Security Camera Network, Privacy Protection and Community Safety

Smart car with security camera for homeland security

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Abstract

We present a new design of safety car system for car accident investigation and homeland security. Radio receiver and security camera are imposed to involve in the car manufacturing, which can be used for car accident and crime suspect investigations, and navigation. Moreover, the road situation and the available route can also be reported, which is available for road traffic managements. In case of the security camera is in operation, the investigation data can be kept in the secret until the investigation is taken place by the authorized party, which is required for the fair judgment and investigation of both parties. Furthermore, the crime suspect investigation and alarming can also be implemented into the system for crime prevention, which is useful for homeland security applications.

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1. Introduction

Security cameras are generally accepted currently and widely for crime washing and investigation in the places such as shopping mall, parking and the personal property. Security camera is the effective innovation that can be applicable in all places (Harwood, 2008). One example, both government agency and the private sector respond to use as the important tool to facilitate the transportation system, when the traffic is reported on radio stations all the time. People used to drive a vehicle to know the dynamic traffic conditions (Neyland, 2006), and may seek to avoid the path that having the traffic congestion problem. The key issues related to security and social issues that deserve to find a way to change the technology of security camera, which is to use it. In which the problems of crime and theft of cars in the park or home, shopping mall and the hotel may be solved. In case of public passengers in vehicle or taxi are not confident that driver will drive safety because there is often a passenger stripped and then rape or assault in car or taxi (Hong and Ong, 2008). Often, the police cannot find any evidence or suspect for investigation. Alternatively, the driver has been robbed by the passengers in cars which is also a problem of investigation (Rosenbloom and Shahar, 2007). In this paper, the use of security camera and radio receiver are imposed to involve in the car manufacturing, which can be used for car accident and crime suspect investigations, homeland security and navigation. The road traffic can also be reported and solved by using the car radio. Moreover, the investigation data can be kept in the secret until the investigation is taken place by the authorized party, which is required for the fair judgment of both parties. Furthermore, the crime suspect investigation and
alarming can also be implemented into the system, which is useful for security network, homeland security, and insurance business.

2. Smart car system for homeland security

Now camera in car becomes common instrument which is acceptable by the society. But, no car manufacture put car recorder in their products, where the reason may be the privacy violation. Therefore, to keep the privacy requirement, the proposed system can be provided as following detail. Initially, the required public vehicles must be registered to install the security camera as shown in Figure 1. The camera with memory is installed in front(camera-1) of the driver which may be included within the GPS (Global Positioning System) or distance meter installation. The images recorder can be used either type I or type II; where type I-images before and after 20 second of the input are recorded; type-II-continuous recording for 20 hours can be performed. While, in case of accidence, the camera to car (Display only) is required to install for back (camera-3) and side (camera-2) monitor. In operation, the camera watching around/in the car where the images are continuously recorded with GPS data (position) and time, the images are recorded with secret code. In case of problem, when the police query, in which they ask if you are around-A in time-B, then notify as that, and give us images. The system reports it to the owner via the radio receiver, thus, the owner decides if he does so or not.

![Figure 1 shows a smart car that installed the security cameras.](image)

Other applications, in some cases, the first camera position can be installed in the bumper, radiator cap or in front, which can be used to view outside the front car or to car. Secondly, the installation of the camera in the distance meter and fares display. By using the wireless communication link, the control office can be able to see all images within the vehicle within a distance away, however, the secret codes are required to involve in case for privacy requirement. Two security cameras and the control system will work incorporating a GPS which will be used to record the images from two security cameras. The car's GPS can be used to track the individual cars using the access code only in conjunction with a computer program (Mintsis et al., 2004). If any system is not working, for instance, one of security cameras has a problem, hence, the GPS system or a signal outage notification can immediately inform to the control center to check the notification code and contact the driver of the vehicle or motor vehicles inform the problems immediately. Therefore, the car owners will need to bring their cars to check the integrity of the system within 24 hours. By using the emergency button that can be installed in the taxi, thus, wherever the taxi location is not safety, the warning signal can be sent to the control center. Hence, the assistance can be reached in a
timely manner before a serious event. After that the evidence can be appealed by using the image data from security cameras that was recorded in a recording of the control center with the desired code for confidential use. The accessible codes can be used by the authorized control center staff, which is available to police or court official in the investigation.

After the accident was occurred, the recorded images from the security cameras can be used to capture events both within and outside the car for investigation of the cause of the accident (Bener et al., 2008). Because of after the accident may not be able to find any witnesses and evidence that were attributed to other events over time. Moreover, the discrepancy of evidence may not match the reality (Harwood, 2008). For instance, the picture that is actually the police or insurance company employee is notified and seen after the event was over may not be realistic as shown in Figure 2. The use of recorded images will be useful for the investigation after the event of car 1 and car 2, where the red and blue(Green) light signal images were recorded. However, to protect the alternative changes, the security codes are required in case of security requirement.

Figure 2 shows images of events in the previous scene recorded by a CCD camera.

3. Discussion

The major increasing cost including in this system is the instruments and insurance, where the instruments of the proposed system requires the following equipments: charge coupled device (CCD) camera, central processing unit (CPU) with memories GPS and radio receiver, as shown in Figure 1. All have already installed to medium class car or higher which means that very low cost is needed to install the system to cars once the manufacturer decides to do. In case of insurance cost, when the vehicle owner or property owners who insured the insurance company agrees to install the security device (Qing Yang et al., 2007), the insurance companies can add in terms of insurance premiums collected increased. One more problem is the privacy violation, whereas the privacy protection-can be used the e-JIKEI with privacy protection, where more details can be found in references (NPO, 2009; Fujii et al., 2005 and Fujii et al., 2009).

4. Conclusion

We have proposed that the use of security cameras installed in front, back, and side car, where the first two installations are for security purpose, while the latter one for navigation only (only display). In the case of accident, it can assist the police or insurance investigator by using the recorded images. Moreover, the crime prevention may be also useful when the car passengers notice that they are in the camera capture.
References


