Journal of Anbar University for Law and Political Sciences
مجلة جامعة الانبار للعلوم القانونية والسياسية
P. ISSN: 2706-5804 E.ISSN: 2075-2024
Volume 15- Issue 1- March 2025 المجلد ١٥- العدد ١ – اذار ٢٠٢٥

Criminal Law against offences committed by a robot and its programmers: An overview

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Abstract:

A robot is a human creation and without human intervention, there would have been no elevation of the concept of robots. Since law enforcement does not specifically provide the liability of the robots there are different schools of thought. Criminal law defines that "acts" are construed as offenses and the intention behind committing such acts. But, coming to Robots, there is no mind but the program designed by a human using his skills and foreseeing its actions and consequences. As the name suggests Robotics are creations of Artificial intelligence made only with the aim to substitute human mistrial work however it has gradually evolved from automatic cooking to self-driving cars. When the robotic veil is lifted there is a programmer behind every Robot who is in control of its actions. Applying the theory and principal here, a responsibility can be understand on behalf of the principal basing on his instructions, and the actions of them are ratified by the principal. Applying the same tortious rule in criminal law, A robot have responsibility of its programmer, but the liability of the programmer differs from state to state and circumstance to circumstance. Criminal Liability of robot is still hypothetical .

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DOI
https://doi.org/10.37651/aujlps.2024.153381.1348

Submitted: 1/9/2024
Accepted: 4/9/2024
Published: 19/9/2024

Keywords:
Robot
Human
Liability
Criminal Law
Artificial Intelligence, Robotics
Programmer Responsibility
Tortious Rule.

القانون الجنائي ضد الجرائم التي يرتكبها الروبوت ومبرمجوها: نظرة عامة

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الملخص:

الروبوت هو ابتكار بشري، وبدون تدخل الإنسان، لم يكن هناك أي تطور في مفهوم الروبوتات. نظرًا لأن القانون لا ينص بشكل محدد على مسؤولية الروبوتات، فإن هناك مدارس فكرية مختلفة حول هذا الموضوع. يعرف القانون الجنائي أن "الأفعال" تعتبر جرائم بناءً على النية وراء ارتكاب هذه الأفعال. لكن عندما يتعلق الأمر بالروبوتات، لا يوجد عقل، بل برنامج مصمم بواسطة إنسان باستخدام مهاراته وتوقعاته للأفعال والنتائج. كما يوحي الاسم، فإن الروبوتات هي ابتكارات في مجال الذكاء الاصطناعي تم تصميمها فقط بهدف استبدال العمل اليدوي البشري، ومع ذلك فقد تطورت تدريجيًا من الطبخ التلقائي إلى السيارات ذاتية القيادة. عندما يتم رفع الستار عن الروبوت، نجد أن هناك مبرمجًا خلف كل روبوت يسيطر على أفعاله. بتطبيق النظرية والمبدأ هنا، يمكن فهم وجود مسؤولية نيابة عن المبرمج بناءً على تعليماته، وتتم المصادقة على أفعاله من قبل المبرمج. بتطبيق نفس القاعدة التقصيرية في القانون الجنائي، يتحمل الروبوت مسؤولية مبرمجه، لكن تختلف مسؤولية المبرمج من دولة إلى أخرى ومن ظرف إلى آخر. لا تزال المسؤولية الجنائية للروبوت افتراضية.

الكلمات المفتاحية:

ألالي ، بشر ، مسؤولية ، القانون الجنائي ، الذكاء الاصطناعي ، الروبوتات ، مسؤولية المبرمج ، القاعدة المدنية.

المقدمة

INTRODUCTION

Robots are proof that humans have evolved from igniting fire from stones to sending rockets into space. Every minute there is a contribution made by one human by inventing one thing or the other which eventually makes the life of humans easier. One such invention

is Robot. Robots are such inventions that seem to be acting independently but upon unveiling the same one can find a programmer who is controlling the same or is responsible for controlling the same. The programmers determine the robots' functions and he is responsible to speculate the possible actions of the robots. However, it is not possible for the programmer to determine each of the consequences of the actions of the robot, as the robots are mainly trained to perform independently and to learn from trial experiences.

