Ethics and challenges of Artificial Intelligence in policing enforcement

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Abstract

The rapid development of science and technology has changed the existing methods of law enforcement officers. One of the most attractive is Artificial Intelligence. Artificial Intelligence has begun to be used in robotics to assist or replace part of the work, and law enforcement officers, Artificial Intelligence, and robots can also combat crime more effectively. However, when we use Artificial Intelligence to assist us in performing tasks and provide robots with more autonomy, we may face legal and moral issues. First, this paper introduced Artificial Intelligence and robots' characteristics and how to use robots to commit crimes, gradually deducing the interactive influence of Artificial Intelligence and criminal justice. Second, the article further hints at the limitations, obstacles, and possible challenges of Artificial Intelligence in law enforcement applications.

Keywords: Artificial Intelligence, Science and Technology Enforcement, Procedural Justice, Legal Norms, Ethical and Morals.

人工智慧技術於警務執法上的道德與挑戰
Ethics and challenges of Artificial Intelligence in policing enforcement

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摘要

科技的日新月異，使現行執法人員執勤方法改變，其中最吸引人但又令人懼怕的，就是人工智慧，現在人工智慧已開始用於機器人領域，以協助或替代各項工作，而執法人員，亦可以透過人工智慧與機器人更有效的打擊犯罪，但是，當我們在越多的領域使用人工智慧來協助我們執行任務並提供機器人更多的自主權時，可能會面臨法律與道德的問題。本文從介紹人工智能與機器人的特性開始，進而介紹各國使用機器人協助執法的現況，再逐漸推衍至人工智能與刑事司法領域的交互影響，並提及人工智能在執法運用上的局限性、障礙與可能面臨的挑戰。

關鍵詞: 人工智慧、科技執法、程序正義、法律規範、倫理道德

1. Introduction

1.1 What are Artificial Intelligence and Robotics

People are always full of fantasies about robots. Because of the blurring of robot definition and interpretation, it gives people the space to imagine and create. A robot is a machine that can perform work automatically. It doesn't have to be like a person, but it must be a device that can operate independently. It can accept human command, run pre-programmed procedures, or act on principles based on Artificial Intelligence. Its mission is to assist or replace social work, such as production, construction, or dangerous work. Today's robots are already working in the industrial, commercial, and service industries. The robot has moved from a single-function, goal-oriented machine to a multi-functional system. After decades of development, robots have been recognized for use in different tasks. (Savela, Turja, & Oksanen, 2018).

Artificial Intelligence (AI), a term that attracts people but teaches everyone to be afraid, draws us to be an intelligent robots that can think, help people with their work, and cook for our children. Artificial Intelligence refers to the wisdom expressed by machines made by humans. The definition of Artificial Intelligence can be divided into two parts, namely "artificial" and "intelligent." "Artificial" is better understood and less controversial. Its definition is the things that humans created.

About what is "Intelligence" involves other issues such as consciousnesses, self, mind, etc. We use our brain to create something automatic. However, humans have a minimal understanding of our intelligence. Furthermore, we have limited knowledge of the necessary elements that constitute human intelligence, so it is difficult to define "intelligence" or "artificial."

Robots are tools for performing tasks, and Artificial Intelligence is the brain that humans create for them. The overlap between robots and Artificial Intelligence is that we can apply Artificial Intelligence to robots. The robot is changed to a machine that can automatically perform motion without performing repeated work. This kind of used intelligent robot can perform relative and appropriate reactions and actions by sensing externally different environments and commands. (Savela, Turja, & Oksanen, 2018).

1.2 The Autonomy in Artificial Intelligence and Robotics

As robots become more complex, experts and scholars begin to pay attention to the ethics of robot behavior. Some scientific organizations claim that there may be robotic brains in 2019. Others predict that the robot's intelligence will have a breakthrough in 2050. Recent advances have made the behavior of robots more complicated.

