

An optimization scheme for campus security prevention and control

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Abstract. With its unique charm for student education, campus security has recently attracted extensive attention from all walks of life. The scheme design and system management of campus security prevention and control has become a hot spot in related fields. In addition to the basic campus security prevention and control design, the current security prevention and control scheme design tends to achieve more perfect campus security prevention and control from multiple directions and angles. Firstly, this paper introduces the design concept and common measures of campus security prevention and control. Secondly, the paper analyzes the surrounding environment of the school, analyzes the factors that have not been considered in school security prevention and control, and puts forward an optimization scheme of campus security prevention and control.

Keywords: Safety prevention and control, Environmental analysis, Optimization scheme.

1 Introduction

At present, the status of campus security prevention and control is higher and higher, and parents have higher and higher demands for the design of security prevention and control system with higher security performance. The goal of campus security is to ensure the life and property safety of every teacher, student and employee on campus and minimize the possible losses. First of all, the prevention and control system should take safety and technical prevention as the guarantee, combine civil air defense, material defense and technical defense, and strengthen the construction of professional security team. Secondly, based on campus patrol, we should combine point (school gate fortification), line (campus Patrol) and area (unit prevention) to strengthen and improve the new mechanism of comprehensive management of campus public security. In addition, as an emerging technology, information network management is also the key direction to be considered. A good prevention and control system needs to unblock social conditions and public opinion, and establish a public opinion collection and analysis mechanism. Finally, the campus security prevention and control system will establish a campus security early warning

system based on institutionalized management and various emergency plans to improve the ability to protect public security and deal with emergencies.

With the development of information technology, the emerging prevention and control system not only strengthens the safety prevention and control of school buildings and facilities, but also outputs information such as tracking, trajectory analysis and intelligent prediction of concerned personnel by building data source warehouses of different types of people, behaviors, trajectories and events on the platform of the Education Bureau through big data analysis methods such as multidimensional data statistics, data mining and OLAP multidimensional correlation. The high-level prediction and scientific decision-making of campus security control are realized by means of interactive aggregation of key public security personnel or personnel concerned by the Education Bureau, abnormal behavior track prompt, student loss of contact and automatic early warning. Such emerging systems make full use of the existing security equipment or systems such as video surveillance, face camera, license plate camera and access control. By integrating campus coal, electricity and other IOT equipment, they not only "use the old solid waste", but also eliminate the security "island", upgrade and integrate the original decentralized systems to form a complete closed-loop smart campus security and air defense system.

2 Equipment configuration

2.1 Basic information of security facilities

This paper proposes an optimization scheme of campus security prevention and control system, so the scheme is implemented based on the existing mature basic security prevention and control system. This section introduces the configuration of school security facilities under the assumed state.

- At present, more than 200 surveillance cameras are installed on the campus, covering the perimeter, public areas, corridors and other areas;
- License plate recognition and road gate have been installed at the vehicle entrance and exit of the back door of the campus;
- The visitor channel is manually registered

2.2 Basic information of security facilities

The equipment configuration list is shown in Table 1.

Table 1. Equipment configuration list.

Equipment name	Brand model	Quantity
SKYEYES ISP intelligent security prevention and control host	SKYEYES ISP F32	1
Face recognition server	Uniview (nvr-s300-r24)	1

Face capture camera	Uniview (hic2641)- WH@Z28 -VD)	24
Face recognition visitor machine	Uniview (et-b32f- D@W)	1
License plate recognition camera	SKYEYES CC	0
IP speaker	SKYEYES AY	2
IP linkage	SKYEYES-OD-M8	2
IP one button alarm button	SKYEYES AB	1
Accessories (alarm lamp, relay)	domestic	2
Gun surveillance camera	Universal vision (ipc-s242-ir @ dup- ir5-z-e-ve) CPU i5, Memory 8g above,	1
Client computer	Hard disk 500g, Graphics card 1060 Display, Keyboard Mouse	1

3 Specific design of optimization scheme

This section mainly introduces our optimization and measures for campus security prevention and control system from various angles.