RESEARCH OBJECTIVES:

1. Determining Criminal Liability: The research aims to identify criminal liability for crimes committed by robots, determining who is responsible—whether it's the programmer, user, or manufacturer.
2. Studying Existing Legal Frameworks: The research seeks to examine current legal frameworks to assess whether they are sufficient to address crimes involving robots or if new laws or amendments are needed.
3. Analyzing the Relationship Between Programmer and Robot: The research aims to analyze the legal relationship between the programmer and the robot and how a robot can be held accountable for its actions.
4. Addressing Ethical Challenges: The research seeks to discuss the ethical challenges associated with the use of robots in contexts that may lead to harm and to propose solutions to these challenges.

5. Providing Legal Recommendations: The research aims to offer recommendations for developing existing laws to better address the challenges posed by robot-related crimes.

RESEARCH SIGNIFICANCE:

1. Enhancing Criminal Justice: The research helps clarify legal responsibilities in cases of crimes involving robots, contributing to the achievement of criminal justice.

2. Keeping Pace with Technological Developments: The research contributes to developing legal frameworks to better align with the rapid advancements in technology and artificial intelligence.

3. Protecting Society: The research aims to protect society from potential risks that may arise from the use of robots in illegal activities.

4. Encouraging Safe Innovation: The research contributes to creating an environment that encourages innovation in robotics while ensuring that there is a legal framework in place to protect society.

5. Enriching Legal Discourse: The research adds to the legal discussion on the new challenges posed by robots, prompting further future studies in this area.

LITERATURE REVIEW

There is no specific law governing the acts and offences committed by a robot or its programmer. It is either the manufacturer who is held liable for the mal-function of the robot and I come cases operator of the care driving the self-driving cars in autopilot mode. The criminal liability for the actions of the Robot cannot be general and the same is also not governed by any regulations. An operator/programmer must

prove that he was diligence in finalizing the features and functions of the robot while the onus is on the user to prove that there is defect in manufacture[1]. Robot does not mean walking talking robot, as a matter of fact, a vacuum cleaner, phone, self-driving cars, Alexa, Artificial intelligence, and google assistants are robots. There are no reliable precedents to guide the current scenarios and to clarify the ambiguities prevailing.

RISK OF BEING REPLACED BY ROBOTIC PROCESS AUTOMATION

Automation still threatens those who work in low-skilled or low-skilled jobs. However, as digital technology develops, more skilled workers are likely to fall victim to this process. "Transportation, logistics, office and administrative support can all happen," says GPS: Citigroup's Global Perspectives and Solutions Report. This also applies to countries: As shown in the chart below, some automations are more vulnerable than others. While 35 percent of US workers are being replaced by automation, many jobs in Thailand (77 percent) and Nigeria (65percent) have large manufacturing sectors in their economies. The main reason after this is Ethiopia. eighty-five percent of jobs are at risk as a result of efforts to turn the agricultural sector into an industry.