Like all technology issues, automated robots bring about technological changes. The impact of smart robots on society cannot be ignored, and now police and law enforcement personnel are using robots to detect explosives or use robots for other criminal investigation purposes. In the future, we may provide more autonomy for robots because of advances in technology. However, we have to consider whether we can make these robots have autonomy. When robots can also be judges, human beings may face a day of trial by robots because humans are always more likely to make mistakes than robots. Humans may think they can avoid this legal and moral issue, but these problems may arise when we deliver autonomy to the robot. (Greeling, 2013).

1.3 Improper use and design by law enforcement agencies

In 2013, after a man murdered five Dallas police officers and threatened to shoot in a standoff in a parking lot, the police decided to detonate the robot and kill the suspect (Taft, 2018). In addition, in 2011, Tennessee police tied a tear gas grenade to the robot and accidentally caught fire in a mobile home (Singer, 2016).

On the other hand, compared with people with light skin, facial analysis software is more likely to misidentify people with dark skin. Without a policeman's ability and vision, the robot may be too strong when required nuances and restraint. The use of robots may further exacerbate social inequality in policing (Thomas, 2020). The cameras on the robots cannot provide their operators with the same visual acuity as humans at the scene. As a result, they may attack people who are not involved. Thus, some states, including Oregon, Virginia, and Wisconsin, have banned law enforcement agencies from armed drones. So far, only North Dakota has explicitly allowed the police to install weapons on drones (Boyd, 2016).

Because the design of artifacts is ethically related to their use and "responsible use," "responsible design" is also required in this field. (Houkes and Vermaas 2010; Verbeek 2011). For example, if the AI robot is designed without human rights (such as the right to express opinions or assume that the people are innocent), the AI robot is likely to make wrong decisions. This problem is not AI or the robot itself. It is because the designer did not consider human rights when designing it. Torrance (2011) stated that AI ethics could be defined as designing machines to do, and the design is closely related to ethics. When designing an AI robot, we should consider "ethical productivity and the public's moral acceptance of its behavior."

1.4 What we have now in Artificial Intelligence and Robotics

We are now living in an era of Artificial Intelligence, and Artificial Intelligence has changed many ways of life and has given us a lot of help. Now the phone can take pictures with the AI function. The car can reach its destination using automatic navigation and automatic driving. Banks can control the funds in the form of AI and robots. The doctor can use AI and robots to find the medicine that is most suitable for the patient. The farmer can control the plant's growth environment by AI and robots to get the most fruits. The police can use the AI and Robot's assistance to know the crime hotspots or use the AI to conduct face recognition to find the prisoner. The judges use the aid of the AI to consider the prisoner's sentence to make the final judgment. Robots and Artificial Intelligence are now in every corner of our lives. (Rigano, 2019)

Our paper presentations are listed as follows: In Sec.2, we find the Artificial Intelligence and robotics policy in law enforcement agency. In Sec.3, the limitation of development is summarized. Next, we discuss our proposed policy in Sec.4. Finally, the conclusion is given in Sec.5.

2. Artificial Intelligence and Robotics policy in Law Enforcement Agency

2.1 Cases of law enforcement agencies using robots to assist in committing the crime around the world

In Singapore, the police use "Xavier robots" to look for unwelcome social behaviors, such as smoking in restricted areas and illegal hawking. Once the activity is detected, the Xavier robot will alert the command and control center, where police can make an appropriate decision. In

addition, the tablet on the front of the robot will display a message to people who may violate the law to educate them and stop their bad behavior. (Atherton, 2021).

In addition, according to Glaser's report, the use of robots to assist law enforcement applications in the world include:

1. In Cleveland, police use robots to find explosives in front of the car or behind the trash can.
2. In India and South Africa, police use drones to spray pepper spray and paintball on protesters.
3. In Korea, prisons use robots to monitor prisoners,
4. In Israel, police use robots to enter houses and fire bullets to deter prisoners.
5. In Los Angeles, police use robots to pick up car bombs.
6. In Japan, police use drones to catch suspicious drones.
7. In Brazil, police use robots to check suspicious packages.
8. In the Democratic Republic of Congo, police use robots to guide pedestrians safely through wide and busy roads.
9. In Polish, police use robots to conduct house reconnaissance.
10. In South Korea, police use semi-autonomous killing machines to patrol the border. They are equipped with 5.5 mm machine guns, and the grenade launcher can detect targets two miles away through its sensitive heat and motion sensors.
11. In Greek, the coast guard uses robots as lifeguards to rescue refugees across the Mediterranean.

