SMART AGRICULTURE SCARECROW

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ABSTRACT: -

Scarecrows were commonly featured in rural landscapes until recently. There are numerous rituals associated with creating a scarecrow and erecting it in the field, with many legends being linked to this character. The scarecrow itself has counterparts in many countries worldwide. However, with civilization progressing and characterized with an emphasis on economic efficiency and agricultural engineering in the present day, scarecrows are disappearing from the rural landscape. Advanced electronic devices replace them, while scarecrows end up in museums and open-air museums called skansens, as well as being on display at local village festivals. The goal of this paper is to investigate the past and present functions of the scarecrow in rural areas in Poland as an indicator of changes occurring in the cultural heritage in these areas. The survey and field studies were carried out in selected localities in Małopolskie Voivodeship that exhibited distinct qualities related to rural cultural heritage.

1. INTRODUCTION: -

A scarecrow is a decoy or mannequin, often in the shape of a human. Humanoid scarecrows are usually dressed in old clothes and placed in open fields to discourage birds from disturbing and feeding on recently cast seed and growing crops. Scarecrows are used across the world by farmers, and are a notable symbol of farms and the countryside in popular culture.

Scarecrow, device posted on cultivated ground to deter birds or other animals from eating or otherwise disturbing seeds, shoots, and fruit; its name derives from its use against the crow. The scarecrow of popular tradition is a mannequin stuffed with straw; free-hanging, often reflective parts movable by the wind are commonly attached to increase effectiveness.

2. BLOCK DIAGRAM:-

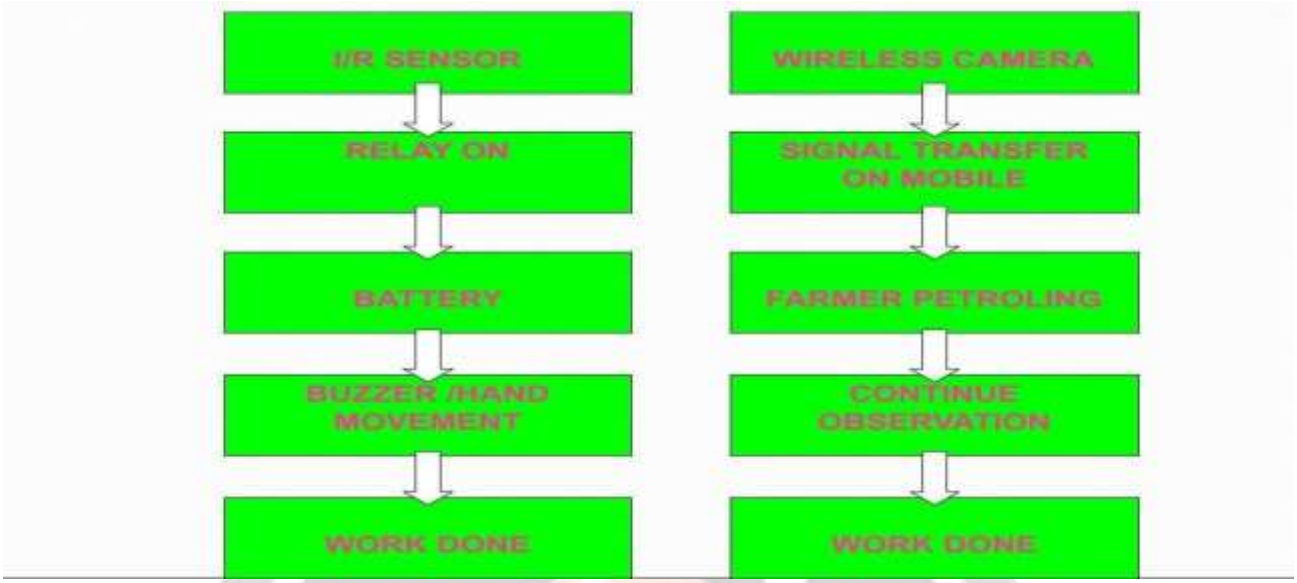

Fig -1: Project Model

3.WORKING:-

- In our project we are using a 12V DC to provide a power supply.
- In our project we are going to modify this scarecrow that when the birds come in the field, it will sense the coming of birds with the help of PIR Sensor and move its hand Upand Down with the help of Flapping mechanism and it will start ringing with the help of Buzzer.