3.1 School perimeter

- Equipment configuration: surveillance camera;
- Installation position: use the original surveillance camera and fine tune the position according to the actual situation;
- Warning area detection and warning: use the existing monitoring video around the perimeter, use the camera to cover the perimeter of the school, set it as an intrusion alarm, and trigger the alarm when someone enters the warning area. Different perimeter prevention schemes can be set for class, school and holidays. Through intelligent video alarm to ensure the safety of the school perimeter, so as to ensure the safety of students, teachers and school property. For the perimeter crossing event of abnormal personnel, the actual reporting operation can be carried out, and the on-site audio-visual linkage and remote shouting can be started to quickly and effectively deal with the intrusion event.

3.2 Key areas

Power distribution room.

- Equipment configuration: 1 surveillance camera;
- Installation position: one surveillance camera is installed in the power distribution room;
- Warning area detection and early warning: set warning area detection to trigger alarm when someone enters the warning area. Different prevention schemes can be set for class, school and holidays. For the intrusion event of abnormal personnel, the actual report operation can be carried out, and the on-site audio-visual linkage and remote shouting can be started to deal with the intrusion event quickly and effectively

Dangerous chemicals storage room of experimental building.

- Equipment configuration: 1 surveillance camera (original);
- Installation position: use the original surveillance camera and fine tune the position according to the actual situation;
- Access summary: use the existing surveillance video for video structured analysis. When someone enters and exits, the system will automatically record the personnel access information of the channel, classify and sort it into storage, and automatically filter out the video without access

Canteen back kitchen and canteen warehouse.

- Equipment configuration: one camera in the back kitchen of the canteen and one camera in the warehouse of the canteen (using the original);
- Installation position: use the original surveillance camera and fine tune the position according to the actual situation;
- A Warning area detection and early warning: use the existing monitoring video of the canteen kitchen and warehouse to set up warning area detection in non working hours, and trigger the alarm when someone enters the warning area;
- Access summary: using the existing monitoring video of the warehouse behind the canteen, the access summary is set at the warehouse entrance and exit during working hours. When someone enters and exits, the system will automatically record the personnel access information of the channel, classify and sort it into storage, and automatically filter out the video without access

Stairway of the first to second floors of the teaching building.

- Equipment configuration: 1 IP sound, 1 IP linkage and alarm light, 1 surveillance camera (using the original);
- Installation position: one IP sound, one IP linkage and one alarm lamp are installed in the stairway from the first to the second floors of the main stairs of the teaching building;
- Crowd gathering warning: use the existing surveillance camera in the corridor to enable the crowd gathering warning function during the peak period. When the number of students is too dense and exceeds the set value, the system starts the on-site automatic voice prompt to prompt students to pass slowly in order. When the early warning exceeds 3 times, it will be automatically uploaded to the duty room, and the

duty room will start the functions of remote voice call, video monitoring and alarm upload

3.3 Fire Engine Access

- Equipment configuration: 1 IP speaker, 1 IP linkage and 1 alarm light, 1 surveillance camera (using the original);
- Installation position: one IP sound, one IP linkage and one alarm lamp are installed in the fire passage;
- Fire channel blocking early warning: use the existing public area monitoring video of the school to set fire channel early warning on the cameras covering the public roads of main roads, fire channels, important channels and parking lots. When abnormal blocking, illegal parking and other behaviors occur, the early warning will be triggered automatically to avoid the occurrence of trunk road blocking and other events. For abnormal behavior events, it can carry out on-site automatic early warning, start on-site audio-visual linkage and local voice prompt, and quickly and effectively deal with channel blocking events

3.4 Monitoring duty room

- Equipment configuration: 1 surveillance camera (original), 1 emergency alarm button;
- Installation position: one emergency alarm button is installed in the monitoring duty room;
- Off duty / sleeping early warning: use the existing monitoring video in the security duty room of the gate to realize the off duty supervision and management of the on duty personnel. When the security personnel leave the post for more than the preset time, the off duty early warning will also be triggered to timely remind the management personnel to strengthen the management of security work and effectively eliminate potential safety hazards;
- One button emergency alarm: install an emergency alarm button in the duty room at the school gate. In case of emergency, relevant personnel can trigger the one button alarm button to start the emergency alarm. The audio and video information at the alarm site can be automatically uploaded to the monitoring center or online alarm service center within 7 seconds. So as to realize the rapid response to emergencies and effectively prevent emergencies and other illegal acts

4 Conclusion

This paper first analyzes the importance and current situation of campus security prevention and control, and then puts forward an optimized structure of campus security prevention and control through specific configuration and optimization scheme. Therefore, the optimization method in this paper has certain logic and implementation value.

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