

APPLICATION OF ARTIFICIAL INTELLIGENCE AND MONITORING DEVICES ON PREVENTION OF PUBLIC DISORDER CRIMES AND DISORDERLY CONDUCT

APLICAÇÃO DE INTELIGÊNCIA ARTIFICIAL E DISPOSITIVOS DE MONITORIZAÇÃO SOBRE PREVENÇÃO DE CRIMES DE DESORDEM PÚBLICA E CONDUTA DESORDEIRA

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Abstract: The purpose of this study was to application of artificial intelligence and monitoring devices on prevention of public disorder crimes and disorderly conduct. The article presents some urgent issues and scientific basis for artificial intelligence application and public monitoring devices in preventing public disorder crime and disorderly conduct at present and in the near future. the author has used a combination of traditional research methods of the scientific social and legal sciences such as the method of legal analysis, legal assessment, legal comparison and expert to achieve the goal of the study. Data were collected from official documents, books, independent reports, newspapers and related parties' analysis. Results shows that it is necessary to promote research and application of scientific and technological achievements, especially the application of artificial intelligence to building a large database system for the State management of crime prevention, including prevention of public disorder crimes and disorderly conduct, contributing to the country's socio-economic development towards civilization, modernity and sustainable development for the future.

Keywords: CCTV. Disturbance. Resources. Crime prevention. Public order. Artificial intelligence.

Resumo: O objetivo deste estudo era a aplicação de inteligência artificial e dispositivos de monitorização na prevenção de crimes de desordem pública e conduta desordeira. O artigo apresenta algumas questões urgentes e bases científicas para a aplicação da inteligência artificial e dispositivos de monitorização pública na prevenção de crimes de desordem pública e conduta desordeira no presente e no futuro próximo. o autor utilizou uma combinação de métodos tradicionais de investigação das ciências científicas sociais e jurídicas, tais como o método de análise jurídica, avaliação jurídica, comparação jurídica e perito para alcançar o objetivo do

estudo. Foram recolhidos dados a partir de documentos oficiais, livros, relatórios independentes, jornais e análises de partes relacionadas. Os resultados mostram que é necessário promover a investigação e aplicação das realizações científicas e tecnológicas, especialmente a aplicação da inteligência artificial na construção de um grande sistema de base de dados para a gestão estatal da prevenção do crime, incluindo a prevenção de crimes de desordem pública e conduta desordenada, contribuindo para o desenvolvimento sócio-económico do país rumo à civilização, modernidade e desenvolvimento sustentável para o futuro.

Palavras-chave: CCTV. Perturbação. Recursos. Prevenção da criminalidade. Ordem pública. Inteligência artificial.

1. Introduction

The context of crime prevention and law violations in general and the prevention of public disorder crime and disorderly conduct in particular requires a new preventive measure on the basis of applying resources to develop and apply science and technology, including the application of artificial intelligence (AI) with the development of computer science (Earl B. Hunt, 2014) and Closed-Circuit Television (CCTV). This is an inevitable development trend in crime prevention in the coming time, especially for public disorder crimes and disorderly conduct mainly occurring in public places.

Artificial intelligence and public surveillance have been used by many countries around the world to improve their ability to regulate public activities and law enforcement, especially in the fight, prevention and control of crimes and law violation in public places. Vietnam should take a shortcut to the field of AI, build and successfully implement a national AI development strategy to forecast, collect information and implement measures to prevent and fight crimes, fostering the socio-economic development of Vietnam (Nguyen Thanh Thuy, Ha Quang Thuy, Phan Xuan Hieu, Nguyen Tri Thanh, 2018). The first step is to deploy a big data system on crime prevention, connecting CCTV in urban areas, forecast risk factors, causes and conditions of criminal acts in public places in general and public order disturbance in particular. In which, public surveillance application should be associated with the human right to protect personal privacy like the system used in the UK (Benjamin Jervis Goold, 2004).

2. Methodology

To research the application of artificial intelligence and public surveillance in the prevention of public disorder crimes in Vietnam, the author has used a combination of

traditional research methods of the scientific social and legal sciences such as the method of legal analysis, legal assessment, legal comparison and expert to achieve the goal of the study. Data were collected from official documents, books, independent reports, newspapers and related parties' analysis. In addition, the experiences of specialized units and agencies in management and supervision of artificial intelligence application and public surveillance in the prevention of public disorder crimes in Vietnam have also been taken into consideration.

