

The e-JIKEI Network Camera: Abuse prevention of street camera network by recording browsing-history

Yusaku Fujii^{1, a}

¹Faculty of Science and Technology, Gunma University, 1-5-1 Tenjin-cho, Kiryu City 376-8515, Japan

^a<fujii@gunma-u.ac.jp>

Keywords: social safety, privacy protection, network camera, Internet of Things, social infrastructure, e-JIKEI Network, e-JIKEI Network Camera

Abstract. This paper reviews the e-JIKEI Network Camera [1-4], in which all the browsing-history of the images stored in each network camera is disclosed to the public on the Internet, for preventing the abuse of the recorded images by operators, such as city officials and police officials.

1. Introduction

The following 4 steps are helpful to understand the necessity of the proposed concept.

[Step-1] It is not difficult to install street lights with networked cameras throughout the nation just like the conventional street lights, if street lights with networked cameras are mass-produced.

[Step-2] The positive effect is enormous. Very few criminals can be escaped and many kidnapped children can be rescued, if the networked cameras are installed just like the street lights throughout the nation.

[Step-3] The negative effect is also enormous. If this powerful networked camera system is abused by the owners and the operators of the camera system, such as bad city officials, the serious violation of privacy of the ordinary citizen will arise.

[Step-4] For this powerful networked camera system to be accepted by the society, it is necessary that the negative effect should be perfectly prevented.

Therefore, we propose and develop the e-JIKEI Network Camera, which enable the operation, in which the abuse by the owners and the operators of the camera system is strongly prevented.

2. The e-JIKEI Network Camera

The features of the prototype of the e-JIKEI Network Camera based on the proposed concept are as follows,

[1] Each network camera records the images continuously in the memory card inside. Since we assume that the number of the cameras is comparable to that of the street lights operated by a city government in the near future and most of the cameras are set in quiet areas with very low rate of crimes, transfer of all the captured images to the cloud or the server are waste of the communication cost.

[2] To obtain/view the images recorded in the cameras, each browsing-device needs to get the permission from the recording server operated by a reliable 3third party. If an officer of the city government abuses the system, the act should be exposed and he/she will be dismissed soon.

[3] The recording server, operated by the third party, discloses all the browsing-history of the images to the public on the Internet.

3. Discussions

If the number of the cameras is similar to (or much more than) that of the street lights throughout the nation in the near future, online operations of solving crime, such as the rescue of kidnapped children, can be implemented. The positive impact to the society is enormous. However, the negative

impact of abuse of the system is also significant. The following effects can be expected, if the camera system is installed based on the proposed concept,

[0] All the browsing-history of the images stored in each camera are disclosed to the public on the Internet.

[1] The legitimate use for the legitimate and authorized purpose is encouraged. Disclosure of all the browsing history is no problem for the officers, who use the system properly.

[2] The abuse for the non-authorized and personal purpose is strongly discouraged. An officer, who did abuse the system, will be dismissed immediately.

[3] By [1] & [2], ordinary citizen are free from the mental stress of the violation of their privacy due to the strong camera system around them.

[1] Each network camera records the images continuously in the memory card inside. Since we assume that the number of the cameras is comparable to that of the street lights operated by a city government in the near future and most of the cameras are set in quiet areas with very low rate of crimes, transfer of all the captured images to the cloud or the server are waste of the communication cost.

[2] To obtain/view the images recorded in the cameras, each browsing-device needs to get the permission from the recording server operated by a reliable 3third party. If an officer of the city government abuses the system, the act should be exposed and he/she will be dismissed soon.

[3] The recording server, operated by the third party, discloses all the browsing-history of the images to the public on the Internet.

4. Conclusion

In the near future, everywhere throughout the nation might be watched by the network camera systems, then a new world, in which no criminal can escape and no children can disappear, will be created. The technology for creating this new world is available at low cost at this moment. However, the method how to protect the privacy for the ordinary citizens has not yet been established. The e-JIKEI network Camera could be a one possible solution.

Acknowledgements

This study was supported by the research aid fund of the LIXIL JS Foundation and the Grant-in-Aid for Scientific Research (B) 15H02887 (KAKENHI 15H02887).

References

- [1] Y. Fujii and N. Yoshiura, "[Will every streetlight have network cameras in the near future?](#)", *SCIENCE*, eLetters (21 October 2016).
- [2] Y. Fujii, N. Yoshiura, N. Ohta, A. Takita, H. Ueda and K. Maru, "Abuse Prevention of Street Camera Network by Browsing-History Disclosure", *Journal of Community Informatics*, Vol. 12, No. 1, pp.152-156, 2016.
- [3] Y. Fujii, K. Maru, K. Kobayashi, N. Yoshiura, N. Ohta, H. Ueda and P. Yupapin, "e-JIKEI Network using e-JIKEI Cameras: Community security using considerable number of cheap stand-alone cameras", *Safety Science*, Vol.48, No.7, pp.921-925, 2010.
- [4] 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.