Study

The importance of this research lies in its examination of a modern type of crime that legal systems worldwide have yet to fully comprehend in terms of its implications, dimensions, and effects on human life. This necessitates international efforts to study and regulate this evolving issue.

On a scientific level, AI crimes are distinct from traditional crimes, posing a new threat to societal stability and security.

Objectives of the Study

This research aims to:

- Define Artificial Intelligence and distinguish it from related concepts.
- Identify its key features in the field of criminal law.
- Examine the various crimes committed by AI systems in real-world scenarios.
- Determine the criminal responsibility for AI-related offenses under different circumstances.

Research Problem

This study explores the legal perspective on criminal responsibility for AI-related crimes. The key questions it seeks to answer are:

- Who should be held criminally responsible for offenses committed by AI technologies?
- Do existing legal frameworks provide adequate regulations to address AI-related risks?

Methodology and Structure

To address this issue, this study employs a descriptive methodology**,** which is commonly used for such legal analyses.

Accordingly, the research is divided into two main chapters:

1. The Nature of Artificial Intelligence
2. Criminal Responsibility for AI-Related Crimes

Section I: The Nature of Artificial Intelligence

Artificial Intelligence (AI) has become one of the most essential technologies for modern society, playing a crucial role in assisting with various tasks across multiple sectors—many of which would be difficult or impossible for humans to perform manually.

This chapter aims to explore the fundamental nature of AI and analyze its key features as follows:

1. Definition and Concept of Artificial Intelligence
2. Key Characteristics and Advantages of AI

A) subtitle: The Concept of Artificial Intelligence

Artificial Intelligence (AI) can be defined as computer behavior that mimics human cognitive abilities and operational patterns. One of the most well-known AI applications is robots, also referred to in Arabic as "Al-Insan Al-Ali" (The Humanoid Machine). Robots are programmable machines designed to perform predefined tasks autonomously.[1]

Some scholars define AI as a set of technological processes that produce results by processing data intelligently, similar to human reasoning. These AI systems are capable of solving problems efficiently and logically, often in ways faster than human cognition. Furthermore, AI aims to understand human intelligence by developing applications that simulate human behavior, reasoning, and even future predictions.[2]

AI has also been defined as:

"A scientific field concerned with building machines that perform actions considered intelligent by human standards."[3]

Russell Bell, an expert in the field, describes AI as:

"**Making ordinary machines behave like those seen in science fiction movies.**"

Key Characteristics of AI

From these definitions, AI can be understood as a computer's ability to learn from its environment without explicit and direct programming. It achieves this through data analysis and algorithms, distinguishing it from conventional programming, which follows a fixed set of instructions. AI is also adaptive, allowing it to recognize patterns, relationships, and contextual changes in real-time.

An algorithm is defined as:

"**A process or a set of logical steps designed to solve a problem, following an organized sequence.**"

Another definition describes an algorithm as:

"**A series of mathematical and logical steps necessary to reach a solution.**"[4]

Definition of Robotics and its Relation to AI

The concept of robots is closely linked to AI, but they are not identical. According to the American Robotics Institute, a robot is:

"**A programmable, multi-functional manipulator designed to move materials, parts, tools, or specialized devices through various pre-programmed motions to perform a variety of tasks.**"

The **Japanese Industrial Robotics Association** defines a robot as:
"**A machine designed for general-purpose tasks, equipped with appendages and memory, capable of movement, and able to replace human workers through automated motion execution.**"[5]

Although **robots are programmable machines**, they are **not inherently intelligent.** The intelligence comes when **AI is integrated** into robotic systems, leading to the emergence of **Artificially Intelligent Robots.**

Distinguishing Robots from AI

While AI and robots are often used interchangeably, they refer to different technological domains. The confusion arises due to the development of AI-powered robots, also known as Artificially Intelligent Robots.

- Robots are physical machines designed to perform specific tasks without independent learning.
- AI systems, on the other hand, learn, analyze, and make decisions autonomously without human intervention.

