

SOLAR FENCING TO PREVENT CROP DAMAGE BY ANIMALS

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ABSTRACT

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. Crops are vulnerable to wild animals. Therefore, it is very important to monitor the nearby presence of animals. Then the actuation of various devices should follow to repel the hazardous animals. we propose a method to protect farms from wild animals' Operational amplifier circuits are utilized mainly for the detection of animal intrusion from the outside of farms. The proposed monitoring scheme is to provide an early warning about possible intrusion and damage by wild animals. The Solar Electric Fence system is a modern-day alternative to conventional methods of fencing to protect your crops & property. Electric Fence is an effective way to reducing losses caused by animals

INTRODUCTION

In the world, the economy of many countries is dependent 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. The 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. Crops are vulnerable to animals. Therefore, it is very important to monitor the nearby presence of animals. Then the actuation of various devices should follow to repel the hazardous animals. In this project, we propose a method to protect farms from wild animals via ubiquitous wired network devices, which is applied to farm along with traditional methods to improve the protection performance.

Operational amplifier circuits are utilized mainly for the detection of animal intrusion from the outside of farms. The proposed monitoring scheme is to provide an early warning about possible intrusion and damage by wild animals. The Solar Electric Fence system is a modern day alternative to conventional methods of fencing to protect your crops & property.

Electric Fence is an effective way to reducing losses caused by animals. The objective of this project is to secure people from wild animals using fence electric shock using MOSFET. The farmer from the unknown persons and animals with help of solar energy. In the hills side, due to presents of lot of animals the farms are often destroyed by them, so the human has to protect and secure their farms. But now-a-days there is no time for the human beings to do the work. Hence to avoid the human interface (security) and also to protect the farms, we provide a system called automatic electric farm protection system. The solar panels position is control depending upon the sun light. Nowadays power demand has increased due to this power failure happens many time.

This project is designed to provide the solution for this power loss. This project is designed with ldr, amplifier, ADC, microcontroller, driver circuit along with motor and limit switches. Solar Electric fencing is one of the efficient periphery systems to protect your property than conventional barbed wire fencing. When an animal or human being comes into contact with the electric Fence they receive a sharp, short, painful but safe electric shock. The shock does not cause any physical damage. After a period of conditioning, the mere presence of the fence acts as an effective barrier even if it is not powered 'ON'. Electric fence can be made to detect a fault on the fence like shorting or cutting of the wire due to tampering on the fence with the Alarm system. Nano Bright Solar offers customized solutions for solar electric fencing according to your needs.

PROPOSED SYSTEM

The project aims at developing a solar fencing, which helps farmers to avoid their crop damage usually occur due to animals. Solar energy is used to power up the fence through shock generation circuitry. The system has a provision for ON/OFF the solar fence based on presence of Animals. This is achieved using PIR sensor near solar powered electric fence. Electric fences can be used to protect farm houses, farmlands, forest bungalows, etc from animals. In a way, these simulate the job of a cowboy or forest guard. Already popular in countries where manpower is expensive, electric fences are slowly becoming popular in India as well. These control the animals by giving them a short, sharp but safe shock that teaches them to stay away from the fence. Thus electric fences are economical and practical solutions to maximize field production through controlled grazing.

The project makes use of a solar plate. The solar energy obtained is stored to a battery. The battery supply is fed to microcontroller based pulse generator and in turn to a MOSFET which is capable of generating ON/OFF pulses of different frequencies. This is fed to a step up transformer to generate a low voltage AC. This AC is fed to electrical fence, which will give shock when any animal comes in contact with it. This project makes use PIR sensor to trigger the electric fence based on presence of Animals nearby. This saves the battery power supply. The battery used can be recharged by Solar power or conventional 230v power supply.

The objectives of the project:

1. Storing solar energy.
2. Creating shocking circuitry.

3. ON/ OFF control for fence based in PIR sensor.

An embedded system is a combination of software and hardware to perform a dedicated task. Some of the main devices used in embedded products are Microprocessors and Microcontrollers. Microprocessors are commonly referred to as general purpose processors as they simply accept the inputs, process it and give the output. In contrast, a microcontroller not only accepts the data as inputs but also manipulates it, interfaces the data with various devices, controls the data and thus finally gives the result. The “Microcontroller based Microcontroller based Solar fencing to prevent crop damage by animals” using Solar panel, PIR Sensor, MOSFET driver, inverter circuit, Led indicator, LCD Display and Voltage measurement Circuit used to protect fields from animals using fencing based on solar panel.

