Crop Protection against Wild Animal Attacks

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ABSTRACT: Wildlife requirement overlaps human population, creating cost to residents and cultivated field. Wild animals often destroy standing crops, due to which annual production of crops reduces causing economic losses to farmers. In our region, farmer suicide is big problem due to low productivity among farms. This low productivity is because of two main reasons i.e. Crop destroyed by wild animals and Crop destroyed by nature object. Due to over population it occurs a deforestation this results in shortage of food, water and shelter in forest areas. So, Animals interference in residential areas is increasing day by day which affects human life and property causes human animal conflict but as per nature's rule every living creature on this earth has important role in eco-system. Agriculture is the backbone of the economy but because of animal interference in agricultural lands, there will be huge loss of crops. Elephants and other animals coming into contact with humans, impact negatively in various means such as by depredation of crops, damaging grain stores, water supplies, houses and other assets, injuring and death of humans. Farmers in India face serious threats from pests, natural calamities &damage by animals resulting in lower yields Traditional methods followed by farmers are not that effective and it is not feasible to hire guards to keep an eye on crops and prevent wild animals. Since safety of both human and animal is equally vital. So, animal detection system is necessary in farm areas.

KEYWORDS*:* IOT in agriculture, Sensor Cloud, RIOT, Blynk app.

I.INTRODUCTION

The crop damage caused by animal attacks is one of the major threats introducing the crop yield. C.Nagarajan *et al.*[4,7,10] has proposed the traditional methods used by the farmer are Shot/Gas guns, String & stone and electrified welded mesh fences etc. Our proposed method is based on animal friendly ultrasounds generator.It does not produce physical or biological harm to animals nor sound audible to humans.

II.METHODOLOGY

IOT technique is used here for crop protection and the entire process is monitored by using blynk app.
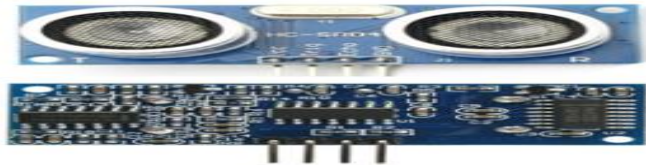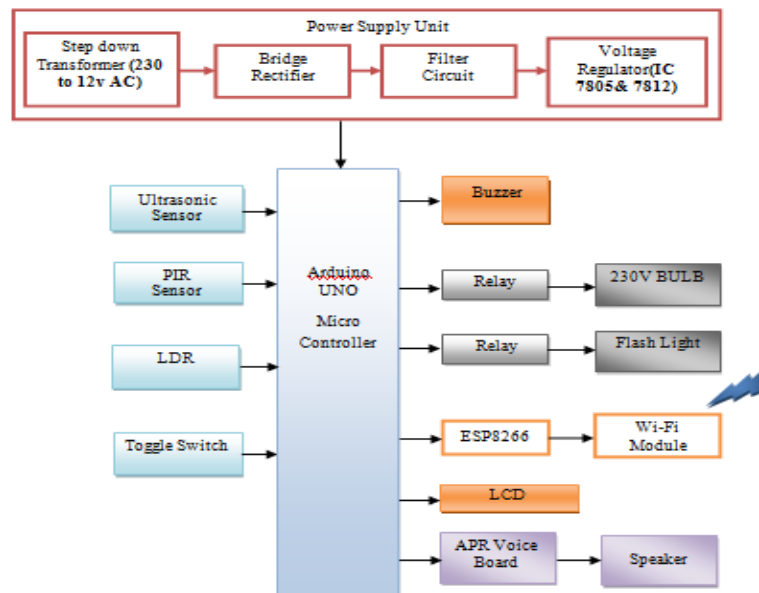
FIG:APPLICATION

FIG:Block Diagaram

III.HARDWARE REQUIREMENTS

1 .Arduino UNO

An Arduino is actually a microcontroller based kit which can be either used directly by purchasing from the vendor or can be made at home using the components, owing to its open source hardware feature. It is basically used in communications and in controlling or operating many devices. It was founded by Massimo Banzi and David Cuartielles in 2005.

FIG:Arduino UNO

2. Ultrasonic sensor

ultrasonic sensor uses sonar to determine distance to an object like bats do. It operation is not affected by sunlight or black material like It comes complete with **FIG:Ultrsonic Sensor** ultrasonic transmitter and receiver module.