1. Mulligan, C. (2017). Revenge against robots. SCL Rev., 69, 579.

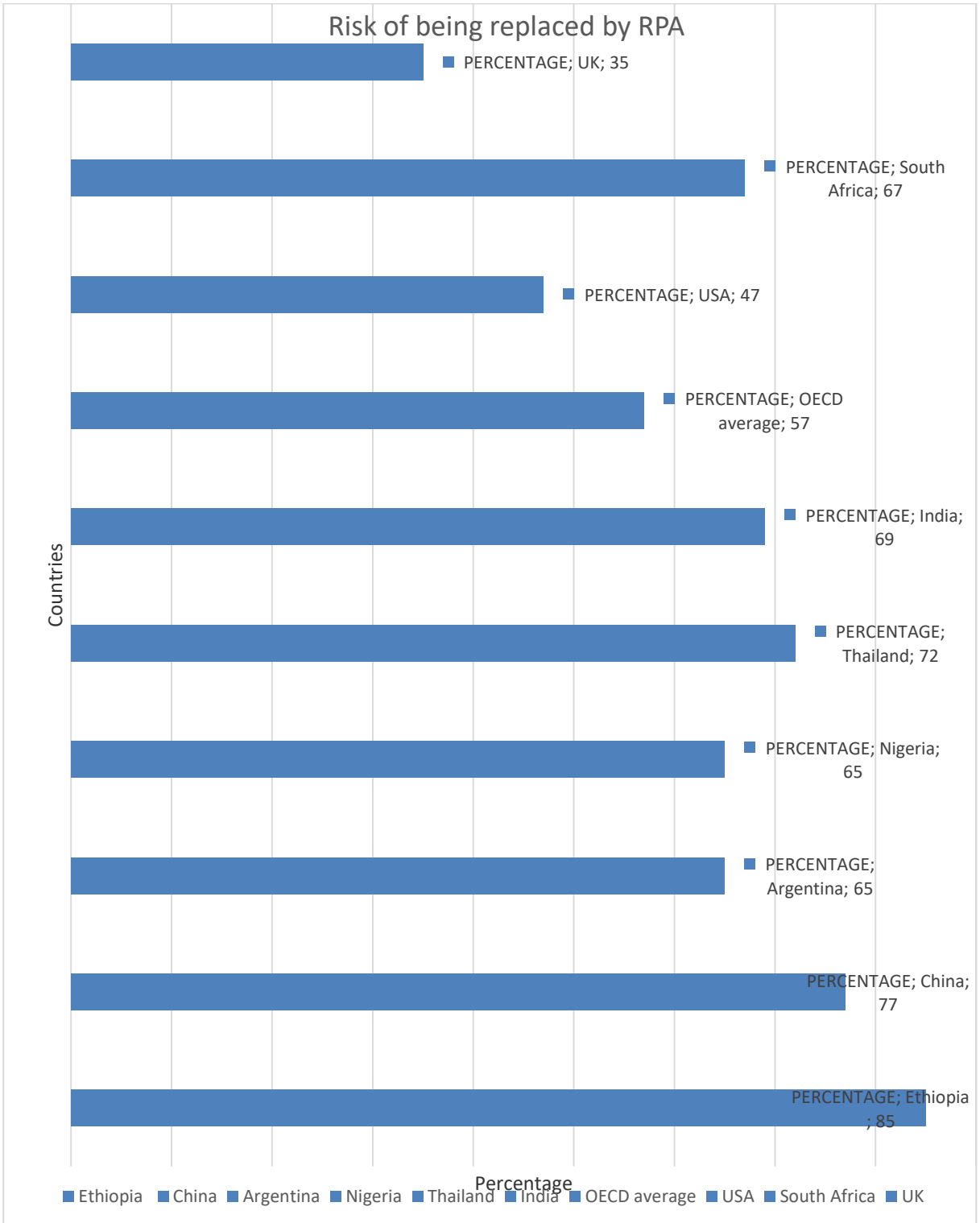
Risk of being replaced by RPA
PERCENTAGE; UK; 35
PERCENTAGE; South Africa; 67
PERCENTAGE; USA; 47
PERCENTAGE; OECD average; 57
PERCENTAGE; India; 69
PERCENTAGE; Thailand; 72
PERCENTAGE; Nigeria; 65
PERCENTAGE; Argentina; 65
PERCENTAGE; China; 77
PERCENTAGE; Ethiopia; 85
Countries
Percentage
Ethiopia
China
Argentina
Nigeria
Thailand
India
OECD average
USA
South Africa
UK

Fig.1 risk of being replaced by robotic process automation in many countries.

RESPONSIBILITY & LIABILITY

Every legal system is classified under Criminal law. While the few law breakings are deemed tortious and often damages are quantified while criminal law ensures that a wrongdoer is punished and justice is done to the victim. Who is to blame for the fault of the robot? The jurisprudence behind imposing punishment on the wrongdoers is with an object to restrain them from repeating or from making them realize the suffering caused by them or reformative theories[(1)]. The said concept cannot be applied to robots as they are lifeless and none of the theories make practical sense. So, focus shifts on to the creators of the human mind behind them. Even though there is no specific uniform law governing crimes committed by robots, the legal system is drawing inferences as per the situation and has to determine the responsibility of the programmer and the user.

