The Development of Humanities and Social Sciences, 2025, 1(5), 92-101
https://doi.org/10.71204/dqsddd47

# The Role of Intelligent Security Prevention Technology in Crime Prevention — A Crime Deterrence Based on Technological Means

Hao Zhou [1, *]

[1] Zhejiang College of Security Technology, Wenzhou 325000, China

[*]**Corresponding Author**
Hao Zhou

chowhao@foxmail.com

*Received: 16 July 2025 /Accepted: 31 December 2025 /Published online: 3 January 2026*

**Abstract**

With the rapid development of technology, smart security technology is playing an increasingly important role in the field of crime prevention. This article explores the deterrent effect of technological means on crime, and delves into the application and effectiveness of smart security technology in crime prevention. By analyzing various smart security technologies such as intelligent monitoring, biometric recognition, big data analysis, etc., this article elaborates on how they can achieve early warning, accurate identification, and effective prevention and control of criminal behavior. Based on practical cases in Chinese society, demonstrate the significant effects of smart security technology in reducing crime rates and enhancing public safety. At the same time, exploring the challenges and future development trends faced by current smart security technology provides theoretical support and practical reference for further improving the level of social security prevention and control.

**Keywords:** Smart Security Technology; Crime Prevention; Crime Deterrence; Public Security

## 1. Introduction

Crime has always been an important factor affecting social stability and development. Traditional security measures are gradually showing their limitations in dealing with increasingly complex and changing criminal situations. Liu et al (2018) pointed out that in the face of the increasingly complex application of artificial intelligence technology in criminal activities and the social public safety situation, traditional crime prevention strategies, means, and technologies are no longer able to meet the requirements of reality. With the rapid development of high-tech such as information technology, artificial intelligence, and the Internet of Things, smart security technology has emerged and shown great potential in the field of crime prevention. Smart security technology integrates multiple advanced technologies to achieve real-time perception, intelligent analysis, and rapid response to security situations. It can form a strong deterrent against potential criminal behavior, effectively reduce the possibility of crime, and provide strong support for the

upgrading of the social security prevention and control system. Thoroughly studying the role of smart security technology in crime prevention is of great practical significance for enhancing social governance capabilities and ensuring the safety of people's lives and property.

## 2. Overview of Smart Security Technology

### 2.1. Intelligent Monitoring Technology

Intelligent monitoring technology is a core component of smart security. As a basic device, high-definition cameras have high-resolution imaging capabilities and can clearly capture details of people and objects in the monitoring area. Some cameras have a resolution of up to 4K or even 8K, providing high-quality images under different lighting conditions regardless of day or night, laying the foundation for subsequent intelligent analysis and event tracing. At the same time, the camera has multiple shooting modes, such as panoramic, close-up, and pan tilt rotation, which can flexibly adjust the shooting range and angle according to monitoring needs.

Video intelligent analysis utilizes deep learning algorithms to perform real-time analysis on video images captured by cameras. It can recognize personnel behavior, such as whether they are running, falling, wandering, or abnormally gathering. For example, in public places, when the system detects a sudden gathering of people and abnormal behavior, it will immediately issue a warning, prompting security personnel to go and check, effectively preventing possible conflicts or stampedes. In addition, video intelligent analysis can also perform vehicle recognition, identify license plate numbers, vehicle brands, colors, and other information, and provide timely warnings for situations such as illegal parking and vehicles entering prohibited areas.

### 2.2. Biometric Recognition Technology

Biometric recognition technology mainly includes fingerprint recognition, facial recognition, iris recognition, etc. Fingerprint recognition technology confirms identity by collecting and comparing fingerprint feature points, which has uniqueness and stability, and is widely used in fields such as access control systems and attendance management. Facial recognition technology has developed rapidly in recent years, and it performs identity recognition by analyzing facial feature information. In the field of security, facial recognition can be used for personnel access control. For example, in transportation hubs such as airports and train stations, facial recognition systems can quickly verify passenger identities, improve traffic efficiency, and effectively identify wanted criminals, suspicious individuals, etc. Iris recognition utilizes the unique texture of the human iris for identity recognition, with extremely high accuracy. It is commonly used in places that require high security, such as financial institutions' vault access control.

