

Smart Crop Protection System with Image Capture over IOT

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Abstract: The problem of **wild animal attacks on crop fields** i.e. **crop vandalization** is becoming a very common phenomenon in the state of **Himachal Pradesh, Punjab, Haryana** and many other states. Wild animals like monkeys, estray animals especially cows and buffaloes, wild dogs, nilgais, bison, elephants deer, wild pigs and even birds like parakeets cause a lot of damage to crops either by running over them or eating them and vandalizing them completely. This leads to **poor yield of crops**. These animals attack on fruit orchards and destroy the flowerings and fruits. In both cases, this leads to **significant financial loss** to the farmers and orchard owners. The problem is so pronounced that sometimes farmers decide to leave the area barren due to these animal attacks.



1. INTRODUCTION

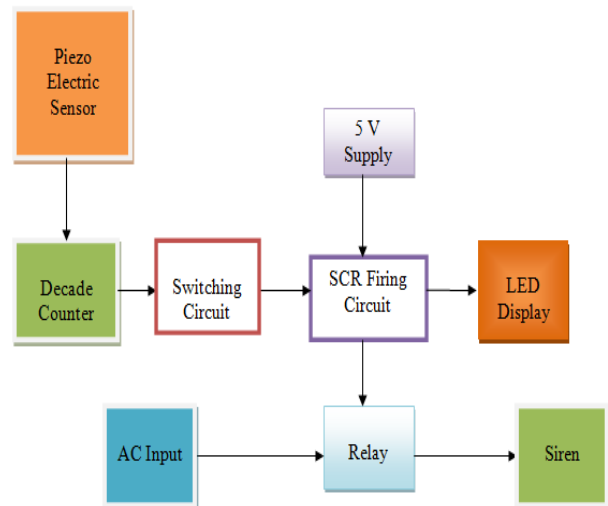
The aim of this blog post is to describe the project – **SMART CROP PROTECTION SYSTEM**, which aims to address the **problem of crop vandalization by wild animals**. It describes the problems that are faced by our farmers due to wild animal attack on their fields and orchards along with the current solutions and methods that have been adopted to address this problem. It then describes our project proposal and

elucidates our method of addressing this problem i.e. how this project can solve this problem. The main aim of this project is to provide **an effective solution to this problem**, so that the **economic losses incurred by our farmers are minimized** and they have a good crop yield.

MODULES USED: Raspberry pi, PIR sensor, LAN, Camera

2. EXISTING SYSTEM

This project describes a security alarm system that can monitor an industry and home. This is a simple and useful security system and easy to install. This vibration detector is realized using readily available, low cost components. One of its many applications is in a rolling shutter guard for offices and shops. The detector will sense vibration caused by activities like drilling and switch on the connected load (bulb, piezo buzzer, etc) to alert you.



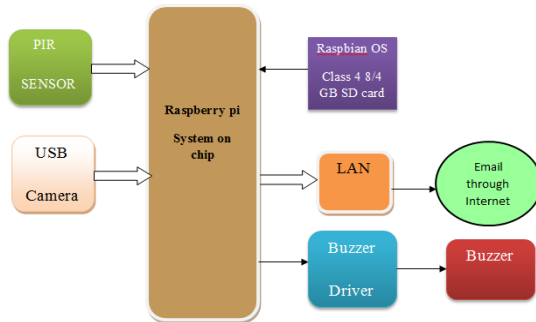
Drawback: In this process only neighbors will be alerted and there is no image capture of the thief to trace him later.

3. PROPOSED SYSTEM

The camera and the other components are connected to the microcomputer which is turned on 24x7 for the whole day. The camera continuously monitors the fields. Acting as the brain of the system, the Raspberry Pi continuously checks for the motion in the field or orchard. If any kind of motion is detected in the field, the raspberry pi checks for the presence of animals in the image. If any animal is found, it provides real-time images of the field over the internet, which can be viewed by using a web browser on devices like computer and mobile and also it alerts the surrounding people through buzzer sound.

The **Raspberry Pi** is a credit-card-sized single-board computer developed in the UK by the Raspberry Pi Foundation. The Raspberry Pi has a Broadcom BCM2836/2837 system on a chip. It does not include a built-in hard disk or solid-state drive, but Uses an SD card for booting and long-term storage.

Block Diagram



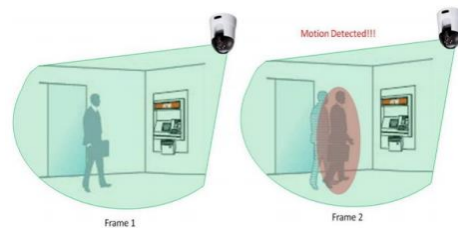
4. POWER SUPPLY



A simple mobile charger is used instead of complex hardware step down transformer.