Advantages:

1. Storing solar energy.
2. Creating shocking circuitry.
3. ON/ OFF control for fence.
4. Conservation of energy.
5. Efficient and low cost design
6. Easy to operate.
7. Utilization of free available source of energy from sun
8. Storage of energy into rechargeable battery.
9. Stored energy is used for fencing security.
10. Low Power consumption
11. Long life.

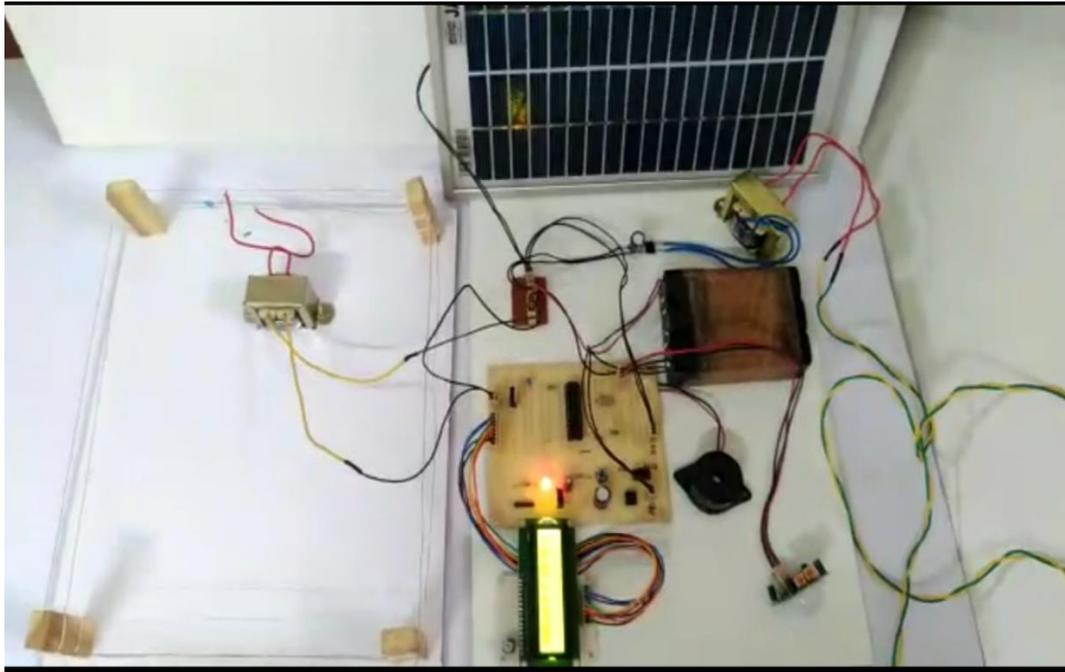
Disadvantages:

1. Solar panel interfacing with microcontroller is sensitive.
2. The electricity generated by the solar cell panel is stored during the day with the help of storage batteries which give us only direct current. But to operate our devices we need alternating current. Therefore we need to convert DC to AC before using any appliance and thus it increases the cost of such solar panels as the sources of electricity.

Applications:

This system can be practically implemented in real time at the fields or crops to prevent from animals.

Our project “**Microcontroller based Solar fencing to prevent crop damage by animals**” is mainly intended to protect farms, fields from animals by designing a solar based fencing security system.



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In future we can extend the project in a way such that the output from the solar plate is increased. This can be done by increasing the dimensions of the solar plate. In future we can use this project in several applications by adding additional components to this project like devices, water pumps etc.

- This project can be extended using GSM modem GSM module will send the information regarding the status of fencing to the respective authorities.
- In future we can use this project in order to control devices automatically in fields alike water pump control and intimation of environmental conditions. This kind of automation provides greater advantages like accuracy, energy conversation, and reliability and more over the automated systems do not require any human attention.
- As the energy conversation is very important in the current scenario and should be done to a maximum extent where ever it is possible.
- We can extend the project using wireless camera for viewing the security levels.

The project “Microcontroller based Solar fencing to prevent crop damage by animals” was designed such that the fields or crops are protected from animals using fencing security. This system helps farmers to avoid their crop damage usually occur due to animals. Solar

energy is used to power up the fence through shock generation circuitry. The system has a provision for ON/OFF the solar fence according to farmers wish.

CONCLUSION

Integrating features of all the hardware components used have been developed in it. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. Secondly, using highly advanced IC's with the help of growing technology, the project has been successfully implemented. Thus the project has been successfully designed and tested.

REFERENCES

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