3.PIP sensor

4.Buzzer

5.Relay

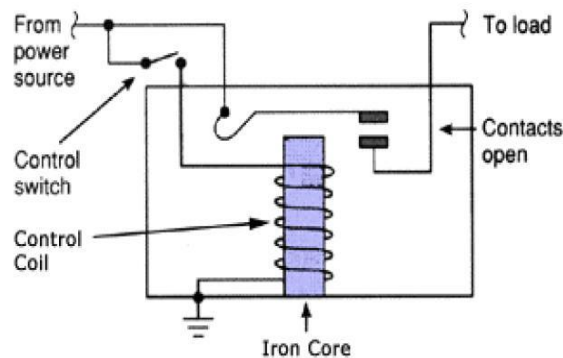Relay act as a switching device .
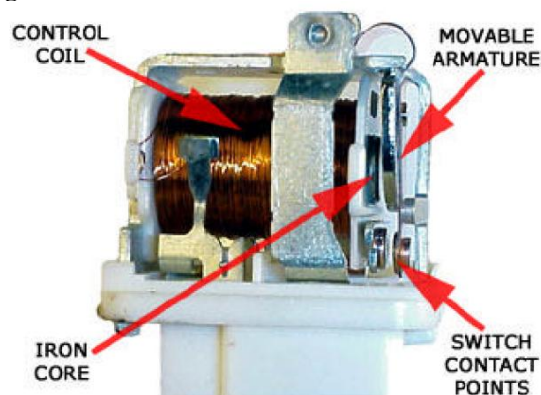

FIG:Relay Circuit Diagram

FIG:Relay

The diagram shows an inner section diagram of a relay. An iron core is surrounded by a control coil. As shown, the power source is given to the electromagnet through a control switch and through contacts to the load. When current starts flowing through the control coil, the electromagnet starts energizing and thus intensifies the magnetic field. Thus the upper contact arm starts to be attracted to the lower fixed arm and thus closes the contacts causing a short circuit

for the power to the load. On the other hand, if the relay was already de-energized when the contacts were closed, then the contact move oppositely and make an open circuit.

6.Power Supply Unit

Power supply is a reference to a source of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to others.
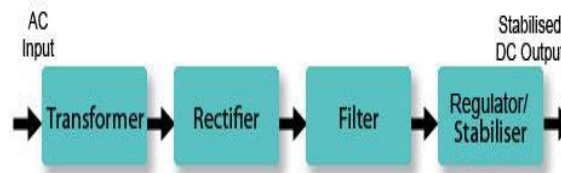

FIG:Power Supply Uint

IV.CONCLUSION

In this paper, we presented an integrative approach in the field of Internet of Things for smart Agriculture based on low power devices and open source systems. The goal of this work is to provide s repelling and monitoring systems for crop protection against wild animal attacks and weather conditions. In our future work, we will extend the current functionalities of our system and investigate the change of incorporating the features of our system to sectors.

REFRERENCES

1. A. Veeramani, P. Easa, and E. Jayson, "An evaluation of crop protection methods in kerala," J. Bombay Nat. Hist. Soc, vol.101, pp. 255-260, 2004.
2. "www.telegraph.co.uk/news/worldnews/europe/italy/12105887/tuscan-wine-makers-back-cull-of-250000-wild-boar-and-deer.html."
3. "www.reuters.com/article/us-italy-boar/italy-hunts-for-solution-to-wild-boaremergencyiduskcn0su1jn2015110"
4. C.Nagarajan and M.Madheswaran - 'Stability Analysis of Series Parallel Resonant Converter with Fuzzy Logic Controller Using State Space Techniques'- Electric Power Components and Systems, Vol.39 (8), pp.780-793, May 2011
5. B. Hamrick, T. Campbell, B. Higginbotham, and S.Lapidge,"Managing an invasion: effective measures to control wild pigs,"2011.
6. A. R. Tiedemann, T. Quigley, L. White, W. Lauritzen, J. Thomas,and M. McInnis, "Electronic (fenceless) control of livestock,"US Department of Agriculture Forest Service Pacific Northwest Research Station PNW-RP-510, 1999.
7. C.Nagarajan, M.Muruganandam and D.Ramasubramanian – 'Analysis and Design of CLL Resonant Converter for Solar Panel - Battery systems- International Journal of Intelligent systems and Applications (IJISA), Vol.5 (1),pp.52-58, 2013.
8. C. Thomas, J. Marois, and J. English, "The effects of windspeed, temperature, and relative humidity on development ofaerial mycelium and conidia of botrytis cinerea on grape." Phytopathology, vol. 78, no. 3, pp. 260-265, 1988.
9. M. Lenders, P. Kietzmann, O. Hahm, H. Petersen, C. Gündoğan,E. Baccelli, K. Schleiser, T. C. Schmidt, and M. Wählisch, "Con-necting the world of embedded mobiles: The riot approach to ubiquitous networking for the internet of things," arXiv preprint arXiv:1801.02833, 2018.
10. E Geetha, C Nagarajan, "Induction Motor Fault Detection and Classification Using Current Signature Analysis Technique", 2018 Conference on Emerging Devices and Smart Systems (ICEDSS), 2nd and 3rd March 2018, organized by mahendra Engineering College, Mallasamudram, PP. 48-52,2018