3. Results and Discussion

3.1. Discussion

Artificial intelligence is created by humans to help machines automate intelligent behaviors and reactions like humans such as thinking and reasoning to solve problems; know how to receive and analyze the impacts from the surrounding environment to give appropriate responses... Artificial intelligence has been established and developed for over 60 years since 1956¹. The Industrial Revolution 4.0 has brought many important achievements to people, in which the development and application of artificial intelligence in automatic monitoring activities, data analysis and quick reaction. This is essential for preventing crimes of public disorder, whose acts include manner of diverse, quick and potentially large-scale expanding, especially in the stage of social management and the provision of fair services, artificial intelligence is an indispensable requirement for the development of social management of the state (Bernd W. Wirtz, Jan C. Weyerer & Carolin, 2018).

Public order disturbance directly offends public order, which also affects public security and the implementation of the Party's lines and policies, the laws of the State in the process of national construction and development. In which: Public order is a part of social security, order and safety indicating a stable, orderly, peaceful, and undisturbed social state, where activities in public places are carried out sequentially, uniformly, safely and in a civilized manner, on the basis of compliance with the provisions of the law, the rules and regulations to ensure public order, contributing to the protection of the lawful rights and interests of the State, organizations, individuals and socio-economic development of the country. Public order is also considered a normal operation of agencies, organizations and individuals in ensuring social relationships (Sengeeg Gantulga, Batzeveg Enkhbold, 2018).

¹ Hồ Tú Bảo, Artificial Intelligence and its 50 year journey, <http://www.jaist.ac.jp/~bao/Writings/AI50years.pdf>

Public order means the absence of disturbances, riots, disturbances, disruption of order and discipline (Second Administrative Reform Commission - India, 2007).

Therefore, the prevention of crimes of public disorder should be carried out mainly in public places, which are public works, areas and vehicles built and used for the common needs of the community and society. Those include buildings, areas, vehicles used to provide public services such as eating, drinking, playing, entertainment, culture, arts, sports, sightseeing... serving the needs of travelling, education, training, religion, belief, health, postal services, etc. especially roads and public places in urban areas, which are crowded with people and complicated in terms of social order and security, in which quickly detecting risk factors and abnormalities in public places is an important basis for preventing public disorder. Especially in cases of large-scale public disorder, there are violent acts which can be against the Police force and other authorities (David Waddington, 2013).

The application of artificial intelligence and public surveillance in the prevention of public disorder crimes is a suitable solution for the rapidly developing socio-economic and urbanization like Vietnam. It both brings long-term effectiveness and limit the mobilization of human resources in the application of preventive measures, thereby reducing unnecessary costs. The use of human resources in preventing, suppressing and arresting criminals of public order disturbances will be more focused and effective.

The application of artificial intelligence and public surveillance also contributes to the prevention of public disorderly conduct, thereby enforcing the laws, rules and regulations on order, safety, environmental sanitation in public places so as to ensure the normal life, work and activities of people in the society.

Applying artificial intelligence and public surveillance only solves the "top" of the problem, not its "root" because public disorder crimes and public disorderly conduct stem from social negatives, corruption from social standards, contradictions and conflicts in daily life, interests and social benefit. However, through public surveillance, recording data from solving disruptive cases, the main manner of the disruptive behavior is carried out and its causes, artificial intelligence can synthesize and analyze, identify the causes and shortcomings in the operation and regulation of activities in public places, which are the conditions for criminals to disturb public order, to come up with solutions with high practical applicability. At the same time, it contributes to pointing out the exact cause of the crime for more thorough prevention. Empirical research on the effectiveness of CCTV in controlling crimes

and public disorderly conduct shows that “public surveillance resulted in a reduction in crime by its actual deterrence capacity” (Welsh & Farrington, 2009).

