

Review on Solar Electric Fencing for Irrigation of Animal Man Conflict

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ABSTRACT

This paper introduces fundamental concepts of electric fence technology, presents a new design method for a livestock electric fence energizer circuit. India, with vast agricultural lands has different crops ranging from paddy to tomato. But few crops are destroyed due to animal menace and hence a protection is required to save the crops from animal. Solar Fencing Perimeter Protection is the modern day need to the growing security threat in denying, detecting while having the in built capability to serve as deterrent. In this project, we design and implement Fencing Perimeter Protection for agriculture. It is the modern day need to the growing security threat in denying, detecting while having the in built capability to serve as deterrent. It works on Solar Energy with backup facility to run uninterruptedly during the nights as well as cloudy days. When any object is sensed by PIR or IR sensor, immediately controller sends the message to the authorized person through the IOT technology, and it is interfaced with the controller. If the object touch to the wire shock given to them and buzzer will on. Its applications suits remote areas provide an economical and practical solution to achieve maximum protection of field or particular areas.

Keywords: IOT, Sensor, Fence, Agriculture, Buzzer

I. INTRODUCTION

Electric fences can be used to protect farmhouses, 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.

Nowadays the use of electric fence for control and content livestock are having a large application in almost all countries of the world. Electric Fence was starting to use in the thirties and nowadays is used in all world in little and big farms. Brazil, like the major exporter of beef cattle is a great consumer of this technology. Big farms with large areas of control need electric fences energizers of large capacity to keep

high voltage in all its extension. But not much information about safety use and project is presented in papers and available for consumers and manufacturers as well electric fences characteristics. There are in Brazil many manufacturers of this kind of equipment, but these manufacturers use empiric rules to design this kind of equipments. This work intends to be a starting point to change this reality involving the academic researchers in the study of this problem. The electric fence presents the following parts: Energizer, Wire, Isolation and Ground.

Agriculture in India is the broadest economic sector and plays a significant role in the overall socio-economic factor of India. The increasing news articles in television and newspaper on wild animals raiding agricultural crops during harvest season shows that

these animals can destroy a farmer's livelihood. In such areas Electric fencing system can be employed in which the animals experience a high voltage low current shock for a very short time. Because of the small magnitude of current there is no threat to the animal's life at the same time the large magnitude voltage scares away the animals.

Usually, PIR sensors allow you to sense motion, almost always used to detect whether a human has moved in or out of the sensors range. They are small, inexpensive, low-power, easy to use and don't wear out. For that reason they are commonly found in appliances and gadgets used in homes or businesses. They are often referred to as PIR, "Passive Infrared", "Pyroelectric", or "IR motion" sensors. A photoelectric sensor, or photo eye, is a device used to detect the distance, absence, or presence of an object by using a light transmitter, often infrared, and a photoelectric receiver. They are used extensively in industrial manufacturing. There are three different functional types: opposed (through beam), retro-reflective, and proximity-sensing (diffused).

The practices employed by farmers to deter elephants are also wide ranging. These generally include active traditional deterrents such as shouting, drum beating, bursting firecrackers, torch lighting, and setting fire to raw jute or tires fixed at the end of bamboo sticks.

Usually, farmers guard their crops on their own, however during peak raiding season two to three neighboring farmers form groups to ride elephants back.

Additionally, forest department officials may aid in mitigating human elephant conflict by firing shots in the air as well as using domestic elephants to drive away crop raiders.

II. LITERATURE REVIEW

[1] An electric fence was first use in Texas in 1888. electricity from a generator using an overshot wheel.

There is a possibility of electric fence posing the risk of fire when bushes or trees grow in close proximity. after that electric fence was based on GSM technology so the circuit cover certain distance, this circuit is more expensive for farmers.

[2] there have been numerous attempts to modify farming practices to prevent retaliatory killings that appear to have focused on different predators who may exhibit different hunting behaviors, across contrasting landscapes, with potentially different kinds of fences, and ultimately different outcomes. Hence, the objective is to eliminate predation of livestock and thus reduce provocations between humans and animals that often lead to retaliatory killing.