Coming to laws dealing with harm caused by self-driving cars, the U.S Department of Transportation has from time to time updated its guidelines for usage of autonomous vehicles. However, instead of opting for codified rules, each state is passing separate rules regulating the usage of the same due to which there is ambiguity in defining "Vehicle Operator". While Georgia defines a person who engages

2. Pagallo, U. (2017). When morals ain't enough: Robots, ethics, and the rules of the law. Minds and machines, 27(4), 625-638.

Autonomous Driving System (ADS) as an operator, Texas laws say that a vehicle operator I any natural person who is driving a person, and further Tennessee, ADS is the vehicle operator. As noticed, if the very definition differs the liability also differs[1]. Lack of application of unified guidelines is explained in the following picture:-

Figure 2 : Explanation of Guidelines

PERSPECTIVE OF ROBOTS

Artificial intelligence is used in robots under moral ethics[2] however, they are programmed to achieve the goal instructed or set by their programmer without giving a second thought about the collateral harm. For example, needless to mention how these self-driving cars have come to market as a boon but when the bane of the same came into light i.e in 2016, 2018, 2019 when accidents occurred to the self-driving case in theory autopilot feature, pedestrians were killed. In autopilot mode, the car is only programmed to reach the destination. But that does not entitle or mean that the feature may include reaching the destination by running over the pedestrians. The computer science community is currently discussing ethical dilemmas for Intelligent robots.

[1] Cofone, I. N. (2018). Servers and Waiters: What Matters in the Law of AI. Stan. Tech. L. Rev., 21, 167

[2] Torresen, J. (2018, January 15). Robotics and Intelligent Systems Group, Department of Informatics, University of Oslo, Oslo, Norway. Retrieved from Front.: https://doi.org/10.3389/frobt.2017.00075

Further, even if the robot is blamed for its misfunction, is it capable of taking the punishment and serve the purpose of punishing a wrongdoer? The answer is negative most of the time[1]. However, in few circumstances, the robots may be ordered to be dismantled which is equivalent to imposing death on it from the perspective of its creator. The programmer intentionally programs the robot to cause harm to others, on then the creator can be held liable for criminal responsibility. The Programmer is obligated to perform due care while programming functions of the robots. For example, in South Korea and the United States, a woman's hair was sucked by her vacuum cleaner, by mistaking hair to be dust as per the program set in it, and in another case, a self-driving car run over a child as the sensors could not detect the child. Due to the lack of incorporation of features, the programmer is held liable for the harm caused[2]. In the former case, the onus lies on the woman to prove that the suction of hair was due to a manufacturing defect. In such cases, a manufacturer may be held liable for such negligence. However, United States does not impose post-sales duties on the manufactures.

Coming to a later case, Self-driving cars are fully automated and there is constant research ad development done by the Automotive

[1] Pagallo, U. (2018). Vital, Sophia, and Co.—The quest for the legal personhood of robots. Information, 9(9), 230.

[2] Joh, E. E. (2017). Private Security Robots, Artificial Intelligence, and Deadly Force. UCDL Rev., 51, 569.

industries to make self-driving cars fully automated beyond imagination. As per Insurance law, motor insurance covers the liability of the driver and the damages covered[1]. However, coming to self-driving cars with autopilot mode facilitation, the liability in the unfortunate event of damage caused arises, the question of vehicle operator arises as the same is not defined. However, if the programmer has failed to perform due care and research on incorporating sensors to detect child amounts to negligence.

It is also pertinent to note that, if the robots are deemed to cause harm, then the same should not be invented or improvised further[2]. However, even though there are deaths caused by self-driving cars, the following study shows how it was adapted by its users in the market:-

It is a fact undisputed that a robot is not self-made. It is a creation of another human mind and is capable of only functioning only those features which are incorporated in to it. Robot does not have inherent power to alter or modify by itself. Concept of morality and ethics are absent in robots. Let's say, a self-driving care has malfunctioned and on one side there is a homeless guy and on another sider there is a public figure, the configuration of the car is to weigh the

[1] Subramanian, R. (2017). Emergent AI, social robots and the law: Security, privacy and policy issues. Subramanian, Ramesh (2017)" Emergent AI, Social Robots and the Law: Security, Privacy and Policy Issues," Journal of International, Technology and Information Management, 26(3).