Crime prevention is the process by which competent state agencies, organizations and individuals base on the State's laws, assigned functions and tasks, rules and regulations, local regulations, codes of conduct in the community to take measures to reduce and eliminate the causes and conditions of public disorder crimes, thereby maintaining stability in the community, public areas, public places, ensuring that social activities take place normally, orderly and disciplined, protecting the safety of the State's property, the life, property and legitimate interests of the citizens, ensuring public environmental sanity. In which the core subjects with direct and pivotal role are People's Committee; Police; Management boards of public areas, public places, people living in the area.... Applying artificial intelligence and public surveillance in the prevention of public disorder crimes is an important basis to provide measures to ensure safety for the subjects participating in the repression of criminals. With proactive social control policies being applied, it includes eliminating the risks of causing social disorder (Cara E. Rabe-Hemp, Nancy S. Lind, 2019).

3.2. The real situation of artificial intelligence application and public surveillance

Currently, many countries in the world have extensively applied scientific and technological achievements and especially artificial intelligence in many fields, including the field of state management of security and order. Typically, Dubai is a pioneer country when deploying smart Police Stations that provide up to 25 types of public services without the need for Police officers². When people need to carry out administrative procedures or report cases, they will do it through a computer system that is intelligently programmed to receive and automatically solve citizens' needs according to the preprogrammed procedures. Especially in the field of ensuring public order and safety, many countries around the world have effectively applied artificial intelligence in controlling and operating traffic systems or operating daily activities at public places such as railway stations, ports, bus station, routes... in order to enhance public order and prevent criminal acts in public places, including crimes of public disorder.

In Vietnam, despite later application than many other developed countries in the world, many large state-owned and private corporations have deployed big data systems in many fields of social life. Information technology, informatics and AI technology have made

² <https://vtv.vn/don-canh-sat-thong-minh.html>

great progress, approaching the countries of the highest development level. Regarding the application of CCTV system, many agencies and organizations have deployed synchronously on many routes and public places such as in Hanoi, Da Nang, Ho Chi Minh City.... Many localities have even deployed the model to public places at district level such as Tay Ho district, Hanoi city. With the implementation of CCTV system, it has contributed to detecting and handling many offenders³.

Through the survey, the CCTV system in urban areas and routes has played an important role in collecting information, investigating and prosecuting criminals, quickly detecting criminals in public places, public disorder offenses and effectively prevent those who commit acts of fighting, gathering unlawfully, using weapons and fighting tools, vandalize other people's property in public places, using weapons and tools to disrupt public order, etc. especially with large groups of individuals who prepare weapons to fight against each other.

However, the current situation shows that the law violations occurring in public places and public areas including public disorderly conduct tends to be complicated with many types such as disturbing public order; unlawfully gathering large numbers of people, causing trouble at the places of lawsuits or court hearings; violating traffic order and safety, causing serious consequences; theft, burglary, robbery... That comes from many different reasons, such as people's awareness of law observance on public order is not high; the rapid increase of urban population increases the number of people working, commuting, transporting and making a living on roads and public places; an increase in the number of vehicles leading to traffic jams and traffic accidents; subjects who take advantage of inciting mass gatherings to disrupt public order; In public places, where there is a lack of functional forces on duty, lack of supervision and forces to patrol and control at night, subjects can take advantage of the situation to illegally race, use weapons to attack people or break vehicles on roads.

It can be seen that the application of artificial intelligence and public surveillance in the prevention of public disorder crimes and public disorderly conduct is a breakthrough solution in the future. Especially in the current conditions in our country, with the dynamic development and expansion of international cooperation in economy, culture and society, there will be a trend of rapid increase in public areas, public places in terms of both quantity,

³ <https://hanoimoi.com.vn/tin-tuc/Xa-hoi/992791/quan-tay-ho-se-lap-dat%C2%A0he-thong-camera-giam-sat-tai-khu-vuc-cong-cong>

scale, and nature of activities to serve the economic and social development of the country and satisfy the needs of the people. This increases crimes in public places, law violations on public order.

Being aware of the problem, the competent authorities in the application of artificial intelligence and public surveillance in the prevention of crimes of public disorder and public disorderly conduct have strengthened measures of mobilizing resources to complete the CCTV system and data processing center. Combining CCTV system of the organizations with propaganda, advocacy, and instructions for the people to install surveillance camera systems in residential areas and houses. Combining the use of CCTV with enhanced patrol, control, detection and handling of red-handed crimes and public disorder cases.

Socialize crime prevention activities, adopt legal policies and call on businesses, organizations and individuals to invest in a shared big data system for social management and crime prevention, expand the CCTV system nationwide to even the rural areas. The above measures have promoted positive effects, limiting criminal acts of public disorder and violating the law of public order, ensuring public order and safety, public environmental sanitation, serving the guidelines and policies of the Party and State in economic and social development and expanding international relations, as well as satisfying the increasing material, cultural and spiritual needs of the people.

