

Real Time Embedded Based Forest Animals Intruder Detection And Monitoring System

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Abstract- Farmers in and around forest regions are exposed to attack from wild animals which results in loss of crop and life. This brings to an important concept of monitoring and repelling of wild animals. Old methods of repelling and monitoring even endanger the life of wild animals. So here a paper is proposed to protect farms from wild animals via RF Technology, which is functional to farm along with outdated methods to improve the protection performance. Laser Transmitter and Receiver circuits are utilized mainly for the detection of animal intrusion outside the farms. The proposed monitoring scheme is to provide an early warning about possible intrusion and damage by wild animals. The main object of system aims at whenever the object (animal) tried to cross the range of transmitter, the receiver part will alert and show on LCD, and the Arduino UNO microcontroller habitually activate the unwilling gas to wild animals wirelessly from 2Km distance.

Keywords- RF technology, Repelling of animals, Crop protection, Arduino UNO microcontroller.

I. INTRODUCTION

Economy of many countries depends upon agriculture. In spite of economic development agriculture is the backbone of the economy. Agriculture is the main stay of economy. It contributes to the gross domestic product. Agriculture meets food requirements of the people and produces several raw materials for industries. But because of animal interference in agricultural lands, there will be huge loss of crops. Crop will be totally getting destroyed. There will be large amount of loss of farmer. To avoid these financial losses it is very important to protect agricultural field or farms from animal. To overcome this problem, in our proposed work we shall design a system to prevent the entry of animals into the farm. Our main purpose of project is to develop prohibitive fencing to the farm, to avoid losses due to animals. These prohibitive fencing protect the crop from damaging that indirectly increase yield of the crop. The develop system will not harmful and injurious to animal as well as human beings. Theme of project is to design a intelligent security system for farm protection by using Embedded system.

II. EXISTING SYSTEM

An electric fence was used as a barrier to protect a farm from wild animals. An electric fence was first used in Texas in 1888. Electricity from a generator using an overshot wheel was to charge the top two wires of a four-wire fence.

Often solar-powered, such fences were used extensively in the Panhandle to prevent cattle from wandering onto farmlands. One major disadvantage of an electric fence is that it might slow down emergency services from reaching you. This might even result in help reaching you after it is too late. There is a possibility of electric fences posing the risk of fire when bushes or trees grow in close proximity. Hence, it is important to keep the area near the fence cleared of any such vegetation.

It will also have to ensure that the grounding has been done properly. Failure to do so might render the electric fence ineffective. In this case there will be loss of animal life and it is very dangerous to human being also. It will be too much expensive for farmers.

Also in existing system wired sensor used for detecting wild animals. In these techniques fencing wire is used as a sensor. When animals come in contact with this open cable the circuit will be grounded and we get initial input signal that indicates presence of animals at fencing. But in these techniques more possibilities to damage the fencing wires by wild animals.

The existing techniques for the prevention of wild animals entering into the agricultural field are to develop electric barriers, crackers & forced throat water on the boundaries of agricultural area. These techniques will be harmful for the wild animals like elephant, pigs, monkeys, etc

III. PROPOSED SYSTEM

In our proposed work, Laser Source is used as a sensor. When animals cross the Laser Line the circuit will engaged and presence of animals at fencing. After getting that initial input signal followed by RF Encoder -1 the data will

encode and transmit the signal to RF Receiver-1 via RF Transmitter-1. The RF receiver-1 receives the transmitted signal and passed it for further processing to the RF decoder-1, the decoder decodes the signal then it will be given to the Arduino UNO microcontroller. Our system will be activated, immediately buzzer will be on, at the time of night flash light will be on. Whole process is controlled by microcontroller. LCD use to Display status of microcontroller, from where we know we get the initial input to our system. After got the intruder signal from RF Receiver -1 the Arduinomicro controller automatically stimulates the Unwilling GAS to wild animals by using RF transmitter-2. At the receiver side the RF Receiver-2 receives the control signal from Arduino UNO microcontroller and stimulates the Unwilling GAS using Relay control circuit.

Elephants: It's a myth that elephants are afraid of mice, but new research shows that they are not too keen on bees. Even though they fearlessly stand up to lions, the mere buzzing of bees is enough to send a herd of elephants running off.

Monkeys: We can play predator animal sounds like tiger, lion etc. multiple variations of loud roaring sounds will be very effective.

With these preliminaries, a robust protection system is designed for the wild animals entering into the agricultural field by capturing the particular wild animal using Laser line technique and creating that irritation sound for particular wild animals. Alternatively, alert signal also sent to the owner and forest department wirelessly if the wild animals cross the limit. By this way wild animals can be repulsed

IV. MATERIAL USED

1. RF ENCODER AND DECODER:

The encoder has 4 input lines these lines are used to give input which we want to encode. The input given to data pin is in parallel form which is being transmitted into serial form from the System is Repulse of Wild Animals data output pin. The decoder neglect all the pin just concentrate on data in pin and data lines pin. The data line pins in same order as that on transmitter pin.

2. RF TRANSMITTER AND RECEIVER:

An RF transmitter and receiver pair is used for wireless communication. The wireless data transmission is done using 433MHZ RF signals. In order to implement the wireless transmitter and receiver, an encoder IC HT12E and a decoder IC HT12D is used.

3. LASER TRANSMITTER AND RECEIVER:

Using this Laser transmitted and receiver circuit communication with wireless can be done to with the nearby people. A laser torch can transmit light up to a distance of about 500 meters. In our project laser transmitter and receiver can be used to create the line of sight.

4. ARDUINO UNO MICROCONTROLLER:

Arduino uno microcontroller is open source. The main advantage for this microcontroller is that the frequency range can be changed. Arduino boards are able to read the inputs; it consists of both a physical programmable circuit board and a piece of software or IDE. It has 14 digital input/output pins, 6analog inputs.

5.16X2 LCD DISPLAY:

LCD display is used to display the status of microcontroller, from where initial input is received to the system.

Applications

- Main application is to protect the farmer
- This can also be implemented in forest range for preventing the animal reaching the road.
- It can be used as security system for houses
- This unit can be used in area where human movement is minimal. It can be placed near agricultural lands to prevent the entry of wild animals from nearby forest.
- This can also be implemented in forest ranges for preventing the animals reaching the roads.

Advantages

- Continuous monitoring can be done.
- Mini appearance.
- Device can be implemented in large scale.
- Simple circuit.
- Low cost maintenance.
- Automatic operation.
- Long life time.