5. PIR SENSOR

In a PIR-based motion detector (usually called a PID, for Passive Infrared Detector), the PIR sensor is typically mounted on a printed circuit board containing the necessary electronics required to interpret the signals from the pyro-electric sensor chip. The complete assembly is contained within a housing mounted in a location where the sensor can view the area to be monitored. Infrared energy is able to reach the pyro-electric sensor through the window because the plastic used is transparent to infrared radiation (but only translucent to visible light). This plastic sheet also prevents the intrusion of dust and/or insects from obscuring the sensor's field of view, and in the case of insects, from generating false alarms.



Motion Detection

6. BUZZER

A **buzzer** is a loud noise maker. Most modern ones are civil defense or air-raid sirens, tornado sirens, or the sirens on emergency service vehicles such as ambulances, police cars and fire trucks. There are two general types, pneumatic and electronic.

7. RASPBERRY-PI

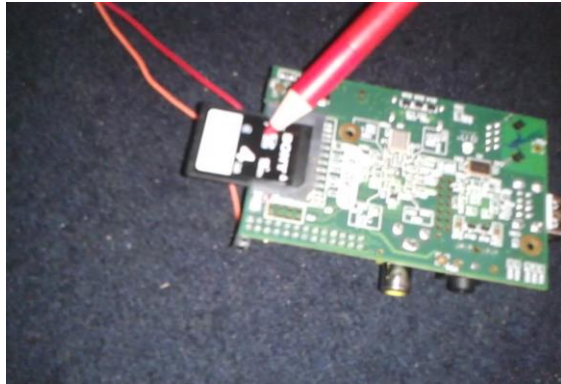
Model

- Brand: Raspberry Pi
- Model: 3 Model B

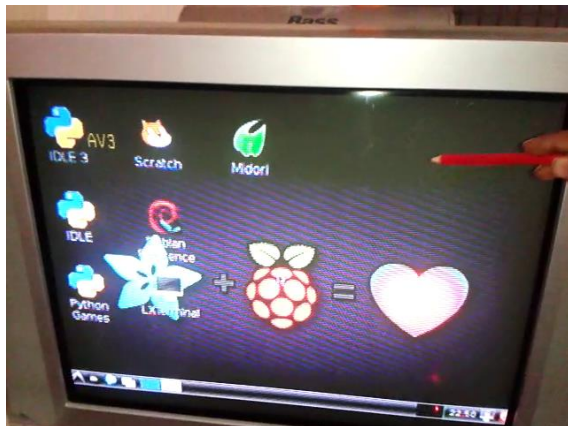
Bundle

- CPU: Broadcom BCM2837 64bit ARMv8 QUAD Core 64bit Processor powered Single Board Computer running at 1.2GHz
- Memory: 1GB RAM

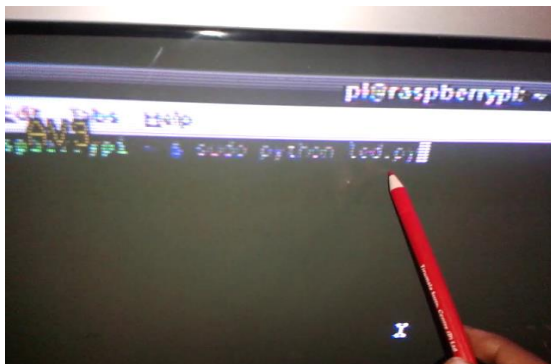
Image Of The Board Showing Sd Card



Os Used In Raspberry Pi Is Linux



Coding will be done in Python/C language



8. ADVANTAGES

- Highly-flexible
- Fit & Forget System
- No need of human effort
- High security is provided

9. APPLICATIONS

- Museums
- Home / Office security
- Jeweler shops
- Banks

10. CONCLUSION

The problem of crop vandalization by wild animals has become a major social problem in current time. It requires urgent attention as no effective solution exists till date for this problem. Thus this project carries a great social relevance as it aims to address this problem. This project will help farmers in protecting their orchards and fields and save them from significant financial losses and will save them from the unproductive efforts that they endure for the protection their fields. This will also help them in achieving better crop yields thus leading to their economic wellbeing.

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Author Profile



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Dr. R. Ramesh Babu is presently working as Head of Department of ECE in Jagruti Institute of Engineering and Technology. He had a Teaching experience of 12 years and has Guided number of students for Project and Paper Publications. His Areas of research Includes Digital System, VLSI, Embedded Systems and Communication systems