3.3. Some suggestions and recommendations

The application of artificial intelligence and public surveillance in the prevention of public disorder crimes and disorderly conduct is an objective necessity and needs to be implemented, specifically as follows:

Firstly, building and operating Centers for Management and Administration of databases on activities in public places, including public disorder crimes, to collect, research, apply, control, connect databases, monitor, analyze, forecasts, automatically process information about arising situations related to crimes, law violations in public places in general and public disorder crimes in particular, pilot implementation in urban areas and big cities.

Currently, at the Center for Urban Traffic Management and Operation of the Department of Transport of Ho Chi Minh City, the application of artificial intelligence in traffic management has been applied and achieved many important results, contributing to the development of the city. reducing traffic congestion and reducing traffic accidents.

However, research and application in the field of public order has not been paid attention⁴. In the coming time, localities across the country, especially in big cities, such as Hanoi, Hai Phong, and Ho Chi Minh City... can study and apply the model to build management and administration centers for public order and safety in order to apply artificial intelligence to improve the efficiency of security and order in public areas and public places. In which, it has the function of forecasting and preventing public disorder crimes and disorderly conduct, and choosing effective measures to handle when a crime or law violation occurs.

Specifically, the database on activities in public places, through images and information, of the Management and Operation Center will be transmitted to the server system and workstations to automatically analyze and forecasts about the possibilities of the situation such as overloading of people and vehicles, the possibility of social conflicts, fighting in public places, the possibility of acts that may obstruct public activities that cause disorder and safety, from which to make recommendations to reorganize the activities of people and vehicles, optimize traffic flow, recommend and notify the operators of possibilities. In addition, selecting appropriate forces in dealing with emergency situations for public disorder offenses and disorderly conduct. For the consequences caused by criminal acts, law violations such as death, injury, fire, explosion..., through the analysis of risk factors and sources of danger, AI system will recommend to promptly take preventive measures. Forecasts and recommendations on public disorder crimes and disorderly conduct can be connected and shared publicly on the mass media for everyone to know and understand, and make a reasonable choice not to participate in public activities at the scene of the incident.

In addition, through the CCTV transmitting data to the Management and Operation Center to collect data, images, analyze and prove criminal acts, law violations in public places to handle the violations of people and vehicles, such as public disorder disturbance; disorderly conduct accompanied by resistance to law enforcement officers in public places, public areas, disorderly conduct with the use of weapons, acts affecting the environment, public order and safety. Thereby effectively prevent and prove crimes and law violations, handle and investigate criminal liability of the right subjects at the right level of violation, thereby "detering" against offenses, recidivism and raising people's legal awareness.

In addition, the Management and Operation Center of the Database on activities in public places will also apply artificial intelligence in monitoring, checking and analyzing

⁴ <https://nld.com.vn/thoi-su/trung-tam-quan-ly-dieu-hanh-giao-thong-do-thi-tp-hcm-se-co-nhung-chuc-nang-gi-20200313123546167.htm>

information to maintain the public works system; information collection, monitoring and automatic detection of inadequacies, damage to the traffic system and public works occurring during the operation and use. From there, the functional agencies will promptly repair and replace the damage, ensure normal operation in public places, reduce the conditions and the possibilities of public disorder crimes and other acts of infringing upon public order.

Secondly, after the Centers for Management and Operation of Databases on Activities in Public Places have been established, it is necessary to research and connect with the system of National Database on Population, specialized databases of a number of branches such as Police, Court, Procuracy, Transport... to share information about the law offenders but not yet to the point of accountability criminal.

It is necessary to link with the system of National Database on Population, specialized database of Police, Courts, and Procuratorates in order to update information of people who regularly work or appear in public places to manage and extract information when necessary. In addition, through the connection of the database system and facial recognition software integrated at the Centers to monitor subjects with previous convictions for acts related to crimes in public places, such as disturbing public order, theft, robbing property at railway stations, bus stations, cultural or festival areas whenever these subjects appear in public places, crowded and complicated public places, thereby giving warnings to the management, operating and automatic agencies to preven the crimes in general and crimes of public disorder in particular.

