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Android Based Security

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Abstract

Security has been a major concern over the years. With the advancement in technology, this issue has been addressed to a certain extent but despite of all available tools and technologies, there exists no consolidate solution to the above stated problem. Also, with the widespread and indispensable use of smartphones seen over the current decade, the amount of e-waste generated due to them, is huge and practically has no pragmatic way to dump the same. Working along the same lines and finding a solution to serve both these issues, we have been working on developing a security system using spare Android phones available at a household. This is, in turn, an economical solution wherein spare android devices can be used in order to provide security surveillance at homes, offices by common people in their day to day life.

Keywords: *IoT, Bluetooth, Android, PIR sensor*

I. INTRODUCTION

People these days are becoming victims of theft and robbery. Looking at the current rate of hike in such cases, people have resolved to various ways like hosting cameras at their places, hiding spare keys, inspecting windows etc. These days, installing home security system for protection top the list. But, these home security systems do not prove to be an economical solution. Hence, the problem has not been alleviated and still, persists as many people who can't afford the same, continue using traditional systems of having spare keys, locking systems etc.

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1.1 Solution

The project, titled as Android Based Security System, aims to eliminate the difficulties faced by the people so far. This is an android based utility which provides a user friendly as well as an economical solution to the problems. The android phones, which need to be sold away or are of no more use with a Bluetooth and front camera capability are used along with a PIR sensor. The PIR sensors, sensors the movement around itself and any change incurred, forces the camera of the smartphone to get activated and the picture gets clicked, which further is stored on the cloud.

2. AIMS AT PROVIDING

Detect any motion/movement in its range

According to the set sensitivity level of the PIR sensor, the area of coverage of the Android based security system varies. Any movement by a human, animal or object in this area will be sensed by the changes caused in the infrared radiations emitted from the body, and the Arduino will send signals to the Android device to carry out further actions.

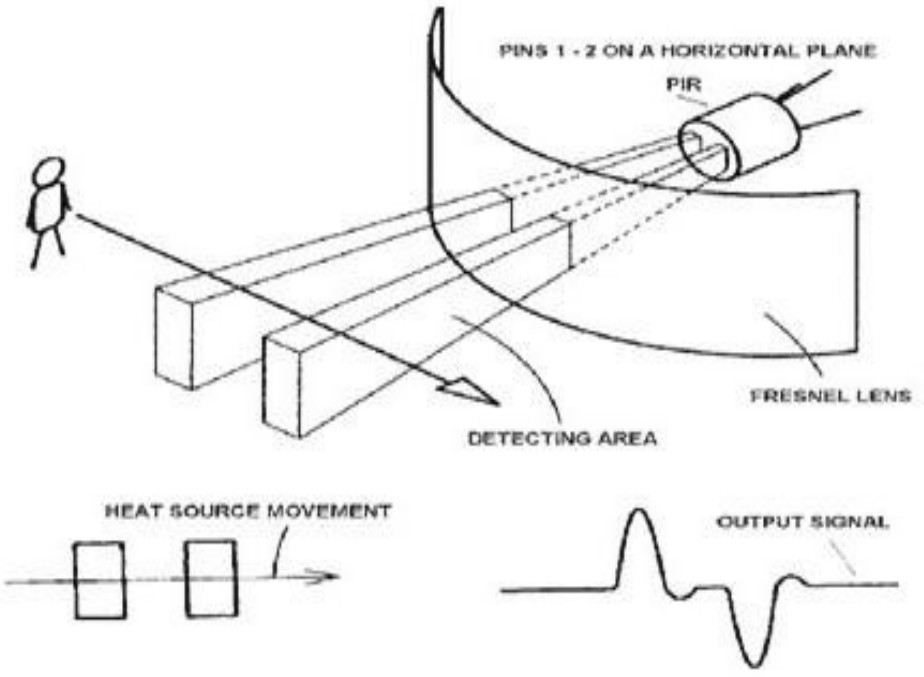


Figure: 1

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Capture images of the area under surveillance on sensing any movement The Arduino Uno, on detecting movement, sends signals to the Android device over Bluetooth connection.

The application within the Android device is initiated to open the camera and capture an image of the area under surveillance.

Store the captured images on the Android device

On clicking the images of the area being monitored, the application on the Android device ensures that the images are properly stored on the device, so that they can later be retrieved for supervision.

Transfer and store the captured images on cloud

Besides on device storage of the captured images, the images clicked are also uploaded onto the cloud. This is carried out by the Android device through its connection to the WiFi network set up in the vicinity of the home, office or any location where the security system is established. Storage onto the cloud safeguards the numerous images captured over a period of time and allows for easy retrieval when required.

HARDWARE REQUIREMENTS

- Android Device
- Arduino Uno
- PIR Sensor
- Bluetooth Adapter
- USB flash cable

3. SOFTWARE REQUIREMENTS

- Arduino IDE
- Android SDK
- Java Development Kit
- Android SDK Manager
- Eclipse

FUTURE SCOPES

The openness of the Android operating system is a major reason why android is the leading OS on handheld devices, and encourages developers and enthusiasts to develop applications for enhancing the existing features or laying foundations for connections to other devices on different platforms. This android based security system developed too has scope for further additional functionalities to be incorporated, in order to provide a better security model:

Video Surveillance

Solar panels

CONCLUSION

The IoT based project addresses the core objective of providing the users, in their day to day lives, with a solution in the

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form of a low-cost system that supports security services at homes, offices etc. The sole purpose is to serve the essential requirement of surveillance over a specific area. Any activity or movement in and around a location can be monitored for ensuring security. The images captured by the android device are securely stored and retained over time on the cloud. The Arduino board and Android device's ease of use and manageable size facilitates easy installation and convenient inspection of an area. The Bluetooth module and WiFi provide connections for transferring detected signals and images for storage. The PIR sensor is easily available and the level of sensitivity can be set for detecting even the slightest of motions.

The Arduino IDE provides an atmosphere for coding the functionality of the microcontroller board and the Android SDK software facilitates the android device's programming, adding to the simplification in the implementation of the project. The technologies used and the basic features included leave scope for further advancements in the system, with additional functionalities and technologies incorporated.

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