### 2.3. Big Data Analysis Technology

Big data analysis technology plays a crucial role in smart security. It can integrate multi-source data from intelligent monitoring devices, sensors, police systems, etc., and conduct deep mining and analysis. By establishing a data model, the system can comprehensively determine whether a security incident has occurred based on feedback from different devices and automatically make corresponding decisions. For example, when the intrusion detection sensor triggers an alarm and

the camera captures suspicious personnel activity images, the big data analysis system can quickly link nearby lighting devices to turn on, deter criminals, and send detailed alarm information to the mobile terminals of security personnel, including the location of the incident, on-site images, etc., so that security personnel can respond quickly. In addition, big data analysis can also predict crime trends by analyzing historical crime data, personnel flow data, socio-economic data, etc., to identify patterns and potential risk areas of criminal activities, providing a basis for the police to deploy police forces in advance and formulate prevention and control strategies.

### 2.4. Internet of Things Technology

The Internet of Things technology connects various security devices into a massive network, achieving interconnectivity and information sharing between devices. In smart security systems, devices such as smart sensors, cameras, and access control systems collaborate with each other through technology. For example, intrusion detection sensors use infrared, microwave and other technologies to detect whether there are abnormal objects entering the monitoring area. Once an alarm is triggered, the signal will be immediately transmitted to relevant devices through the Internet of Things. For example, the camera will automatically adjust the shooting angle to align with the alarm area for real-time monitoring, while notifying security personnel. Smoke sensors, temperature sensors, and other sensors can monitor fire hazards in real time. Once an abnormal increase in smoke concentration or temperature is detected, a fire warning can be quickly issued, and through the Internet of Things, firefighting equipment can be linked to activate the fire extinguishing program, buying time for timely firefighting and personnel evacuation. The Internet of Things technology has transformed the security system from a traditional isolated device operation mode to an intelligent and collaborative whole, greatly improving the efficiency of the security system.

## 3. The Mechanism of Smart Security Technology in Crime Prevention

### 3.1. Early Warning of Criminal Behavior

Smart security technology can monitor various abnormal situations in the environment in real time through intelligent sensors, video intelligent analysis and other means, achieving early warning of criminal behavior. For example, intrusion detection sensors installed in communities, commercial venues, and other areas can monitor illegal intrusion behavior in real time. When someone tries to climb over the fence or pry open the lock to enter the building, the sensor will immediately capture abnormal signals and send alarm information to security personnel or relevant police platforms. The video intelligent analysis system can identify abnormal behavior of personnel, such as when someone is wandering or sneaking around for a long time on an unmanned street at night, the system can automatically determine their abnormal behavior and issue a warning. Big data analysis technology predicts the likelihood of crime occurrence by mining and analyzing massive amounts of data. For example, by analyzing recent changes in personnel flow, frequency of security incidents, social media public opinion, and other data in a

certain area, if abnormal fluctuations are detected, possible criminal events can be alerted in advance, enabling the police to take timely preventive measures.

### 3.2. Accurate Identification of Criminal Subjects

The combination of biometric technology and intelligent monitoring technology can achieve precise identification of criminal subjects. The widespread application of facial recognition technology in public places enables the police to compare personnel in surveillance footage with information in crime databases in real time. When the wanted criminals and key personnel with criminal record enter the monitoring area, the system can quickly identify and send an alarm to help the police grasp the whereabouts of the suspect in time. Fingerprint recognition, iris recognition and other technologies are used in specific places such as bank vaults and important document storage locations for personnel identity verification, ensuring that only authorized personnel can enter and effectively preventing internal personnel from committing crimes or external personnel from impersonating and entering to commit crimes. The license plate recognition technology in the intelligent monitoring system can accurately identify vehicles, detect and track fake license plates, vehicles involved in cases, etc. in a timely manner, and provide strong support for cracking down on vehicle related crimes.

