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Healthcare Assistance through RFID Sensor with enhanced Video Sensor Networks

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ABSTRACT

In general healthcare support systems, Wireless Sensor Networks (WSNs) give rich data and alerting mechanisms against odd conditions with continuous observation. What is more, they minimize the requirement for care givers associate in Nursing facilitate the inveterately unwell and older to survive a casual life. During this paper, we tend to propose an outside observation atmosphere and valuate the capabilities of video device networks for aid observation in an external setting. For this reason, we tend to planned many enhancements for reducing the traffic load on the network for higher performance. Radio Frequency Identification (RFID) could be a terribly mature technology that has already been employed in several areas. The RFID enhanced video device networks scale back the network traffic load. Moreover, the proximity of the aid professionals United Nations agency are residence the police work space is additionally used for higher equalization the network load. Finally, for supportive the coverage of the emergency events with low under developments, we tend to propose Associate in Nursing emergency frame primarily based queuing mechanism and evaluated its performance through simulation.

Keywords: RFID, WSN, Healthcare, Sensor Network, Traffic.

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INTRODUCTION

In older days, we could not able to find the missing patients in the hospital, because in that time there is no any detector to find the missing patients in the hospital. So in order to overcome that situation, an id called the RFID came to existence in the year 1948. This paper deals with various topics such as Healthcare assistance through RFID, Enhanced video sensor network and Working module. The idea is that by using resources more effectively, hospital staff can spend less time running around trying to find medical supplies and more time with patients. In one decade before, the traceability of medicines was done through the lot number and date of manufacture. The RFID is used to trace the prescribed drugs in an efficient manner. All the staff members have an RFID chips in their pocket badges respectively. And equipment is attached to their RFID. In this we introduce a network called "Wireless Video Sensor Network" WSN through which all are monitored [1].

Healthcare Assistance using RFID

The system is reducing the time that staff members spend finding equipment and each other, and it informs them when a colleague is attending a patient and shouldn't be interrupted. Similarly, family members are now directed more quickly to patients. And misplaced equipment can now be easily located and returned to its correct place. All this is allowing the clinical staff to spend more of their time on activities that benefit the patients. The new infrastructure was a real-time-location (RTL) system with state-of-the-art location sensors and devices that use radio frequency identification (RFID) technology to track the movement of and locate patients, staff, and equipment [2]. High-density RFID readers were installed in the ceilings.

All patients will receive their RFID wristbands respectively, when they register. Staff members have RFID chips in their badges. And equipment is tagged with discrete RFID stickers. All of the RFID tags are "passive technology," meaning that does not contain a battery; the power is supplied by the reader [3]. When radio waves from the reader are encountered by a passive RFID tag, the coiled antenna within the tag forms a magnetic field. The tag draws power from it, energizing the circuits in the tag.

Healthcare Assistance through RFID Sensor with enhanced Video Sensor Networks

A wireless video sensor network (WVSN) is a system of spatially distributed video sensors which gather and transmit video information over a wireless ad hoc network [4]. To measure, control and optimize the system performance, the following key research problems need to be addressed they are how to measure the amount of visual information collected by the video sensor within its operational lifetime, how to quantitatively compare the information sensing efficiency between two video sensors, how to measure the information sensing efficiency of the whole video sensor network [5], how to control and optimize the information sensing efficiency of the video sensor network.

In this work, we introduce the concept of accumulative visual information (AVT), and use it as a measure for the amount of visual information collected the WVSN. Based on the AVI measure and the power-rate-distortion analysis model developed in our previous work, we optimize the efficiency of the WVSN system.
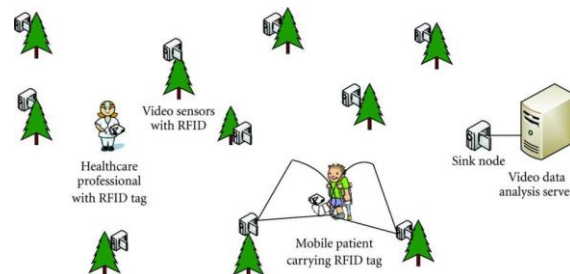

Figure 1. Wireless Video Sensor Network in Healthcare

In the above figure 1, we come to know that, how an RFID enhanced with video sensors is very efficient in healthcare.