- The purpose of the flapping mechanism is to convert the rotary motion of the motor into the reciprocating motion of flapping hands.
- As the crank goes around, the connecting rods push the hand up and down.it will help toscare the birds and the birds will be run away from the field and the crop of the field willbecome safe.
- It can also be used in Garden.

4. COMPONENTS USED: -

DC GEAR MOTOR:

A DC motor is any of a class of rotary electrical motors that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced bymagnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current in part of the motor.

DC motors were the first form of motor widely used, as they could be powered from existing direct-current lighting power distribution systems. A DC motor's speed can be controlledover a wide range, using either a variable supply voltage or by changing the strength of current in its field windings. Small DC motors are used in tools, toys, and appliances. The universalmotor can operate on direct current but is a lightweight brushed motor used for portable power tools and appliances. Larger DC motors are currently used in propulsion of electric vehicles, elevator and hoists, and in drives for steel rolling mills. The advent of power electronics has made replacement of DC motors with AC motors possible in many applications.

Fig 3.3 :Dc Gear Motor

Product Description

- 12V operating voltage
- 55rpm speed
- 2A free running current
- 10A stall torque
- 120W motor power
- 100m shaft diameter
- 29mm shaft length

1. SOLAR PANEL:

A solar cell, or photovoltaic cell, is an electrical device that converts the energy of light directly into electricity by the photovoltaic effect, which is a physical and chemical phenomenon. It is a form of photoelectric cell, defined as a device whose electrical characteristics, such as current, voltage, or resistance, vary when exposed to light. Individual solar cell devices are often the electrical building blocks of photovoltaic modules, known colloquially as solar panels. The common single junction silicon solar cell canproduce a maximum open-circuit voltage of approximately 0.5 to 0.6 volts.

Solar cells are described as being photovoltaic, irrespective of whether the source is sunlight or an artificial light. In addition to producing energy, they can be used asa photodetector (for example infrared detectors), detecting light or other electromagnetic radiation near the visible range, or measuring light intensity.

Fig 3.4 :Solar panel watt: 10 watt

2. LINKAGES:

A slider-crank linkage is a four-link mechanism with three revolute joints and one prismatic, or sliding, joint.[1] The rotation of the crank drives the linear movement the slider,or the expansion of gases against a sliding piston in a cylinder can drive the rotation of the crank.

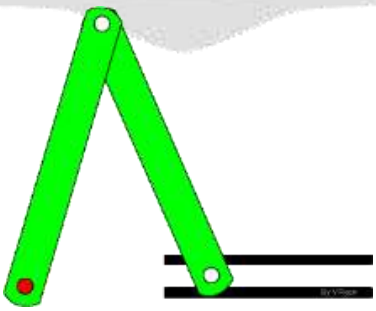

Fig 3.5 : Linkages

3. IR SENSORS:

An **IR sensor** can measure the heat of an object as well as detects the motion. These types of **sensors** measure only infrared radiation, rather than emitting it that is called a passive **IR sensor**. Usually, in the infrared spectrum, all the objects radiate some form of thermalradiation.

Fig 3.6: I/R sensors

4. DC DRY BATTERY:

A dry cell is a type of electric battery, commonly used for portable electrical devices. It was developed in 1886 by the German scientist Carl Gassner, after development of wet zinc-carbon batteries by Georges Leclanché in 1866. The modern versionwas developed by Japanese Yai Sakizo in 1887.

Fig 3.7 : Dc Dry Battery

A dry cell uses a paste electrolyte, with only enough moisture to allow current to flow. Unlike a wet cell, a dry cell can operate in any orientation without spilling, as it contains no free liquid, making it suitable for portable equipment. By comparison, the first wet cells were typically fragile glass containers with lead rods hanging from the open top and needed careful handling to avoid spillage. Lead–acid batteries did not achieve the safety and portability of the dry cell until the development of the gel battery. Wet cells have continued to be used for high-drain applications, such as starting internal combustion engines, because inhibiting the electrolyte flow tends to reduce the current capability.