### 3.3. Effective Prevention and Control of Criminal Space

Smart security technology achieves effective prevention and control of criminal spaces by building a comprehensive and multi-level security network. At the urban level, by installing a large number of intelligent monitoring devices in key areas such as major roads, transportation hubs, and public places, a tight monitoring network is formed to monitor urban space in real-time, supported by big data analysis and artificial intelligence technologies. Any illegal or criminal behavior is difficult to hide under this network, as suspicious activities can be rapidly identified and traced. At the community level, the construction of smart security communities will connect devices such as smart door locks, real name access control, and video security with the ‘smart security’ platform to form an integrated management system. Residents enter the community through facial recognition, fingerprint recognition, and other methods, while outsiders need to register with their real names and purposes of visit. The system records and analyzes the entry and exit of personnel in real time. Once abnormal situations are detected, such as frequent entry and exit of strangers or prolonged wandering in the community, the system can automatically report to the property management and police, enabling timely intervention. At the same time, the intelligent surveillance cameras in the community monitor the public areas 24 hours a day, effectively preventing criminal activities such as theft and robbery from occurring in the community and enhancing residents’ sense of security. In commercial places, intelligent security systems monitor key areas such as entrances and exits, product display areas, and cash registers to prevent theft, fraud, and other criminal activities. In addition, through technology, security devices in different places are connected to achieve joint prevention and control between regions, supporting coordinated law enforcement responses and further expanding the spatial scope and effectiveness of crime prevention and control.

## 4. Case Study on the Application of Smart Security Technology in Crime Prevention

### 4.1. Urban Smart Security System Reduces Crime Rate

The Guangzhou Public Security Bureau has established four precise policing networks, including intelligent perception, dynamic deployment, element control, and emergency response. By installing a multi-dimensional intelligent front-end perception system, covering key areas of the city and complex public security places, advanced analysis technology is used to monitor and evaluate potential risks in real time, achieving rapid response to abnormal behavior. The intelligent perception network utilizes big data and artificial intelligence technology to analyze massive amounts of data, predict and identify crime patterns, and take preventive measures in advance. Dynamically deploying defense networks to develop customized security strategies based on different regions and security needs. These measures have significantly improved the social security control capability of Guangzhou, and the construction of a safe Guangzhou is at the forefront of the province, effectively reducing crime rates and enhancing citizens' sense of security.

### 4.2. Smart Security Communities Reduce Community Crime

5098 "Zhi'an" residential areas will be built to high standards in Suzhou, Jiangsu Province. Intelligent devices such as AI recognition system, intelligent combustible gas alarm, and emergency rescue service "one click alarm" are applied in the community. The elevator AI recognition system can identify safety hazards 24 hours a day, and relevant information is synchronously transmitted to the property duty room and community police room. 537 smart security communities and buildings in Kunshan city have deepened the construction of the "Safe Micro Sculpture" project, creating a smart control mode of "self declaration+front-end perception+back-end comparison", and achieving "zero cases" since 2023. The construction of smart security communities effectively prevents the occurrence of security accidents such as theft and fires, and enhances the sense of security of community residents' lives.

### 4.3. Intelligent Security Monitoring Helps Prevent Theft in Commercial Places

A large shopping mall has installed an intelligent security monitoring system, deploying high-definition cameras and intelligent sensors in various entrances, exits, stores, corridors, and other areas of the mall. The video intelligent analysis system monitors customer behavior in real-time through advanced algorithms and data processing technologies. When it detects someone staying in the product display area for a long time and making abnormal movements, such as attempting to hide the product in clothing, the system automatically issues a warning and notifies security personnel to go and check immediately. The intrusion detection sensor is activated after the mall is closed to prevent criminals from prying open the door and breaking the lock to enter and steal from the mall. Since the installation of the intelligent security monitoring system, the incidence of theft cases in shopping malls has significantly decreased, improving overall operational efficiency, ensuring the safety of merchants' property, and providing customers with a safer shopping environment.

## 5. The Challenges Faced by Smart Security Technology in Crime Prevention

### 5.1. Technical Vulnerabilities and Misjudgments

Despite the continuous development of smart security technology, there are still technical loopholes. For example, intelligent monitoring systems may be affected by factors such as severe weather and changes in lighting, resulting in inaccurate image recognition. Facial recognition technology may result in recognition errors when facing situations such as facial occlusion and plastic surgery. Intelligent analysis algorithms are not perfect either, and may mistake normal behavior for abnormal behavior, leading to false positives. These technical vulnerabilities and misjudgments not only pose challenges to security work, but may also lead to a decrease in public trust in smart security systems.