[2] Hu, Y. (2018). Robot Criminals. U. Mich. JL Reform, 52, 487.

less damage and it choses to hit homeless man is neither moral or ethical feature[1]. The intention of the programmer could be such that the program is to choose between a dust bin or a human. In such circumstance the ethical function would make right decision. But in change of circumstances a spontaneous decision basing on morals and ethics is mandated.

I. ROBOTS AS LAW ENFORCER & LAW BREACHERS

A robotic technology can be used in both law enforcing and law breaching. In New York, Knightscope robots were launched in Huntington Park, California as deployment to Police department. As per the May 2020 statistics, it was found that from June 2018 to December 2019 there has been positive impact on reduction of crimes and nuisance activity with the help of live monitoring of the place.

While positive impacts are being discussed, there has been few unforeseen incidents because of Knightscope robots where during the wandering/ inspection by the robots it has run over foot of a 16 months old boy resulting in bruising. Critics have raised objections that the robot needs to be supervised and inbuilt with morals and ethics. In few incidents, where there was clear video footage of the offender, yet question as to the authenticity of the footage was raised by citing the

[1] Henderson, S. E. (2019). Should Robots Prosecute and Defend?. Okla. L. Rev., 72, 1.

loopholes and scope of tampering of the videos and as a result offender was not even investigated[1]

As Law breacher or violator, few robots are even used as bombs with high capacity or intensity which would cause more destruction to the society than compared to any manual bombs. It is up to the intentions of the creator of the robot to program it in enforcer way or violator way.

II. CRIMINOLOGY BY ROBOTS

Intention behind commission of crimes is one of the major ingredients in determining whether the person indulging in said actions was deliberate or it was unintentional. But coming in applying the same to robots, as reiterated in several aspects in this paper, it is not practically possible as robots are not self-efficient to act on their own beyond the scope of what was actually incorporated in them by way of features. It is premature to discuss on the same as currently robots are not even included in the definition of person or even being recognized as separate body in order to determine commission of crimes by it[2]. As such the question of mens rea remains a hypothetical topic to the legislators/ law makers and requires consideration of other country laws and comparative analysis of the same.

[1] King, T. A. (2020, February 14). Artificial Intelligence Crime: An Interdisciplinary Analysis of Foreseeable Threats and Solutions. Sci Eng Ethics, pp. 89-120. Retrieved from Spinger.com.

[2] Hu, Y. (2019). Robot Criminals. J. L. REFORM, 487.

III. RELATIONSHIP OF AGENT

There are different and various schools of thought debating on the relationship between the programmer and the robot. The responsibility is divided depending on each circumstance of the case and not in a generic sense. From identifying crimes by a person to entity law has evolved. Today, we have law enforcement that determines and cover crimes committed by companies and entities. However, there is no specific law that has defined inclusion or exclusion of Robots in the definition of Persons. Prima facie, Robot is a non-person just like a corporate body. (Peter M. Asaro) When a crime is committed by a company, all the Directors on board at the time of the commission of such acts are held liable. Whereas, when a crime is committed by Robot, the human mind behind it is not held liable absolutely[(1)]. The rule of liability for corporate crimes does not apply to robotic crimes.

As per United States certain Laws, a person who is legally empowered to act on behalf of another person or entity by virtue of the authorization granted by the said person or entity is being referred here. The criminal law is being focused here for legal act against the robots

[(1)] D.V, P. (2019). The problem of robotic activity in qualifying Criminal acts. Atlantis Press (p. Volume 105). Yekaterinburg, Russia: 1st International Scientific and Practical Conference on Digital Economy (ISCDE 2019).

or programmers. Applying the same definition between the Programmer and Robot, an inference as to the robots and principal relation can be drawn between them. Basing on the consequence or unfortunate event committed by the robot, the liability of the Programmer is determined.[1].

It is pertinent to note that, in the United States, operators of the Self-driving cars are convicted for the injuries or accidents caused by the self-driving cars construing same as negligence of the operators who could have avoided the happening of the unfortunate accidents by using the innovative potential. However, there is a little stricter approach on pertaining to determining the criminal liability of the robots. The onus lies on its operators to prove that the damage was not precedented or it was beyond the scope of human mind to predict all the mal-functions and the possible damages that would be incurred.

