Real-Time Security and Monitoring of Farmlands

Abbas Sanwari, Akshay Deshmukh, Niket Sharma, Ravi Gahule, Prof. Geeta Sorate

Department of Computer Engineering, MIT College of Engineering, Savitribai Phule Pune University, Pune, India

ABSTRACT: Security over household and farming equipment's always pays a high price which a common man or middle class person cannot afford for such a price. Hence this paper has power to act effectively to provide a security progression over the people in a very low cost

Present system will provide farm security and monitoring using android application. Farm security must be needed to know if anyone i.e. animal or person is entering in farm. This system uses raspberry pi as main control unit. Two IR sensors are fixed at two boundaries of farm to know the presence of human or animal in farm. After detecting the entry of object in farm the entry time of the object in farm is send to the farmer by using GSM or shown on android application. If someone try to enter in farm then buzzer will on to alert the farmer as try to enter in farm as well as user can automatically on or off buzzer whenever he want by using android application.

KEYWORDS: IR (Infrared), GSM (Global System for Mobile Communication), Raspberry pi, Wi-Fi (Wireless Fidelity)

I. INTRODUCTION

This system implementation provides the safety and security in farming area. Proposed system uses the raspberry pi as main control unit. Because of using raspberry pi in this system provide easiest way of farm monitoring.

System uses the IR sensor for detecting object entering in farming area. Detected object details are get by raspberry pi main control unit. If any entering object detected in farming area then buzzer will on to indicate that someone is entering in farming area as well as alert message send to the user that someone is entering in farm. The details about entering time in farm by any object i.e. person or any animal is shown on android application. By using android application we can automatically on or off buzzer.

II. OBJECTIVES

a) Farm automation by using android application i.e. buzzer on or off with android application.

b) IR sensors used to detect the presence of object i.e. animal or person.

c) IoT based platform used so by using this system we can monitor farm status anywhere in the world.

Aim: Implement such system which can provide security to farming area.

2023

III. LITERATURE SURVEY

a. Cattle Monitoring System Using Wireless Sensor Network in Order to Prevent Cattle Rustling

Stock theft is a major problem in the agricultural sector in South Africa and threatens both commercial and the emerging farming sectors in most of the country. Although there have been several techniques to identify cattle and combat stock theft, the scourge has not been eradicated in the farming sector. This paper investigates how we can model cow behaviour using global positioning wireless nodes to get the expected position of a cow. The objective of this research is to model the typical behaviour of a cow to determine anomalies in behaviour that could indicate the presence of the thieves. A wireless sensor node was designed to sense the position and speed of a cow. The position and the speed of the cow are collected for analysis. A random walk model is applied to the cow's position in order to determine the probability of the boundary condition where we assume there is an increased probability of a cow on the boundary position being stolen. The Continuous Time Markov Processes (CTMP) is applied to the movement pattern of an individual cow in order to find the probability that the cow will be at the boundary position. The value of 2.5 km/h has been found as our threshold to detect any agitation of the animal. The cow has less probability to be at the boundary position. The predictive model allows us to prevent stock theft in farms especially in South Africa and Africa in general [1].

b. Study of Theft Detection and Tracking using Raspberry pi and PIR Sensor

Study of theft detection and tracking using raspberry pi and PIR sensor using mobile devices that uses mobile technology to provide essential security to our equipment's and detecting the theft. The proposed theft detection integrates camera and PIR sensor, GPS tracker on equipment to give the solution through mobile application. Raspberry Pi operates and controls PIR sensor ,camera when motion is detected for remote sensing and surveillance, then capture the image and live video then stores it for future playback, and finally tracing the location of intruder[2].

c. Hardware Implementation of Intruder Recognition in a Farm through Wireless Sensor Network

In rural areas of India thefts in farms are more common. The farm owners struggle a lot for high yield in various ways. But, their yield is curtailed due to the interference of animals and unauthorized humans. The unauthorized humans enter the farm and steal the farm products or cause some damage to crops. While domestic animals like goat, cow cause damage to the crops either by consuming or damaging them. These result in poor yields which in turn reduces their gain, leading to frustration. Fencing the farm is not easy and affordable, especially when the field is large in area. Even if fenced, unauthorized human entries are still possible. Hence, it is very much essential to monitor the boundaries of the farm to detect movement of unauthorized entries into the farm. To implement this, a Wireless Sensor network based system is developed. Motion sensors are placed at various locations around the farm. These sensors continuously sense the movement and communicate to the Co-ordinator through Radio- frequency transceiver. The Co-ordinator on detection raises an alert and a call is made to the mobile of the farm owner through Global System for Mobile. Further, to differentiate between authorized and unauthorized entries Radio-frequency identification tags are used [3].