### 5.2. Difficulties in Data Security and Privacy Protection

The smart security system will collect a large amount of personal data during operation, such as facial images, fingerprint information, vehicle driving trajectories, etc. The secure storage and use of these data face serious challenges. Once data is leaked, it will cause serious infringement on personal privacy and may even be used by criminals for fraud, theft, and other criminal activities. Meanwhile, how to collect, use, and protect personal data in a reasonable and standardized manner while ensuring security needs is an urgent issue that needs to be addressed in the field of smart security. The imperfection of relevant laws and regulations also leads to a lack of strong institutional guarantees for data security and privacy protection.

### 5.3. System Compatibility and Integration Difficulties

Smart security systems are typically composed of multiple devices and software from different brands and types, and there are compatibility issues between these devices and software. For example, smart sensors and monitoring systems produced by different manufacturers may not be seamlessly integrated, resulting in poor data transmission or inability to work together. In addition, integrating existing smart security systems with public security systems, urban management systems, etc. also faces many difficulties. Data sharing and business collaboration between systems are hindered, making it difficult to fully utilize the overall effectiveness of smart security systems.

### 5.4. High Construction and Maintenance Costs

The construction of a smart security system requires a significant investment of funds, including equipment procurement, installation and debugging, software development, network construction, and other related expenses. Moreover, with the continuous updating and upgrading of technology, the maintenance and upgrade costs of the system are also quite high. Lv and Zhang (2022)'s research shows that currently, the funding for public security research and innovation projects is mostly based on tens of thousands of yuan, which limits the development of projects. Even some underdeveloped areas' public security organs have been in a low investment state in scientific and technological innovation work due to a lack of funding support, seriously restricting the development of police technology and slowing down the process of police modernization.For some economically underdeveloped areas or small businesses, high construction and maintenance

costs may become obstacles to promoting the application of smart security technology, limiting its widespread adoption.

## 6. The Development Trend of Smart Security Technology in Crime Prevention

### 6.1. Deep Application of Artificial Intelligence Technology

In the future, artificial intelligence technology will be more deeply applied in the field of smart security. Zhao (2024) shows that using IoT technology, various devices can be closely interconnected to form an intelligent network, providing more comprehensive and accurate support for community policing work. Through continuous exploration and innovative technological applications, community policing intelligent assistance systems can maintain a leading position in grassroots social governance and better respond to the increasingly complex community safety situation. Translate Zhao's research shows that by utilizing IoT technology, various devices can be closely interconnected and form an intelligent network, providing more comprehensive and accurate support for community policing work. By continuously exploring and innovating technological applications, the community policing intelligent assistance system can maintain a leading position in grassroots social governance and better respond to the increasingly complex community security situation.

Intelligent analysis algorithms will continue to optimize and be able to more accurately identify abnormal behavior and criminal signs in various complex scenarios. For example, by learning from a large amount of crime case data, artificial intelligence systems can predict the probability of different types of crimes occurring in specific time periods and regions, providing more accurate warning information for the police. At the same time, artificial intelligence will also enable autonomous decision-making and collaborative work of security equipment. When a security incident occurs, the system can automatically allocate resources, such as intelligently scheduling nearby patrol police forces, activating relevant emergency equipment, etc., to improve the efficiency and accuracy of responding to crimes.

### 6.2. Multi Technology Integration and Collaborative Innovation

Smart security technology will develop towards the direction of multi technology integration. Intelligent monitoring technology, biometric technology, big data analysis technology, Internet of Things technology, etc. will be further deeply integrated to form a more complete and efficient security system. For example, by connecting smart monitoring devices with smart home devices through IoT technology, when the monitoring system detects abnormal situations in the home, it can automatically control the smart home devices to take corresponding measures, such as closing doors and windows, activating alarms, etc. At the same time, technologies from different fields will undergo collaborative innovation, such as applying blockchain technology to security data storage to ensure data security and immutability; Combining 5G communication technology with intelligent security devices to achieve real-time and fast transmission of high-definition videos, improving the timeliness and smoothness of monitoring.