The above are examples of countries using robots to assist law enforcement agencies. (Glaser, 2016).

2.2 Human Interaction and consequence in Artificial Intelligence and Robotics

Nowadays, technology can connect the human brain with the robot arm and use the electric wave provided by the human brain to command the robot arm, which is called the Brain-Computer Interface. The robot arm is built based on programs, and it is based on the need to cooperate with the instructions to perform tasks. However, this technology is quite expensive. Moreover, this technology can make people who are inconvenient or have lost their arms use the robot arm to eat. Perhaps this technology can be used in the future to allow law enforcement personnel to work with robots or robotic arms to make the law enforcement process safer.

2.3 Agency and law enforcement policies in Artificial Intelligence and Robotics

The rapid development of science and technology has made criminal techniques more oriented towards cross-type and cross-border expansion. In particular, the current crime characteristics are the most professional division of labor. Through the input of overseas information, it is difficult for police units to trace the source. These problems have brought significant threats and challenges to public security. It is more feasible at this stage to use face recognition technology to conduct a criminal investigation. Face recognition means that the machine of AI will continuously learn from each other and analyze and understand each person's face. In the past, police had to spend dozens of hours to find criminals through the monitor image. Now through Artificial Intelligence and face recognition, criminals can be located within a few minutes. At the same time, with AI, we can also analyze criminals' behavior before crimes and find out the path of movement after the crimes. We can also use

mathematical calculation formulas to introduce the location, time, land type, meteorological conditions, etc. Only through innovative technology and dynamic analysis and integration capabilities can we optimize police duty performance. (Zachary, 2018).

On the other hand, there were 1.1 million drones in the United States in 2019, and law enforcement agencies in 43 states in the United States have also begun to use drones (Fleming, 2019). Studies have shown that law enforcement agencies at all levels in the United States, including state police, county police, and municipal police, have begun to use drones. The uses of drones include highway patrols and taking photos of car and train accidents. The police also use drones in search of missing persons and hunt for fugitives, etc. For example, authorities in the San Francisco Bay Area used drones to help track car robbers; Ohio County police used drones during a standoff and learned from the apartment's glass windows where the suspect was hiding. Florida County police used drones to monitor suspects in possession of firearms in the car. In the United States, using drones to assist the police in law enforcement has become quite common. (Weiss and Davis, 2019)

2.4 How to create Public and Personal safety by Artificial Intelligence and Robotics

In recent years, the development and application of drones have been expanding. Therefore, the police should develop towards the intelligent automatic take-off and charging direction of the drone, which can be applied patrol or large-scale rally, increase patrol range and frequency, quickly deploy and construct 3D policing video and audio defense system.

It has become a common trend to use online customer service or chatbots to solve routine problems in various industries. For example, police can improve the quality of police services by using AI robot technology to quickly answer common questions, such as confirming whether providing a channel for immediate public consultation for fraudulent telephone calls. Thus, it can reduce the human burden of the policeman and improve the quality of service.In addition, in terms of police law enforcement, the Seattle Against Slavery (SAS) in Seattle jointly deployed these bots in other related agencies in 21 cities in the United States, called "intercepting chatbots."

The application of chatbots is also quite common in the West Asia area of the United States. Chatbots will hide behind online prostitution advertisements and chat with those who click on the advertisements. At first, the bots will deliberately talk about age and body issues. Then, if people release signals to buy sex, the robot will tell them, "Buying sex is illegal, it will cause long-term harm to the victim, and may be related to human trafficking."

The chatbot will also inform the person who clicked on the advertisement and ask for a sex service. "The relevant law enforcement will record the information in this conversation. They may contact you for further investigation". By using the chatbot, law enforcement agencies can intimidate those who intend to buy sex and achieve crime prevention (Simonite, 2017).