Artificially Intelligent Robots

These robots serve as the bridge between robotics and AI. They rely on AI software and algorithms to perform complex tasks requiring adaptability and decision-making. Some real-world applications include:

- **Warehouse Robots:** AI-powered robots that use **pathfinding algorithms** to navigate storage spaces efficiently.
- **Drones:** Unmanned aerial vehicles that can **return to base autonomously** when battery levels are low.
- **Self-Driving Cars:** Vehicles that utilize **AI algorithms** to detect and avoid road hazards while navigating traffic.[6]

B) subtitle: **Advantages of Artificial Intelligence**

Artificial Intelligence (AI) offers significant advantages across various fields due to its ability to:

- **Solve complex problems** even in cases where information is incomplete.
- **Think, perceive, and analyze** situations with remarkable accuracy.
- **Learn from past experiences** and apply knowledge to new situations.
- **Provide critical information** to support rapid decision-making.[7]

AI's Advantages in Criminal Law

In the field of **criminal law**, AI offers several benefits, including:

1. **Crime Mapping and Risk Assessment**
   - AI software helps **identify high-crime areas**, allowing law enforcement agencies to deploy resources effectively.
2. **Crime Prevention and Risk Reduction**
   - AI systems analyze crime patterns and propose **preventive strategies** to mitigate risks.
3. **Enhancing Evidence Authentication**
   - AI assists in **detecting forged evidence** and verifying the authenticity of documents, images, and videos used in legal proceedings.
4. **Criminal Identification and Forensic Analysis**
   - AI systems analyze crime scenes to **identify potential suspects** and determine their capability to commit an offense.
   - AI-driven surveillance cameras can **confirm an accused person's alibi** by proving their presence in a different location at the time of the crime.
5. **Prisoner Evaluation for Conditional Release**
   - AI analyzes **prisoners' behavioral reports** and assesses their rehabilitation progress to make **objective recommendations** regarding parole.
6. **Enhancing Road Safety with Autonomous Vehicles**
   - **Self-driving cars** powered by AI help prevent **traffic accidents** by maintaining **precise and automated** control over navigation and decision-making.[8]

Section II: Criminal Responsibility for Artificial Intelligence Crimes

Crimes involving Artificial Intelligence (AI) are diverse and complex, varying based on the field of application and the party responsible for the criminal act. The nature of criminal

liability in AI-related offenses depends on who is at fault:

- If the user is responsible, their liability differs from that of the manufacturer or the AI system itself.
- If the AI system operates autonomously and commits an offense, determining accountability becomes legally challenging.

A) subtitle: **Artificial Intelligence Crimes**

Modern technological systems are designed to function with high precision and control, ensuring that intelligent machines operate efficiently to achieve their intended objectives across various fields.

However, despite these safeguards, AI systems are not immune to errors. In some cases, these errors result in criminal acts, causing significant harm and raising legal concerns regarding accountability.

AI-related crimes vary in nature and execution. Below are some of the most critical AI crimes that have led to serious legal challenges in the real world.

1. Crimes Committed by Smart Robots

Several **homicides** have occurred where **robots** were identified as the perpetrators. These incidents happened when robots were **operating near humans**, leading to **fatal consequences**.

In the following section, we will examine specific **cases of robot-related killings** that have sparked legal and ethical debates.

Notable Cases of Robot-Related Killings

1. **The Robert Williams Incident (January 25, 1979)**
   - Robert Williams was **killed by a robot** at the **Ford factory in Flat Rock, Michigan**.
   - The accident occurred when Williams climbed a shelf to **retrieve a mold**, a task that was originally assigned to the robot.
   - Due to a malfunction, the robot provided incorrect information about the remaining number of molds, leading Williams to climb the shelf, where he was fatally struck by the robot's arm.
2. **The Kenji Urada Case (1981)**
   - In 1981, at Kawasaki Heavy Industries in Akashi, Japan, Kenji Urada was killed by a robot.
   - The victim was performing maintenance work on the machine when the robot mistakenly identified him as an object and forcefully placed him on another device, causing his death.
   - Despite attempts to rescue him, the robot continued its programmed operation, leading to a fatal outcome.
3. **The Ana Maria Vital Case (2009)**
   - In 2009, in California, USA, Ana Maria Vital was killed by a robotic transport machine.
   - The robot, designed to stack boxes onto platforms, was still in operation when it mistakenly grabbed the victim in the same manner as it did with the boxes.
   - Despite efforts from mechanics to free her, she died instantly.
4. **The Wanda Holbrook Incident (March 2017)**
   - Wanda Holbrook, a maintenance expert, was killed by a robot at the Ventra Ionia Mains factory.
   - In a horrific accident, a trailer component controlled by AI lifted her and dropped it on her head, causing instant death.

