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Eradicating Camera Abuse Using RFID Technology

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Abstract: Camera abuse has a great influence on individual security. This paper proposes a system to prevent unauthorized cameras from entering into the premises using RFID (Radio Frequency Identification) Technology. The visitors of any premises are allowed to enter only with this RFID tag and made authorized. Any unauthorized device without RFID tag will be recognized as illegal through an alarm or alert. This can record the type of device, entry time & exit time of devices. Since, active RFID tags are used instead of passive RFID Tags, a large area can be brought under supervision. Thus eradicating camera abuse thereby ensuring safety and security.

Keywords-RFID; privacy; authorized; security.

I. INTRODUCTION

Nowadays, with the advanced in wireless communication technology, uncountable applications are available and are running on different systems using wireless/wired devices. The RFID technology has a wide range of technical solutions ranging from simple, inexpensive with more functionality and reduced cost. Furthermore, RFID is part of daily lives-in car keys, E-Tolling, Airports, Border crossing, Insurance compliance.....etc. The (RFID) is an automatic identification system. RFID uses RF to identify "tagged" items. This data is then collected and transmitted to a host system using an RF Reader. The data transmitted by the tag may provide identification or location information, or specifics about the product tagged, such as price, color, date of purchase, etc.

II. LITERATURE SURVEY

A. Design and Development of RFID based Intelligent Security System

Radio frequency identification is one of the most exciting technologies that revolutionize the working practices by increasing efficiency. It is often presented as replacement for barcode, but the technology has much greater potential such as individual serial numbers for each item and possibility to read these numbers at some distance this work has objective to present a system for security based on RFID technology. The proposed system used contactless smart card to limit the entries of unwanted persons.

B. RFID based Object Localization System using Ceiling Cameras

This paper is about an object localization method for home environments. This method utilizes RFID equipments, a mobile robot and some ceiling cameras. The RFID system estimates a rough position of each object. The autonomous robot with RFID antennas explores the environment so as to detect other objects on the floor. Each object that is attached an RFID tag, is then recognized by utilizing its feature information stored in this tag. Finally, the precise localization of each object is achieved by the ceiling cameras with particle filters. The accuracy and the robustness of the proposed method are verified through an experiment.

C. An RFID based Technology for Electronic Component and System Counterfeit Detection and Traceability

RFID-based system suitable for electronic component and system Counterfeit detection and System Traceability called CST. CST is composed of different types of on-chip sensors and in-system structures that provide the information needed to detect multiple counterfeit IC types (recycled, cloned, etc.), verify the authenticity of the system with some degree of confidence, and track/identify boards. Central to CST is an RFID tag employed as storage and a channel to read the information from different types of chips on the printed circuit board (PCB) in both power-off and power-on scenarios

III. DESCRIPTION

A. RFID System Components

RFID system has three major components: Tag –Transponder, Reader –Transceiver, Backend Database

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- 1) **Tags:** Tags are typically composed of a microchip for storage and computation, and a coupling element, such as an antenna coil for communication. Different types of RFID tags are
- Active Tag:** An active tag is equipped with a battery that can be used as a partial or complete source of power for the tag's circuitry and antenna. ELA Innovation offers you a wide range of long-range active RFID products to satisfy all your identification projects. The range of our tags can reach beyond 100 meters. The most advantage of active tags are that the tag can be read only at very long distances. The advantages of an active RFID tag includes readability from a distances of one hundred feet or more as well as capability to have other sensors that can use electricity for power. The major disadvantages of an active RFID tag are the limitations on the lifetime of the tag (5 years). They are expensive. Battery outages in an active tag can result in expensive misreads.
 - Passive Tag:** Passive FID tags that are powered by the electromagnetic energy transmitted from an RFID reader and collect energy from a nearby RFID reader's interrogating radio waves. The range of our tags can reach beyond 10 meters. The major disadvantages of passive tag are that the tag can be read only at very short distances. Passive RFID tag does not contain a power source; the power is supplied by the reader. The tag draws power from the inductive coupling with reader antenna. The major disadvantages of a passive tag are that the tag can be read only at very short distances, typically a few feet at most. However there are many advantages .The tag functions without a battery. The tags are less expensive.
 - Semi Passive Tag:** The Semi-Passive tag like passive tags, semi-passive tags reflect (rather than transmit) RF energy back to the tag reader to send identification information .However, these tags also contains a battery that powers their ICs. The semi-passive tags achieve a compromise between cost, size, and range.

| S.NO | DESCRIPTION | PASSIVE | SEMI-PASSIVE | ACTIVE |
|------|--------------|---------|--------------|---------|
| 1 | Power Source | None | Battery | Battery |
| 2 | Transmitter | Passive | Passive | Active |
| 3 | Max range | 10M | 100M | 1000M |

Table 3.1 Tag Properties

Like passive tags, semi-passive tags reflect (rather than transmit) RF energy back to the tag reader to send identification information. However, these tags also contain a battery that powers their ICs. This allows for some interesting applications, such as when a sensor is included in the tag so it can transmit real-time attributes, such as temperature, humidity, and timestamp. By using the battery only to power a simple IC and sensor - and not including a transmitter - the semi-passive tags achieves a compromise between cost, size, and range.

- 2) **Reader:** An RFID reader is a device that is used to interrogate an RFID tag. The reader has an antenna that emits radio waves; the tag responds by sending back its data. The RFID tag receives the message and then responds with its identification. The means of interrogation is wireless and because the distance is relatively short and does not use line of sight. A RFID system is made up of two parts: a tag or label and a reader. RFID tags or labels are embedded with a transmitter and a receiver. An RFID reader is a network connected device (fixed or mobile) with an antenna that sends power as well as data and commands to the tags. It can affect the distance at which a tag can be read (the read range).The frequency used for identification, the antenna gain, the orientation and polarization of the reader antenna and the transponder antenna, as well as the placement of the tag on the object to be identified will all have an impact on the RFID system's read range. The RFID reader provides the connectivity between individual tags and the tracking/management system.
- 3) **Backend Database:** Once the reader senses the waves, that data's are stores into the database. The RFID reader contains a networking element such as wired Ethernet or wireless Ethernet that connects a single RFID-read event to a central server. The central server runs a database application, with functions that include matching, tracking, and storage. In many applications, an "alert" function is present.

IV. WORKING

The RFID reader is operated with +5v power supply. As soon as the supply is given, the reader indicates the user that it is ready. Now the device is entered into the premises with the RFID tag, a message is displayed on the LCD as "DEVICE IN RANGE". Then the device within the range consisting of a tag along with a switch in ON state must be registered which is displayed as "DEVICEREGISTERED". This registers the type of the device, entry time, lost time, etc. the device leaving this allowed to remove the tag along with the switch which is turned OFF. This gives the exit time of the device. The tag removed within the premises is

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displayed as “DEVICE REMOVED”. Thus the tracking of device is done using this process.

V. CONCLUSION

This study has provided a new technology for finding hidden cameras in any places. Since, the project should be implemented by organization side, and they can assure their visitors with full security and make them feel satisfied. Thus, this paper provides a way for safety, security and privacy.

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