Besides, for the connection to the database system of the Transport sector, it will exchange and provide information about the traffic situation in the region. From there, the computer system will analyze and calculate the average number of people and vehicles participating in traffic through public areas, complicated public places with regular congestion, traffic law violations to make appropriate recommendations to timely handle and control traffic activities in the area where public disorder crimes occur. However, in the process of collecting public data, it is necessary to ensure individual rights and human rights thoroughly (Nguyen Que Anh, Vu Cong Giao, Mai Van Thang, 2019).

Third, building simulation models using virtual reality technology to simulate situations and practice for specialized forces in prevention of public disorder crimes

Through synthesizing and analyzing cases of public disorder, AI uses an algorithm based on typical violent cases of public disorder to quickly warn and detect disorderly public conduct, and at the same time building virtual reality models, simulating similar incidents in many public places in reality. Fully combine psychological, biological, social response, social

prediction, and social fate data with the collected data, develop measures on the basis of hundreds of thousands of predictions, possibilities to simulate the most diverse and realistic, on that basis, train the officials who are responsible for directing activities of handling and suppressing criminal public disorder acts.

Training skills in virtual space for professional forces in advocacy, negotiation and resolution of conflicts among the people. Training skills to suppress acts of public disorder with the risk of serious consequences including persuasion skills, guiding skills, negotiation skills, suppression skills, arresting skills.... Building virtual models to improve problem solving skills to more diverse situations and reduce costs in maneuver and skill training. Strengthening of strict handling of public disorder criminals, especially the instigators to improve the "deterrence" effect. Reasonable and timely settling the complaints and denunciations directly related to the people's legitimate rights and interests.

Fourth, conducting research and applying intelligent robots to control and monitor activities in some public places, towards the goal of using robots in suppressing and arresting public disorder criminals using weapons, improving safety for the participating forces in the future

In developed countries such as Japan, Taiwan, the US, China, and the Democratic Republic of Congo, intelligent robots have been introduced into traffic control, patrol and monitor in public places, as well as using outstanding advantages of robots instead of humans to conduct patrol activities such as the HP RoboCop model of the US Police⁵. With the current conditions of infrastructure and development, we cannot widely deploy the application of artificial intelligence and intelligent robots in public order patrol, control, prevention and fighting crimes in public places. The use of robots can be replicated from the robot model of fire prevention, fighting and rescue (Nguyen Tuan Anh, 2020).

However, it is possible to research and pilot the use of robots in some public places, such as using robots to channel vehicles in and out of bus stations, railway stations and ports; using robots to direct traffic in some public places; to control the goods transportation through public areas and public places; to patrol, control, detect and remind offenders of public disorder, or provide images to prove violations of public order... To ensure the efficiency and the feasibility of deploying intelligent robots to control and patrol in some public places requires a thorough study of relevant issues, such as characteristics of the local situation, public order situation, daily activities; scale and nature of public areas and public places; scientific and technical issues, funding sources, and guaranteed facilities; and it must

⁵ <https://vnexpress.net/canh-sat-my-su-dung-robot-tuan-tra-noi-cong-cong-3941244.html>

be implemented synchronously with the construction of the Management and Operation Centers in order to manage, operate activities, connect and share data with intelligent robots, ensuring the robot's operation works exactly according to the pre-programmed. From the information reporting to the Centers by the robots, when public disorder crimes are detected, functional forces will quickly analyze the situation, deploy appropriate measures and forces. In the future, robots can be used as the main force in crime prevention and fighting in public places (Honghai Liu, Naoyuki Kubota, Xiangyang Zhu, Rüdiger Dillmann, Dalin Zhou 2015).

4. Conclusion

Those are problems in the application of artificial intelligence and public monitoring devices in the prevention of public disorder crimes and disorderly conduct. Although this is considered a preeminent solution to limit the use of human resources, reduce pressure for the authorities in preventing the crimes and conduct. However, when implementing this, it is necessary to carefully consider the routes, the conditions of facilities and information infrastructure, as well as the real situation of public places. In addition, it is necessary to promote research and application of scientific and technological achievements, especially the application of artificial intelligence to building a large database system for the State management of crime prevention, including prevention of public disorder crimes and disorderly conduct, contributing to the country's socio-economic development towards civilization, modernity and sustainable development for the future.

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