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Smart Security Monitoring Devices for Agricultural Field using Raspberry PI and IoT.

[1] G.Sireesha,[2] D.Tejaswini
[1][2] Department of ECE
[1] SCSVMV University, Kanchipuram

Abstract: **Agriculture is the prime occupation of human being in India. 64% of total available land is occupied by the agriculture. It is practically difficult to every one to view the plants regularly and to use the fertilizers according to the growth rate of the plants or crops. The only solution to this problem is smart agriculture by modernizing the current traditional methods of agriculture the Indian economy deserves security in terms like protection from attacks of rodents or insects, in fields . The security systems which are being used now a days are not smart enough to provide real time notification after sensing the problem. . Hence the project aims at making agriculture smart using automation and IoT technologies. This project is oriented to accentuate the methods to solve the problems like identification of rodents, threats to crops and delivering real time notification based on information analysis and processing without any human intervention. We are using the flame sensor and humidity sensor to find humidity and fire attack. In addition to this, we are using a camera to live stream the field. Here the below mentioned sensors and electronic devices are integrated using Python scripts.**

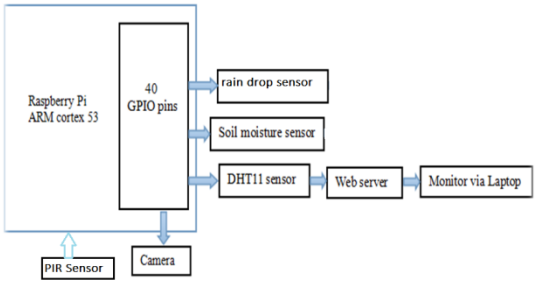
INTRODUCTION

Actually it will be difficult to view and to use the fertilizers according to the growth rate of the plants or crops. Agriculture sector being the backbone of the Indian economy deserves security in terms like protection from attacks of rodents or insects, in fields . This project is totally depends on the methods to the problems like identification of rodents, threats to crops and delivering real time notification based on information analysis. This lack of information transmission and data analyzing has been ”solved” by integration of internet of things with currently available security devices in order to achieve efficient food preservation and productivity. Although the food crop loss and debilitation of diseases are due to various threats as rodents, pests, insects and grain pathogens, while this research is the designing and analyzing of security device, considering damages to post harvest crop.

Internet of Thing:

”Internet of Things” to refer inter connected devices. It’s a major tech revolution in information and communication technology with updated infrastructure and networks where all the connected devices are able to identify and communicate with each other . According to Gartner, in near future, about 25b identifiable devices are exepected to be a part of this computable network . Thus, agriculture can be a vast area to integrate Internet of Things with distributed autonomous sensors to monitor environmental condition of grain stores and to analyze data and pass the information to user.

BLOCK DIAGRAM:



Raspberry Pi 3:

Raspberry Pi is a series of small single-board computer. The Raspberry Pi 3 is the third generation Raspberry Pi.

Compared to the Raspberry Pi 2 it has:

- A 1.2GHz 64-bit quad-core ARMv8 CPU
- 802.11n Wireless LAN
- Bluetooth 4.1
- Bluetooth Low Energy (BLE)

Raspberry Pi 3 has inbuilt wifi.
The name, Raspberry Pi, was the combination of the desire to create an alternative fruit-based computer (such as Apple, BlackBerry, and Apricot) and a nod to the original concept of a simple computer that can be programmed using Python (shortened to Pi).

We will take this little computer, find out how to set it up, and then explore its capabilities using the Python programming language.

Python:
Python has been selected as a good place to start when learning about programming by providing a rich set of coding tools while still allowing simple programs to be written without fuss. This allows beginners to gradually be introduced to the concepts and methods on which modern programming languages are based without requiring them to know it all from the start. It is very modular with lots of additional libraries that can be imported to quickly extend the functionality. You will find that over time, this encourages you to do the same, and you will want to create your own modules that you can plug in to your own programs, thus taking your first steps into structured programming.

PIR Sensor:
A passive infrared sensor (PIR sensor) is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view.

LDR Sensor:
A photo resistor (or light-dependent resistor, LDR, or photocell) is a light-controlled variable resistor.

DTH11 Sensor:
This DHT11 Temperature & Humidity Sensor features a temperature & humidity sensor complex with a calibrated digital signal output. By using the exclusive digital-signal-acquisition technique and temperature & humidity sensing technology, it ensures high reliability and excellent long-term stability. This sensor includes a resistive-type humidity measurement component and an NTC temperature measurement component, and connects to a high-performance 8-bit microcontroller, offering excellent quality, fast response, anti-interference ability and cost-effectiveness. It is a ultra low-cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermistor to measure the surrounding air.

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