5. WIFI CAMERA:

Wireless security cameras are closed circuit television cameras that transmit a video and audio signal to a wireless receiver through a radio band. Many wireless security cameras require at least one cable or wire for power; "wireless" refers to the transmission of video/audio. However, some wireless security cameras are battery-powered, making the cameras truly wireless from top to bottom.

Fig 3.8: Wifi Camera

Wireless cameras are proving very popular among modern security consumers due to their low installation costs (there is no need to run expensive video extension cables) and flexible mounting options; wireless cameras can be mounted/installed in locations previously unavailable to standard wired cameras. In addition to the ease of use and convenience of access, wireless security camera allows users to leverage broadband wireless internet to provide seamless video streaming over-internet.

6. LOUD SOUND BUZZER:

A buzzer or beeper is an audio signaling device which may be mechanical, electromechanical, or piezoelectric (*piezo* for short). Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke. An electric buzzer uses a similar mechanism to an interrupter bell, but without the resonantbell. They are quieter than bells, but adequate for a warning tone over a small distance, such as across a desktop.

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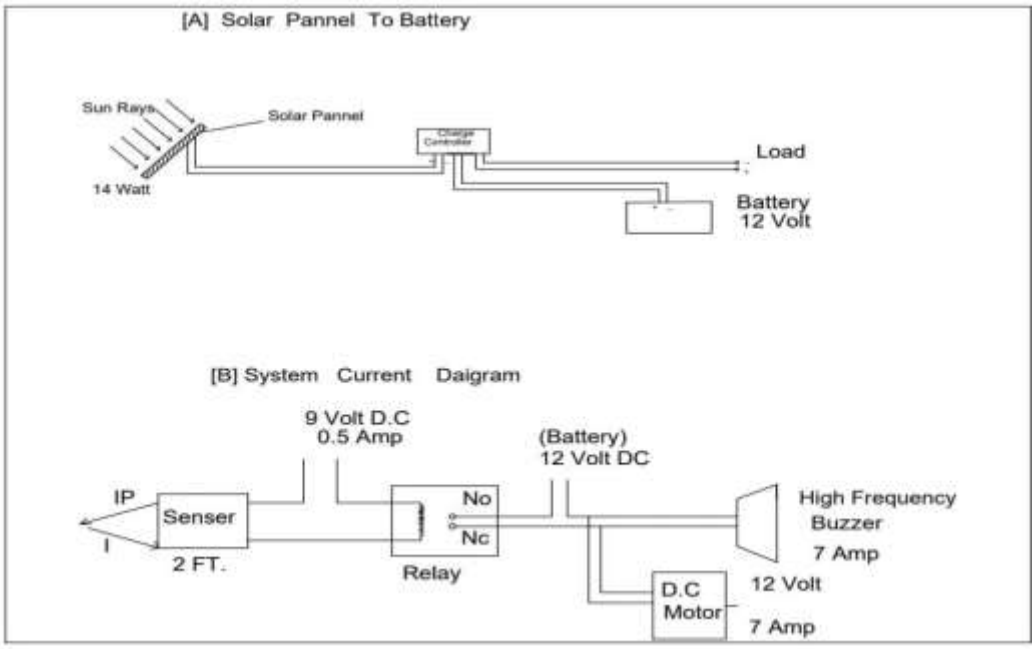
Fig 3.9 : Loud Sound Buzzer

7. CIRCUIT DIAGRAM:-



8. ADVANTAGES:-

- IR detectors are safe and do not affect human and pets health
- Needs small power and voltage use in practical usage.
- Low in cost.

9. DISADVANTAGES:-

- Hot temperature environment may affect the sensitivity of the sensor**.**

10. FUTURE SCOPE:-

- This system provides better help to farmers so that they can get proper income of their crop. The scope in agricultural field is tremendous.
- Use of solar energy instead of electrical energy to operate machine.

- If the motion detection is due to an authorized person with a valid RFID, who is mostly a farm worker, his attendance gets recorded automatically.
- We can design a IOT based application to provide an image and video feed to farmeron any smart device and farmer will be notified when there is an intrusion in the farm by animal along with additional information of humidity and temperature.

11. REFERENCES

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