[3] Zarco-González et al. (2012) found that various aspects of the livestock farmland landscape and farming practices, in part, explained the high rate of livestock predation by pumas and the retaliatory killings carried out by farmers. Interviews were conducted with 52 livestock owners to assess levels of livestock predation and retaliatory killing of pumas, in addition to livestock management practices such as the degree of livestock supervision and nighttime shelter. Additionally, topographic data was collected on the areas surrounding livestock grazing sites such as distance to human settlements, roads, vegetation, and steep cliffs, and in-field verification of killings. By using a combination of analytical techniques, including spatial modeling and parametric methods, livestock losses due to puma predation were found to cluster in space.

III. BLOCK DIAGRAM

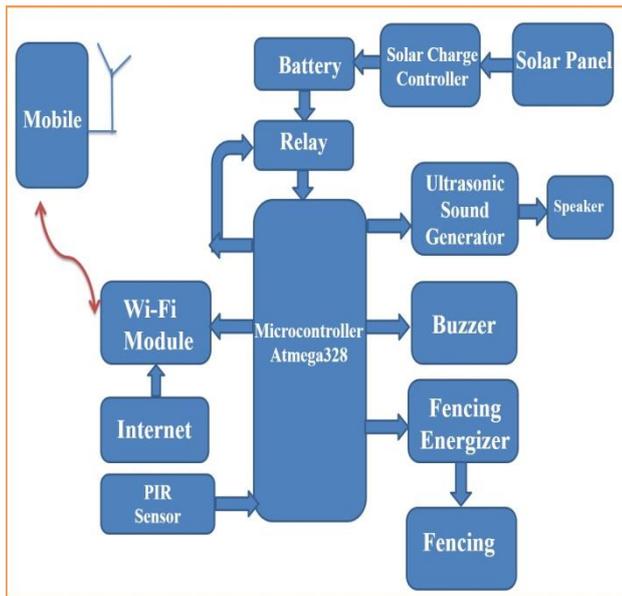


Figure 2. System Block Diagram

Above is the block diagram of our project in which we are using microcontroller which is the heart of our project and we are going to interface different type of component with the microcontroller. PIR sensor is used for monitoring the Motion of animals and people which is fed to microcontroller. Here ATmega 328 microcontroller which is use for monitoring and controlling the system, ATmega328 microcontroller is the brain of system use for programming. Here is 16x2 LCD display use for showing the current status of system. Using relay, the energising system is ON/OFF automatically.

For running whole system, they required power supply, 6V DC battery is used for supplying the circuit. 7805 IC is voltage regulator IC. It converts 6V input into 5V regulated power supply, that 5V is connected to microcontroller, PIR sensor, relay. The energising block which convert input 6V DC into 3000V DC. Using solar panel which converts solar energy into electrical energy and output from solar panel is connected to battery. Here we use battery for storing the charge and output of battery which is connected to energising circuit through microcontroller. When any object come in the range

of PIR sensor the buzzer will on, and if it touches to the wire shock will be given to it.

IV. ADVANTAGES

- ✓ Safety independent of grid power
- ✓ Significantly reduces man-animal conflicts
- ✓ Eco-Friendly
- ✓ Effective wildlife management
- ✓ Durability
- ✓ Low maintenance
- ✓ Designed to work on solar energy and hence
- ✓ tool for park managers
- ✓ Cost effective and return on investment starts from day one

V. APPLICATIONS

- ✓ Electric fence systems have varied application in Agriculture, Industrial and Forestry or, this proven technology has now been Plantation sectors .
- ✓ With increasing crime in urban areas adapted for domestic security applications, too.

VI. CONCLUSION

- ✓ The project "Solar electric fencing for irrigation of animal-man conflict is designed such that it can be installed on any surface.
- ✓ It is much easy and cost effective than increasing the height of the wall.
- ✓ The project is easily expandable and can be used by farmer to increase the security of the land from animals, and compatible with all types of additional security gadgets.

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