

Announcement of Press Release

“The e-JIKEI Camera” Security Camera with Privacy Protection

5 December 2008

Society for e-JIKEI Network, Gunma University, Japan

[Time and Place]

Date: Friday 5 December 2008

Time: 14:00-15:00

Place: Room 111, Building No3, Faculty of Engineering, Gunma Univ.

[Summary]

A prototype of a stand-alone-type security camera with privacy protection is developed.

The features of the developed camera are as follows,

- (1) It has a card-type memory, in which the images for latest 1 week are recorded.
- (2) It can be placed outside.
- (3) All it requires are only the power supply of AC100V.
- (4) All images are encrypted and stored in the memory.
- (5) Owners of the cameras do not have the key for decryption. They own the encrypted images, but they cannot view the images.
- (6) Only the particular persons, such as police or city government, have key for decryption. They can view the stored images once they are given by the owners.



Figure 1. Developed camera

[Concept for privacy protection]

- (1) We propose a new concept regarding the management of security cameras in which those who own and manage images (owner) and those who have the right to view the images (viewer) are separated by means of the encryption of the images.
- (2) Using this concept, encrypted images are transferred from the owner to the viewer only when both the owner and the viewer consider it necessary, such as in the case of crimes; then the encrypted images are restored for viewing by the viewer. By this method, the images can be viewed only when absolutely necessary.
- (3) This concept was proposed to prevent the risk of privacy violation, as well as to reduce the unnecessary psychological burden that third parties may be subjected to, with the aim of promoting the placement of security cameras throughout local communities.

This time, we have just developed a stand-alone-type (all-in-one-type) camera, which is suitable to realize the above concept.

[Comparison with the system in London]

In London, 0.8 million security cameras are in use. Most of people think as follows,

- (1) **Merit:** The security cameras are very effective to prevent the crime and identify the criminals.
- (2) **Demerit:** From the viewpoint of the violation of privacy, the existence of many security cameras is stressful.
- (3) Our point is that the above “demerit” is NOT NECESSARY and CAN BE REMOVED.
 - (A) To watch the images from 0.8 million security cameras, 40,000 staffs are required under the conditions that 1 staff watches images from 80 cameras and 10,000 staffs watch images from 800,000 cameras and they work as 4 group and 3 shift (8 hours in each shift).
 - (B) The number of staffs of 0.8 million is impracticable.
 - (C) That leads the conclusion that images from cameras are usually NEVER WATCHED real time and are just recorded for the investigation for the crimes.
 - (D) Many people are given the stress from the fact that the images can be seen by someone and their privacy can be violated.
 - (E) Using our concept, “(2) Demerit” can be completely removed without sacrificing “(1) Merit”.
 - (F) Only in the area, where continuous watching is necessary, the usual security cameras are appropriate.
- (4) Once our concept is accepted by the society, then the introduction of the security cameras by the usual citizens will be significantly increased.

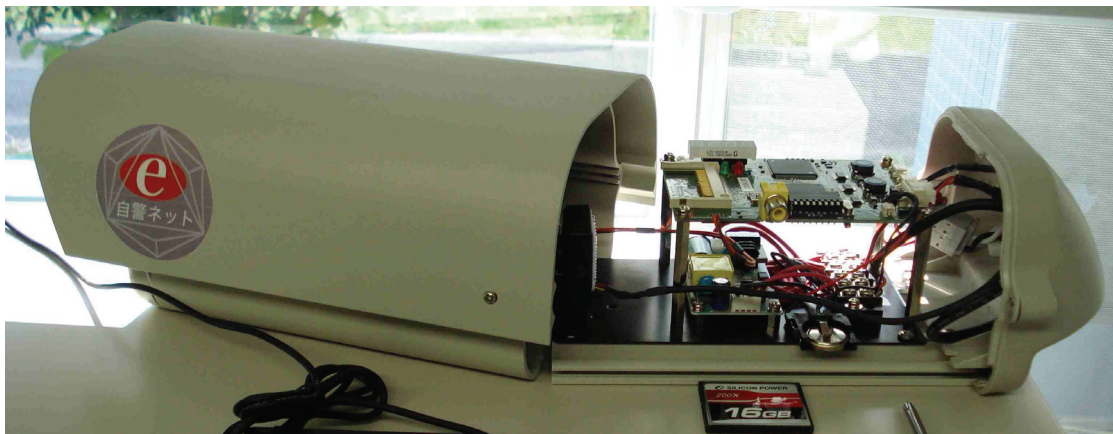


Figure 2. Inside the camera

[General explanation on our concept]