These cases highlight the potential dangers of AI-driven robots, especially when errors in programming or decision-making occur.[9]

2. Crimes Committed by Self-Driving Cars

Modern technology has enabled the creation of self-driving vehicles, which can operate with varying levels of control, reaching the point of fully autonomous driving without human intervention.

A self-driving car can be defined as:

"**A vehicle that uses a combination of sensors, cameras, radar, and artificial intelligence to navigate between destinations without human input. For a car to be fully autonomous, it must be capable of traveling without human intervention to a pre-determined location."**[10]

Self-driving cars offer numerous advantages, the most notable being:

- **Fast response times** through electronic driving systems.
- **Wide-range vision** from all angles.
- **Improved road safety**, reducing the likelihood of accidents.

However, despite these benefits, autonomous vehicles can still be involved in traffic accidents, leading to crimes such as manslaughter and bodily harm.[11]

A real-world example is the accident caused by a Tesla self-driving car, produced by an American automaker, which resulted in the deaths of two people in Texas, USA. The vehicle later caught fire and was completely destroyed.[12]

The causes and contributing factors to self-driving car accidents include:

- **Software errors**, as AI-driven systems may exhibit **unpredictable behavior**.
- **Inability to recognize new situations**, which may lead to dangerous outcomes.
- **Human mismanagement**, where improper control of the vehicle can cause **technical malfunctions**.
- **Sensor failures or system shutdowns**, which can suddenly disable the vehicle's ability to function properly.

B) subtitle: **The Issue of Assigning Criminal Responsibility for AI Crimes**

When a crime is committed using artificial intelligence technologies, who should be held criminally responsible?

- Is it the manufacturer of the AI system?
- Or is the user solely accountable?
- What happens if the AI itself is at fault, without human intervention?

These questions present a complex legal challenge, which will be analyzed in the following sections.

1. Criminal Responsibility of the Manufacturer

When intelligent devices operating with artificial intelligence commit criminal acts, the issue of criminal liability of the AI manufacturer arises. A crime may occur due to a programming error within the AI system, leading to criminal offenses, making the manufacturer legally responsible.

As a preventive measure, legislation must be enacted to regulate the rights and obligations

of manufacturers. This includes setting clear production standards that ensure:

- Compliance with safety and security measures.
- Adherence to ethical and societal values.

An example of AI-based products that fail to meet regulatory standards is the production of sex dolls, where the primary goal is maximizing profit without regard for potential social and ethical risks.[13]

In such cases, the manufacturer bears criminal responsibility simply by creating and distributing these products. However, a fundamental legal question arises:

- Do the laws of the manufacturer's home country consider such production a crime, thereby holding the company criminally liable?
- Or is this type of production legally permissible under that jurisdiction?

This highlights the critical role of legislation in defining clear legal standards for AI-related products. Furthermore, penalties must be strengthened for violations of these regulations.

Manufacturer's Defense against Criminal Responsibility

Despite the legal risks, AI manufacturers may attempt to evade criminal liability based on two main arguments:

1. Terms of Use Disclaimer
   - Manufacturers provide explicit user agreements outlining usage regulations.
   - This shifts responsibility to the owner, who bears sole accountability if a crime is committed using the AI device.
2. Autonomy of AI Systems
   - Manufacturers may argue that AI systems operate independently and are capable of making decisions without human intervention.
   - They claim that programmers are not responsible for the errors or crimes committed by the AI.[14]

2. Criminal Responsibility of the User

A user may commit errors while using AI software, leading to criminal acts. In such cases, the key legal question is: Should the user bear full criminal responsibility for these actions?

This issue presents two possible scenarios:

1. The Crime Results Solely from the User's Actions
   - If the crime occurs exclusively due to the user's conduct, without any external factors, full criminal responsibility falls on the user.
   - Since the crime would not have occurred without the user's behavior, they are considered the sole perpetrator.
2. The Crime is Caused by Multiple Factors
   - In some cases, AI-related crimes may result from a combination of factors, including:
     - The user's actions
     - The manufacturer's design flaws
     - AI system malfunctions
   - In such situations, liability is shared, but the user is still considered the primary offender and is assigned full criminal responsibility.[15]

Legal Perspective on User Liability

Susan B., Professor of Criminal Law and Legal Philosophy at Hanover University, states:

"**Criminal law, which was originally designed to regulate human actions, faces challenges in adapting to independent AI systems and their evolving capabilities.**"

She further explains:

"**As a general legal principle, the operator of a machine is held liable for its actions. For instance, if Google provides you with false information, and you make a decision based on it, you—not Google—are held responsible.**"

This highlights the legal complexity of assigning criminal responsibility in AI-related offenses, particularly when AI autonomy blurs the line between human control and machine decision-making.[16]

3. Criminal Responsibility of Artificial Intelligence Itself

With AI systems reaching a stage where they **think and make decisions independently**, it is possible for **crimes to occur without any direct involvement from the user or manufacturer**.