On the other hand, police robots can also be used to add functions such as face recognition and license plate recognition to policing robots. In the initial stage, they can be applied to busy police stations and simple work. Besides, the police can use AI robots to transmitting images back to the police station. It can also confirm the identity of the people who need assistance. Therefore, law enforcement can use robots and AI to enhance public safety (Joh, 2017).

2.5 The problem in law enforcement that can be answered by Robotics and Artificial Intelligence

With a huge database, the introduction of AI will be the next step for the police to strengthen their combat power. Intersection surveillance images are the primary tool for police handling at this stage. Therefore, we need to apply intelligent image analysis to provide intelligent monitoring such as video enrichment, license plate recognition, object detection, etc. It combines Artificial Intelligence towards automatic processing and discrimination to save human resources effectively and is the key to handling the case.

On the other hand, the police should continue to strengthen the analysis of various types of situations and the use of tools, such as detecting theft cases, clarifying which systems and associated tracking are used in solving the case, identifying details that may be overlooked. In the future, the self-learning judgment of the machine can be used to further guide and assist the new investigators in the screening, collation, and analysis of the sentiment and enhance the effectiveness of the case through information technology.

3. Limitation in Artificial Intelligence and Robotics

3.1 Ethics and Law aspect in Artificial Intelligence and Robotics

The use of robots and AI will create many ethical and ethical issues because the robot is unpredictable. As we apply a large number of robots to various fields, we must ensure that the robots do not go wrong. On the other hand, whether the robot can replace the human decision is also a problem we need to discuss. Although human thinking is not as fast as robots, we usually consider more aspects. For example, if the AI robot does not get enough information, it will likely judge the error.

On the other hand, whether we should give the robot the same status as the average human being in law is also a problem. If a robot sins because of a mistake, there is no way to deal with this result. Therefore, in criminal justice, before using robots for law enforcement, we must consider whether we can solve robots' moral, ethical, and legal problems. (Pagallo, 2017).

3.2 What is our obstacle in Artificial Intelligence and Robotics?

As technology developed, the development of Artificial Intelligence starts to have some related problems. But because of these changes, Artificial Intelligence robots have done things beyond human resources, such as robotic arms, automated tools, etc. As a result, human beings will be afraid that their jobs will not be guaranteed.

Among these obstacles, the most important is the gap between unemployment and the rich and the poor. The rapid development of Artificial Intelligence has led to a gradual push for automation in many industries. Like manufacturing, it is about efficiency and standards. Robots are less likely to be tired than humans. They can work as a standard for 24 hours, and customer service personnel and drivers are also easily replaced. Society is getting more and more self-driving. When it starts to spread, it can reduce the traffic accident rate. It can also calculate which route takes the least time. It will be the most significant advantage of self-driving, and it will also cause massive unemployment in the future. We should begin to think about combining industry and AI robots and avoiding people being eliminated in the future technology era. (Royakkers & van Est, 2015)

3.3 Problems of Autonomous in Artificial Intelligence and Robotics

AI robots learn their prejudice based on the information instilled by the creators. They begin to have autonomy. It reflects how people perceive the world. Not only AI robot creators, but biases such as data can affect their judgment. The AI robot does not discern whether the received data is right or wrong. It is a problem that people are going to solve now.

If the robots have feelings in the future, is it a human or a machine? On the other hand, it is a security issue. As mentioned in the previous article, when people instill the wrong ideas of AI robots, it will cause many problems. Nowadays, drones and autonomous robots have already been used on the battlefield. More and more people are demanding international law to limit AI robotic weapons. It will become a sensational problem in the future. Therefore, we can know that the creators' infusion of misconceptions about robots may affect the safety of society. (McAllister, 2016)

4. Discussions

4.1 Law enforcement and AI Robotics Future Policy

In summary, what scares us is that this law enforcement robot will think for itself. What should he do if he is not obedient? Even worse, when the boss found out that the law enforcement robot was better than the police, the police would not be unemployed? Will AI robots make wrong judgments and infringe on the rights and interests of the people? These statements are concerned that machines may deprive law enforcement officials of their rights, such as different types of better law enforcement tools, reducing labor, safer law enforcement environments, and a new learning and decision-making tools. These returns make law enforcement officers more intelligent and more sophisticated, making human society more stable. Therefore, we should set the rules for using AI robots so that AI robots can help law enforcement officers fight crimes to a limited extent. (Ministry of science and technology, 2019).