Recently, the use of security cameras has spread throughout the world. Along with this trend, concern regarding the violation of privacy has grown. When security cameras are used, the owner, manager and viewer of the images captured by the security cameras are the same person. However, in most cases, the recorded images are not viewed unless a crime occurs. This is because the probability of crimes occurring in most places is low and the labor expense associated with viewing the images is high. However, the psychological burden on the general public related to the recorded images of a security camera system being freely viewed by the owner is huge, and has been an obstacle to the further spread of security camera systems.

By managing the security camera system using our concept, it is possible to markedly reduce the negative effects associated with the introduction of security cameras, such as concerns over the violation of privacy, without reducing the positive effects, such as crime prevention and the provision of recorded images to investigating authorities in the case of crime, at places other than those requiring high-level security and constantly manned surveillance, i.e., most communities.

In a practical example carried out in Kiryu City, Gunma Prefecture, a personal computer (PC)-based security camera system is owned and managed by the owners of retail stores affiliated with the

merchant association, and images are encrypted and stored in the system. To view the stored images, special software installed in the PCs at police stations in Kiryu City must be used. Only when the owner of the retail store and the police determine that it is necessary to view them, are the stored images transferred from the owner of the retail store to the police. Then the stored images are viewed by the police and used as information for investigations. The encrypted images that are stored at each retail store are automatically deleted after 30 days if no incidents or accidents have occurred.

In order to ensure that the system is in line with our concept, the declaration "We will always accept inspection by the police" is posted at each retail store using the system in the case of the example in Kiryu City. We also propose the following to ensure further assurance.

-The use of security cameras that are embedded with several conditions, such as an access password and an encryption key, in a format that prohibits rewriting and that are sealed such that they can be removed only by breaking.

-Sealing by a public agency. The seal shall specify the person who sealed the camera and the viewer of the images.

By this method, even passersby can understand that the images captured by the camera are encrypted and cannot be viewed unless an incident occurs merely by observing the appearance of the camera.

Our concept was originally developed for the purpose of promoting the spread of the e-JIKEI Network, which was proposed by us as a management system for security cameras. In the framework of the e-JIKEI Network, each citizen should observe their surroundings from a sense of responsibility as a citizen of the society; as a means of realizing this, PCs, free software and PC cameras are used. It is considered that a local community in which many citizens watch and observe the neighborhood has a high crime-prevention ability.

It is noteworthy that since the stability and reliability of each system are not necessarily very high from the viewpoint of crime prevention and the ability to identify the criminal, it is possible to use inexpensive hardware. In addition, the basic concept is that each citizen introduces the system voluntarily; thereby the financial and personnel burden on the public administrative side is limited. Furthermore, because the captured images are dispersively owned and managed by individual citizens, the risk of privacy violation is considered to be lower than in the case of a conventional system in which the images captured by many security cameras are owned and managed in an integrated manner by an organization, such as the police. In many areas, including Maebashi City, Gunma Prefecture, our system has already been installed and used successfully.

However, the number of people who are concerned about the risk of privacy violation is large. Our analysis has revealed that this fact is the most serious obstacle to the proliferation of the e-JIKEI Network[1-2]. We hope that, using our new concept, which is characterized by privacy protection, the e-JIKEI Network and the security camera system will become widespread in local communities across the world and will contribute to the realization of a safer and more comfortable society.

References

(1) Y. Fujii, N. Yoshiura and N. Ohta, " Creating a Worldwide Community Security Structure Using Individually Maintained Home Computers: The e-JIKEI Network Project", Social Science Computer Review, Vol.23, NO.2, pp. 250-258, 2005.

(2) Y. Fujii, N. Yoshiura and N. Ohta, " Community security by widely available information technology", Journal of Community Informatics, Vol.2, No.1, 2005.

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