d. AUTO-THEFT DETECTION USING RASPBERRY PI AND ANDROID APP

In the present days, mobile devices like smart phones and iPods are being used to handle daily tasks that traditional desktop and laptop computers once handled. Home automation can be defined as accessing or controlling many of our home appliances, security, climate, and video monitoring from a remote or centralized location. A home automation system allows us to check in on our home from a remote location, giving us true peace of mind. In this system, we can handle remotely our home or office using this security system. This home automation systems will alert user by phone, text or email if there is any unusual movements within our home. The design and implementation of this system to detect an intruder at home when nobody is present. Presence of individual is detected when the system senses the signal generated by many sensors like PIR sensor, IR sensors. The system sends a message to the user through GSM modem after detecting the presence of unauthorized person. The user then monitors the intrusion from anywhere, on an Internet

enabled device by using IP address of the installed IP webcam of mobile in home, and alerts the neighbours and police. This system also provide when intruder is detected then windows and doors are closed immediately after accepting the users command using the crime watcher app. The user can also save the images and record the videos using the cheaper rate of cameras [4].

IV. BLOCK DIAGRAM

The fig shows the block diagram for Real-Time Security and Monitoring of Farmlands.

System uses the IR sensor to detect if any object entering in farming area. Detected object details are get by raspberry pi main control unit. If any entering object detected in farming area then buzzer will on to indicate that someone is entering in farming area as well as alert message send to the user that someone is entering in farm.
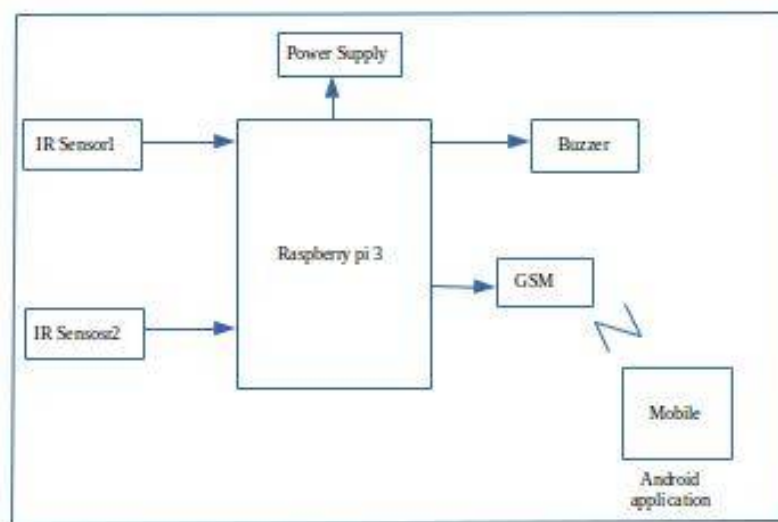

Fig 1. Proposed system block diagram

The details about entering time in farm by any object i.e person or any animal is shown on android application. By using android application we can automatically on or off buzzer.

REFERENCES

[1]. P. Kibambe Mashoko NKWARI, S. RIMER and B.S. PAUL, "Cattle Monitoring System Using Wireless Sensor Network in Order to Prevent Cattle Rustling", IST-Africa 2014 Conference Proceedings Paul Cunningham and Miriam Cunningham (Eds) IIMC, International Information Management Corporation, 2014, ISBN: 978-1-905824-44-1.
[2]. Rahane Madhuri, Pathak Mayuri, Wadekar Ashabai, More Rupali, Malkar Ankita, "Study of Theft Detection and Tracking using Raspberry pi and PIR Sensor", Vol. 6 Issue 1 September 2015.
[3]. Shobhit Kumar Nagpal,P. Manojkumar, "Hardware Implementation of Intruder Recognition in a Farm through
[4]. Ashwini Patil, Shobha Mondhe, Tejashri Ahire, Gayatri Sonar, "AUTO-THEFT DETECTION USING RASPBERRY PI AND ANDROID APP", International Journal for Research in Engineering Application & Management (IJREAM), ISSN: 2494-9150 Vol-02, Issue 07, Oct 2016.