This raises critical legal questions:

- Should criminal responsibility be assigned to AI entities?
- Is it appropriate to charge AI with a crime?
- How can criminal penalties be imposed on AI systems?

The Legal Challenge of AI Accountability

To assign criminal liability, certain conditions must be met:

1. The act must be committed with awareness and intent.
2. The offender must be legally capable of bearing punishment.
3. The individual must have the ability to distinguish between right and wrong.

This leads to a fundamental question: Can a robot be held criminally responsible?

Defining AI as a Legal Entity

To determine AI's liability, it is necessary to classify its legal status:

- Can AI be considered a legal person?
- Under legal principles, a person is either natural or legal (corporate entity).
- AI is neither a natural person nor a corporate entity.

Is AI Merely an Object?

Objects do not think or make decisions independently. Given that AI can learn and adapt, it challenges traditional legal definitions.

A New Legal Category for AI?

Based on these considerations, AI represents a new type of entity, requiring a novel legal framework. Criminal law is governed by principles of legality and personal accountability, meaning:

- Legal texts must be interpreted strictly.
- Expanding definitions or making legal comparisons is not permitted.[17]

As a result, a new legal system must be developed to regulate AI's criminal responsibility.

Flexibility in Legal Interpretation

To address this evolving reality, judges should be granted flexibility within the principle of legality, subject to clear regulatory guidelines.

Historical Comparison: Legal Recognition of Corporate Entities

When the legal concept of corporate personality first emerged, many legal scholars strongly opposed it, arguing that it was impossible to grant corporations the same status as humans.

However, corporations ultimately gained legal recognition, becoming entities with rights and obligations under the law.

The Need for a New Legal Identity for AI

Similarly, AI has established itself as a distinct legal entity. The challenge now is to:

- Develop appropriate legal frameworks for AI regulation.
- Establish foundations for AI's legal responsibility, which remains a highly complex issue.[18]

Conclusion

The widespread adoption of artificial intelligence technologies across various fields highlights the presence of highly advanced intelligent machines that mimic human behavior. This has necessitated legal regulation, especially when AI operates beyond the boundaries of the law. As a result, there is a growing need to define legal responsibility, particularly in criminal matters.

Criminal liability for offenses committed by intelligent machines or AI systems varies depending on:

- The type of crime committed.
- The source of the error.

If the manufacturer or company intentionally designs AI technology to facilitate crimes, as seen in the case of "sex dolls," then the manufacturer bears full criminal responsibility.

If a user misuses AI technology, then the user is held responsible for the crime.

- In both of these cases, there is no challenge in applying existing criminal liability laws.

However, the greatest legal challenge arises when AI commits a crime independently, without human involvement—neither from the manufacturer nor the user.

- The danger lies in the absence of clear legal provisions within criminal law that define AI's criminal liability and prescribe appropriate penalties for its unlawful actions.

Based on the above, the following conclusions can be drawn:

- The term artificial intelligence differs from traditional programming, which relies on pre-existing data and does not generate new solutions, whereas AI has the capability to think and make decisions independently.
- AI contributes to developing solutions that help prevent crimes and reduce risks.
- Numerous crimes, particularly homicides, have been recorded where smart robots were responsible.
- Criminal liability varies between the manufacturer and the user in AI-related crimes, depending on the type of error and nature of the crime.
- The absence of legal provisions in criminal law that address AI entities is a key factor behind the increasing number of AI-related crimes.

Recommendations

- Manufacturers of intelligent entities must take all necessary precautions to prevent crimes, following a preventive approach.
- Imposing restrictions and regulations on users when purchasing complex AI-powered devices, ensuring that they understand their usage to prevent claims of ignorance in criminal cases.
- Enacting new legislation that aligns with AI entities, defines their legal responsibility, and imposes appropriate penalties.
- Encouraging research institutions to support AI-related projects, whether in the legal or technical fields.

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