[1] M. Caldwell, J. T. (2020). Crime Science Journa;. Retrieved from https://doi.org/10.1186/s40163-020-00123-8: https://crimesciencejournal.biomedcentral.com/articles/10.1186/s40163-020-00123-8#citeas

IV. CRITICISM

Limiting the analysis of the criticism of Legal experts to self-driving cars and law enforcing robots, they opined that Robots as law enforcers are not trying to solve problem but it can only be seen as good alternative but would give more results under more supervision [1]. A video of offence captured by the Robot must be held conclusive instead the same is also not being relied on absolutely like that of a Police Officers statement. A trust on the robot will only make it a real enforcer. Following statistics shows the opinion of the people and the possible effects of the robots and its impacts.

[1] Sukhodolov, A. P., Bychkov, A. V., & Bychkova, A. M. (2020). Criminal Policy for Crimes Committed Using Artificial Intelligence Technologies: State, Problems, Prospects.

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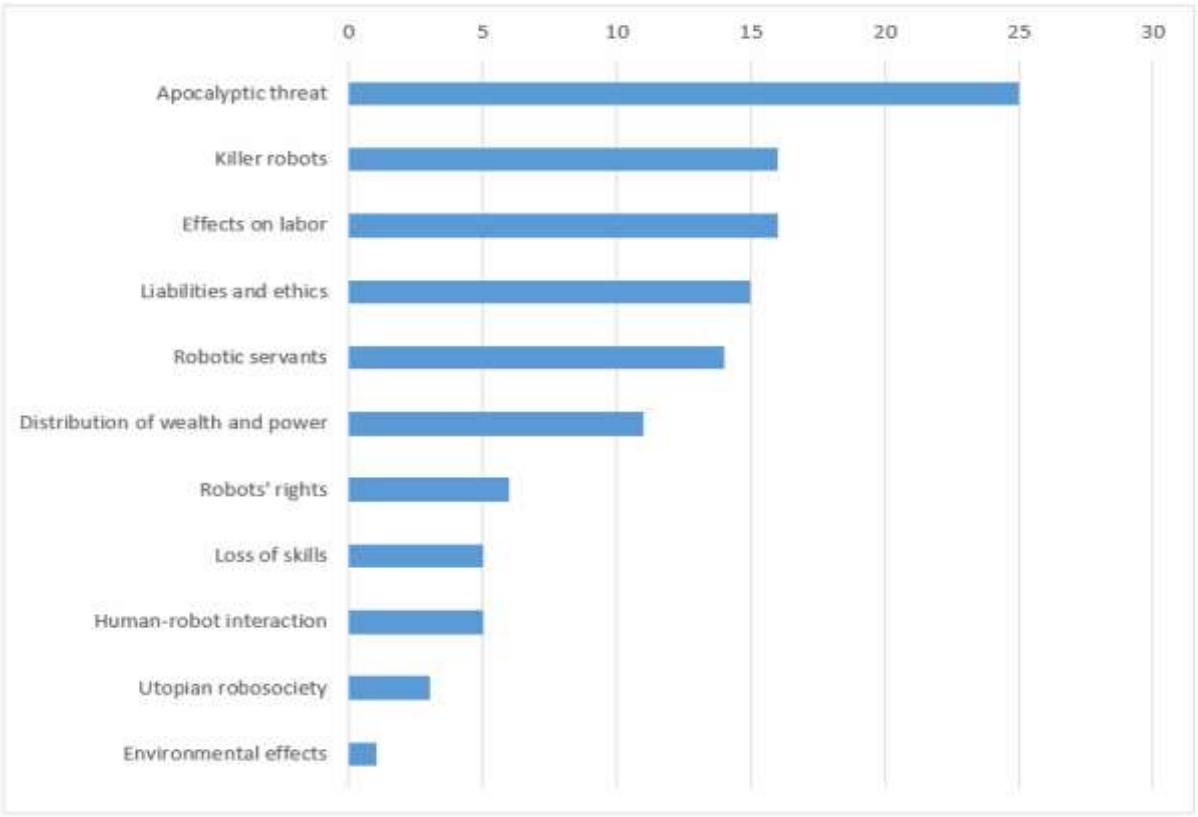