4.2 What do we need to prepare for the future generation of AI and Robotics

The AI era has arrived, and the future will accelerate development. Whether we like it or not, these technologies will bring significant benefits and will inevitably reflect the weakness of our civilization. The government must indicate that they use AI robots to protect people. The government must ensure people's right to privacy, equality, and even the dangers that may arise in the future. The government must use sensible policies to deal with these dangers. They should let people feel relieved when the government use AI to assist the police in law enforcement. Governments and law enforcement agencies need to build solid collaborative capabilities to manage Artificial Intelligence to achieve this goal. The results of this effort will determine whether humans will succeed in creating and using Artificial Intelligence technologies. If adequately addressed, law enforcement officers will get help from AI robots and gain people's trust. (Sharkey, Goodman & Ross, 2010).

Taiwan Ministry of Science and Technology published the "AI Technology R & R&D Guidelines." In the guidelines, we know that using AI should follow the common good rule, non-discrimination, privacy, transparency, and accountability to ensure AI use's potential doubts and risks. (Ministry of science and technology, 2019) . On the other hand, the European Group on Ethics in Science and New Technologies also said accountability, responsibility, and the rule of law are the basic requirements that must be adhered to in the face of new AI

technologies. Besides, "The Institute of Electrical and Electronics Engineers (IEEE) has also issued a global treatise regarding the Ethics of Autonomous and Intelligent Systems. The problem with robots is how to do this and how to assign responsibilities. Thus, this article proposed four guidelines for using AI robots in law enforcement agencies (Taddeo and Floridi 2018).

1. Human-based AI design: Decisions made by AI robots must be understandable by humans and consider human rights (such as the right to freedom of speech, the principle of presumption of innocence).

2. Legislation against the use of AI: AI's accountability. If the Artificial Intelligence system makes false accusations or an error in the monitoring tool causes innocent people to suffer personal losses, who will take the responsibility? The AI-based decisions or actions are usually the result of countless interactions between many participants (including designers, developers, users). Judges should distribute the accountability to every part of participants. This part is left for follow-up research to continue discussing.

3. Establishing an AI committee: We should establish an AI committee to analyze the result after AI robots enforcement, give it back to designers and users, and provide it to the court as a basis for judgment.

4. Enhancing the people's understanding of AI robots: law enforcement actions or the basis for AI discretion must be publicly known. For example, where AI robots are patrolling, what is the standard for AI reporting to the command center? We should let people know that information.

5. Conclusion

Above all, this article shows how law enforcement agencies in various countries (especially the United States) use Artificial Intelligence and robots for crime control and criminal investigation, such as drones, chat robots, and crime detection robots. Still, we also know Artificial Intelligence robots have the limitation of development and the issue of autonomy. Do we need to regulate these robots specifically? This article also explores this issue. We found that the government does have some guidelines for AI law enforcement robots and the basic requirements that must be followed in this article. Because of the advancement of technology, the performance of Artificial Intelligence robots is getting more robust, and the cost is getting lower and lower. Therefore, the future police agency of using AI to investigate crimes will inevitably be a trend. However, relatively speaking, if the police have AI technology in their hands and there's no regulation, it may profoundly impact society. Also, human rights organizations are worried about whether Artificial Intelligence robots will be abused by law enforcement agencies and become another tool to monitor people at all times. Therefore, the real problem that needs to be solved is establishing a government monitoring mechanism to monitor data use and abuse. While law enforcement agency takes advantage of Artificial Intelligence use in crime detection, they must ensure that all AI robot operators receive proper training and comply with the law. Furthermore, we should regulate and use AI robots responsibly within the scope of constitutional values and indeed maintain public safety.

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