### 6.3. Combination of Cloud Based and Edge Computing

The intelligent security system will gradually realize the combination of cloud based and edge computing. Cloud storage and computing can provide powerful data processing capabilities and storage space for smart security systems, enabling centralized management and analysis of data. At the same time, edge computing technology can preliminarily process and analyze data on the device side, reduce data transmission and improve system response speed. For example, after collecting video images, the intelligent camera uses edge computing technology to analyze the images in real time locally, and then uploads the key information to the cloud after identifying the abnormal behavior. The cloud carries out further in-depth analysis and decision-making. This combination of cloud based and edge computing can not only give full play to the powerful computing power of the cloud, but also meet the real-time requirements of the security system.

### 6.4. Standardization and Standardization Construction Strengthening

To address issues such as system compatibility and integration difficulties, standardization and normalization will be strengthened in the field of smart security in the future. The relevant departments will develop unified technical standards and interface specifications to ensure that different brands and types of security equipment and software can achieve interconnectivity and collaborative work. Zhu (2023) mentioned that early technical planning standards, mid-term technical testing and operation standards, and later technical support standards are all essential. At the same time, strict standards and procedures will be established for the data collection, storage, and use of smart security systems to ensure data security and privacy protection. In terms of construction and operation, corresponding standards and specifications will also be introduced to reduce construction and maintenance costs, and improve the construction quality and operation efficiency of smart security systems.

## 7. Conclusion

Smart security technology plays a crucial role in crime prevention with its advanced intelligent monitoring, biometric recognition, big data analysis, Internet of Things and other technological means. By achieving early warning of criminal behavior, precise identification of criminal subjects, and effective prevention and control of criminal space, smart security technology has formed a strong deterrent effect on potential criminal behavior, significantly reducing crime rates, improving social security prevention and control levels, and enhancing public safety. However, smart security technology also faces many challenges in the development and application process, such as technical vulnerabilities and misjudgments, data security and privacy protection, system compatibility and integration, and high construction and maintenance costs. Meng (2020) stated that the highly integrated and coordinated functional modules achieve the "intensity integration, high sharing, and deep application" of police information, which is a new concept and model for the development of Chinese policing.In the future, with the deep application of artificial intelligence technology, multi technology integration and collaborative innovation, the combination of cloud computing and edge computing, and the strengthening of standardization and standardization construction, intelligent security technology will continue to improve and

develop, play a more important role in the field of crime prevention, and provide solid scientific and technological support for building a safe, harmonious and stable social environment. Therefore, the government, enterprises, and all sectors of society should work together to increase support for the research and application of smart security technology, actively respond to challenges, and promote the widespread application and continuous innovative development of smart security technology in crime prevention.

**Author Contributions:**

Conceptualization, H. Z.; methodology, H. Z.; software, H. Z.; validation, H. Z.; formal analysis, H. Z.; investigation, H. Z.; resources, H. Z.; data curation, H. Z.; writing—original draft preparation, H. Z.; writing—review and editing, H. Z.; visualization, H. Z.; supervision, H. Z.; project administration, H. Z.; funding acquisition, H. Z. All authors have read and agreed to the published version of the manuscript.

**Institutional Review Board Statement:**

Not applicable.

**Informed Consent Statement:**

Not applicable.

**Data Availability Statement:**

Not applicable.

**Acknowledgments:**

Not applicable.

**Conflict of Interest:**

The authors declare no conflict of interest.

**References**

Liu, Z., Lin, X., and Li, A. (2018). The Application and Prospect Analysis of Artificial Intelligence in Crime Prevention. Journal of the People's Public Security University of China (Social Science Edition), 34 (04), 1-10.

Lv, Y., Zhang, Z. (2022). The Modernization of Police Affairs Driven by Technological Innovation: Motivation, Challenges, and Countermeasures. Network Security Technology and Applications, (02), 131-133

Meng, B. (2020). The current application status and development prospects of intelligent policing technology. Public security research, (01), 80-91.

Zhao, L. Y. (2024). The construction ideas of intelligent decision-making system for community policing from the perspective of technology empowerment. Public security research, (10),37-43.

Zhu, L. B. (2023). Research on intelligent policing from the perspective of data science. In the world of digital communication, (11), 33-35.