Figure 3: People opinion about robotics effect

RESULT AND CONCLUSION

It is undeniable that the sole intention behind invention of robots is to lessen the risk of human life that is precedented from past experiences. Their use was originally limited to support system later on the same has been human substitute. A self-driving car with sensors on each side of

the car is invented with objective to reduce road accidents. However, at times due to mis-readings by those sensors the car might indulge itself in accidents. In the United States, the self-driving cars are still under testing. However, as per the policy prevailing, even in the auto pilot mode, a self-driving car can only be opted by a licensed driver with a scope of such driver to take over the same in case of any mal-function and avoid any unfortunate events. Some US industries are quickly reaching the point of inflation. The American electronics and power industry now has some industrial robots, many of which are basic and designed to perform simple tasks. But makers are planning to add a variety of complex and expensive robots to perform complex tasks[(1)]. As a result, we estimate that the percentage of work done by advanced robots will increase from 10 percent today to 32 percent by the end of the decade as shown in fig.4. Also there are Some industries that are slow to adapt the new technologies. In the manufacture of furniture, where it is very difficult to perform tasks, the financial cost due to the use of robots is still many years away. According to our expectations, the adoption of robots in the industry will not start until 2020; By the time 12 percent of work is automatic, you will be nearing the end of the next decade as shown in fig.4.

[(1)] Whitford, A. B., Yates, J., Burchfield, A., Anastasopoulos, J. L., & Anderson, D. M. (2020). The adoption of robotics by government agencies: Evidence from crime labs. Public Administration Review, 80(6), 976-988.