Illustration of healthcare assistance through RFID Sensor with enhanced Video Sensor Networks

The RFID works under the principle of "Magnetic Induction". So every RFID has a specific Antenna and reader. The RFID system consists of various components which are integrated in a manner defined in the above section. This allows the RFID system to deduct the objects (tag) and perform various operations on it. The integration of the RFID components enables the implementation of an RFID solution [6].The RFID system consists five components. Components such as, Tag (attached to an object, unique identification).Antenna (tag detector, creates magnetic field).Reader (receiver of tag information, manipulator).Communication infrastructure (enable reader/RFID to work through IT infrastructure).Application software (user database/application/interface). The interface between the RFID Reader and the RFID Tag is shown in the below figure 2, in this the data is communicated using host computer with the RFID antenna called coupling element.
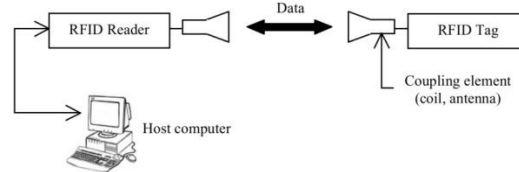

Figure 2.Architecure of Data Connection between RFID Reader and RFID Tag using Host Computer.

Healthcare Services with Injection safety

Usage of reader with RFID tags in patient wristbands, drugs are matched with each and every individual information with the help of their electronic medical records. The information can be accessed by scanning a bar code on the bottle and reading the patient's ID number coded into the RFID tag on the patient's wristband. It also links to the hospital's injection drug inventory and traceability system.

Healthcare Services with Radiology

Some hospitals are taking innovative approaches to RFID. Wake Forest Baptist Medical Centre sewed RFID tags into the veins of x-ray protection vests in an effort to reduce the time it takes to locate the vests for government inspections[7], said Stuart Grogan, the radiology equipment manager who developed its pulse finder RFID enhanced system. It helped the hospital shift from what was essentially a paper-based system to an electronic one. Records are more accurate and tackle is easier to find.

Healthcare Services with Prevention of Infection

Using RFID tags installed to patients and staff is to trace people who come into contact with patients with a communicable potentially dangerous infection such as tuberculosis (TB). It uses a team it refers to as mission control who can head data generated by RFID tag scanners to alert people who need to be screened immediately.

Healthcare Services to track of prescription drugs and tracing

Although this will largely affect pharmaceutical companies, it will change the way drugs are tracked. It will shift from tracking a drug based only on its lot number and include information such as expiration date and each point of contact for the drug from the manufacturer to the pharmacy [8]. The system of tracking drugs using RFID is much efficient rather than how they tracked before.

CONCLUSION

By this paper we come to know that, how an RFID is very useful in the basis of medical industry, that to with the enhancement of video sensor. This helps to tracing   not   only the patient in the hospital as well as prescribed drugs. Although this will largely affect pharmaceutical companies, the tracking system is changed with the implementation of RFID.

This paper reveals many ways on the title Healthcare assistance by using a passive technology of RFID and by WVSN-wireless video sensor network. VSNs for healthcare monitoring are intended to track and monitor only the targeted pedestrians within the surveillance area. Therefore, the traffic caused by other people, animals, or objects moving in the same area should be suppressed. We propose the use of small inexpensive RFID tags for this purpose so that VSNs produce frames only for the intended targets. In the future, we plan to extend this study with real deployment experiments. In collaboration with a healthcare service provider located in Istanbul, we will conduct experiments in their healthcare facility. The experiments will explore the performance of video sensor monitoring along with tracking vital signs of critical patients

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