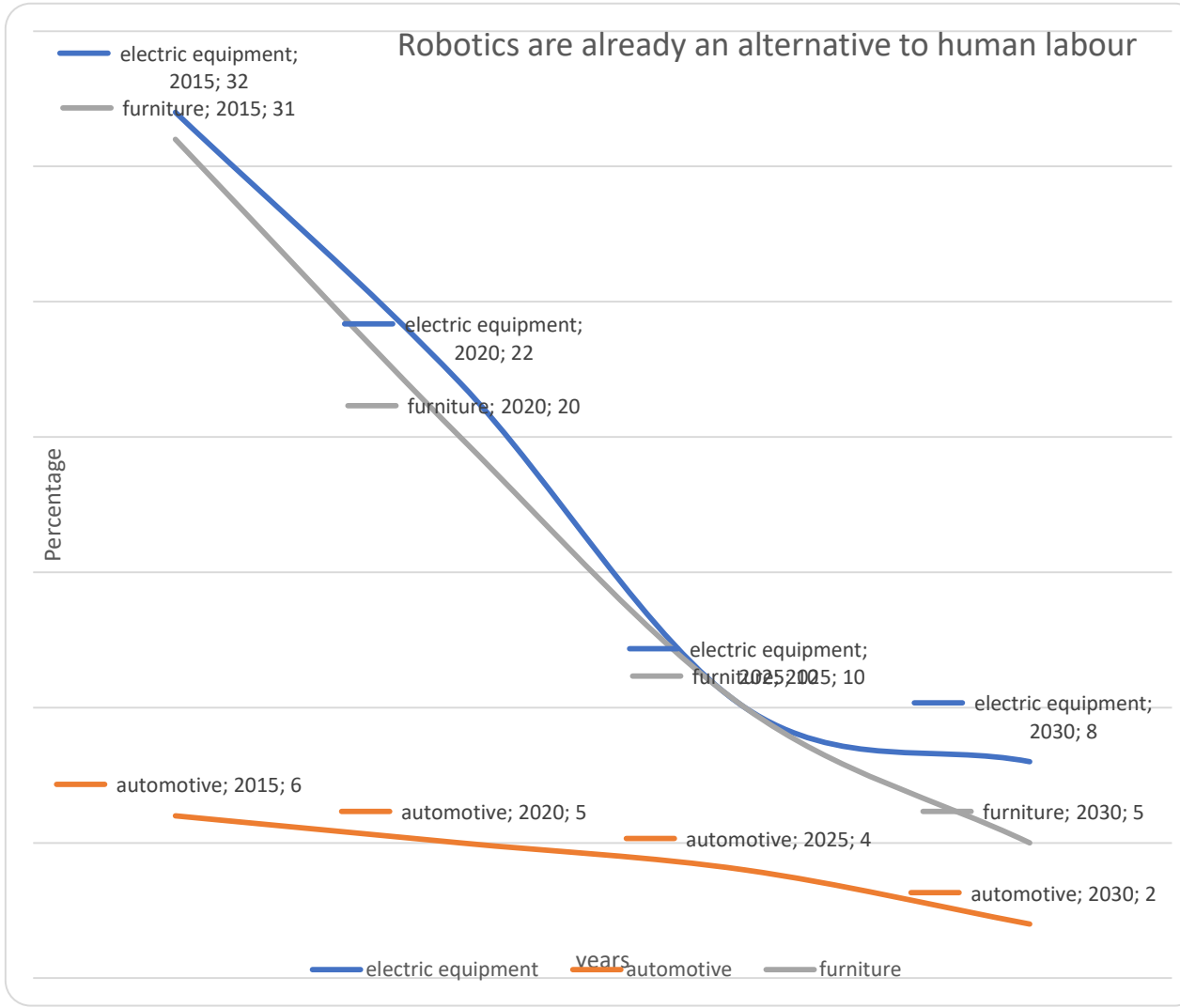

Figure 4: Robotics are already an alternative to human labor in many US industries.

The Criminal Laws when enacted were not drafted by predicting human inventions, and thus does not include crimes by robots specifically. The offences covered under existing laws are traditional and the interpretation and scope are limited. But, in order to address the

issues on need of the hour basis, an operator of the car is to be blamed and held responsible for the negligence accidents done by the self-driving cars because of predictable mal-functions of the features[1]. Amidst the determination of the liability of the operators and the robot, the balance between the need of invention and danger association to such invention and social benefit involved, there is a dire need of special laws governing the acts of Robots.

Result:

The research has demonstrated that the criminal liability of robots is a complex and evolving issue, as traditional criminal laws were not designed to address the actions of artificial intelligence and autonomous systems. Robots, initially created to ease human labor, have grown to perform complex tasks, even in sensitive and dangerous areas like driving and industrial operations. However, despite their perceived autonomy, robots are still creations of human beings—programmed by developers, designed by manufacturers, and controlled by operators. Hence, while robots may act independently, the liability for their actions, especially in cases of malfunction or accidents, must still be attributed to humans, whether the programmer, user, or manufacturer.

[1] Weigend, S. G. (n.d.). If Robots Cause Harm, Who Is to Blame? Self-Driving Cars . New Criminal Law Review.

Self-driving cars, for example, can make independent decisions based on their programming, but when accidents occur, the question arises as to who is held accountable. The existing legal frameworks often place responsibility on the operator, even when the car is in autopilot mode. This indicates that, although robots can perform tasks more efficiently and may sometimes reduce human error, the legal system is not yet ready to recognize them as independent agents under criminal law.

Recommendations:

1. Development of New Legal Frameworks: There is an urgent need for laws specifically tailored to address crimes involving robots. These laws should clarify who holds responsibility—programmers, users, or manufacturers—depending on the situation and degree of control.

2. Clarification of Liability: Criminal laws should be amended to specify how liability is determined in cases where robots or autonomous systems cause harm. This includes setting clear guidelines on the role of the programmer versus the role of the operator or user.

3. Regulatory Oversight for Advanced Robots: Governments should implement regulatory oversight on the design, testing, and deployment of advanced robots, such as self-driving cars, to ensure safety standards are met, and clear guidelines for liability are established.

4. Ethical Frameworks: Policymakers should develop ethical frameworks for the deployment of robots in society. This includes addressing the ethical challenges of robot autonomy, decision-making

in high-risk environments, and how to balance innovation with public safety.

5. Public Awareness and Training: Awareness programs should be created for users and developers of autonomous systems. Operators of self-driving cars, for example, should receive mandatory training on how to intervene when the system fails. Similarly, programmers should be trained in the ethical and legal consequences of their work.

6. International Collaboration: As robotic technologies transcend national borders, an international legal framework is necessary to address the global challenges of robot-related crimes and establish consistent rules on liability across jurisdictions.

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