SMART AGRICULTURE SCARECROW

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Abstract: A Smart Agriculture scarecrow is used to panic the catcalls and to the beasties to save the crop in the fields. A farmer put the scarecrow in the middle of the field to save his crop from the birds and animals. We've seen that smart scarecrow has no movement when the catcalls are come in field. A smart scarecrow is a bait or mannequin, continually in the shape of an earthborn. Anthropoid scarecrows are commonly dressed in old clothes and placed in open fields to discourage boos from disturbing and feeding on new cast seed and growing crops. Scarecrows are used across the world by cultivators, and are a notable symbol of estates and the nowhere in popular culture. The common form of a smart scarecrow is a humanlike figure dressed in old clothes and placed in open fields to discourage hoots like as crows or sparrows from disturbing and feeding on now cast seed and growing crops. Machinery like as windmills have been employed as scarecrows, but the effectiveness lessens as beasts run familiar with the structures. Tending contributes a major income to the Malaysian scrimping. It's a huge concern to cultivators when they're fro from their crops and exposing it to crops' risk like as crow damaging the crops and theft. Agriculture has contributed to nearly upward to 22 of a country's.

Keywords: Sensor, Flapping mechanism, Linear Motion, Buzzer, 360º Wi-Fi Camera.

1. INTRODUCTION

A smart farming scarecrow is naturally used by cultivators to save the crops from the hoots and beasties in the field. Smart scarecrow helps to the cultivators to save their crops by alarm of the boos and beasts. In Bourg, smart scarecrow is made by using the old cloths and sticks and give it to a scary look to alarm the hoots and critters to the crops of the tillers. Smart scarecrow is also used in arenas and at the airdromes. A scarecrow doesn't effective in the night to hand the security for the crops. So there's an option of using automatic smart scarecrow first of using normal scarecrow. Automatic smart scarecrow can also be called as smart scarecrow. An automatic Smart scarecrow or Smart scarecrow is more effectual than a normal scarecrow. Automatic smart scarecrow provides all time security to the crops from the hoots and critters. It's effective in both day and night. It works automatically. Automatic smart scarecrow is equipped with sensors, mobile arms and fearful device. We've seen that smart scarecrow has no movement when the boos are come in field. In our game we're going to modify this smart scarecrow that when the hoots come in the field, it'll see the advent of boos with the help of PIR sensor and move its hand up and down with the help of flailing mode and it'll start ringing with the help of buzzer, the idea of the beating drill is to convert the rotary move of the motor into the straight shifting of flailing hands. When the reel rotates, the connecting rods pushes the hand up and down. On the other hand, 360° wireless rotating camera is plant in both modes either automatically or manually. It's depending on the famer how he wants to used it. Either, it works day and night time. All electronic and electrical elements are plant by using battery power. It's cup by solar panel or electricity. Automatic smart scarecrow will help to frighten the hoots and the hoots will be run out from the field and the crop of the field will get safe. It can also be used in arena.

2. METHODOLOGY

Methodology of project have been divided into three parts;

2.1 Mechanism Details

2.2 Electronic circuit

2.3 Components

2.1 Mechanism Details

In our project we have used flapping mechanism to move the smart scarecrow hands in upward and downward direction. The details for flapping Mechanism is given below:

2.1.1 Flapping mechanism

The aim of the flapping mechanism is to convert the rotary motion of the motor into the linear motion of flapping hands when the crank rotates, the connecting rods pushes the hand up and down.

The flapping mechanism consists of crank, connecting rod, flapping arm, support structure, nut and bolts. Crank is joint with one end of connecting rod and second end of connecting is joint with flapping bar, when crank rotates the crank push the connecting rod and connecting rod push the flapping rod up and down. The flapping mechanism used in automatic smart scarecrow is shown in fig. 1.

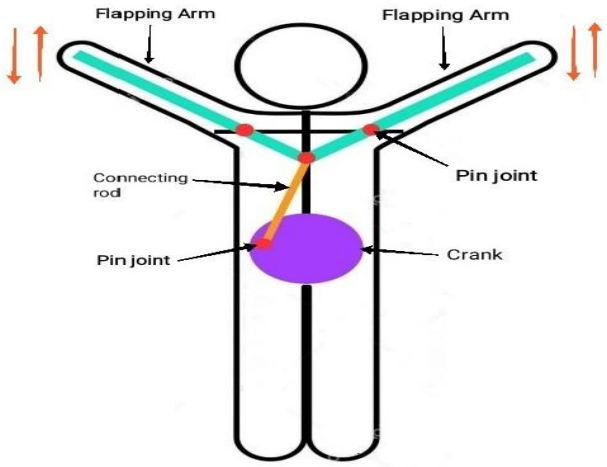

Fig 1: Flapping Mechanism

2.2 Electronic circuit

The different components used in electronic circuit consists of following components:

1) Relay
2) Solar panel
3) 360º camera
4) Motor driver
5) DC Motor
6) Charge controller
7) Sensors
8) Buzzer
9) Battery
10) Connecting wires

2.3 Components

There are a lot of components used while we are making our project automatic smart scarecrow. We have explained our project components into two parts, one is mechanical components another is electrical and electronic components.

2.3.1 Mechanical System Design:

The different metal components used in fabrication of smart scarecrow are discussed as follows -

2.3.1 Mechanical components:

a) Metal pipe:

We have used square hollow section mild steel pipe for making Scarecrow's structure. Which provide strength to the structure of scarecrow.

Fig a): Metal Pipes

b) Wood:

We have used solid wood and ply for making our project's mechanism (Flapping mechanism). Solid wood is used to provide support to the mechanism, and ply is used to make flapping hands, crank and connecting rod.

Fig b): Wood

c) Nut and Bolts, Screws:

Nut and bolts, Screws are used to joint the components into the structure and mechanism, Nut and bolts are used for temporary joint in the flapping mechanism to easily flap the smart scarecrow arms upward and downwards. Screws are used for permanent joint of the structure and the mechanism.

Fig c): Nuts, bolts & screws

d) Thin steel box:

Thin steel box is used to make faces of the smart scarecrow.

Fig d): Thin steel box

2.3.2 Electrical and Electronic System Design:

The different electronic and electrical components used in fabrication of smart scarecrow are discussed as follows -

2.3.2 Electrical and Electronic Components:

a) Relay

A relay is an electrically operated switch. It consists of a set of input terminals for a single or multiple control signals, and a set of operating contact terminals. The switch may have any number of contacts in multiple contact forms, such as make contacts, break contacts, or combinations.

Fig a): Relay

b) Solar panel:

Solar panels can be used to generate large amounts of electricity, and this process can take place both at solar and industrial scales. A key benefit of solar panels is that they can be used in providing electricity in remote areas as well, provided there is enough solar energy at that place.

Fig b): solar panel

c) Motor, Motor Driver:

Motor driver is used to control the motor directions and motor (DC Gear motor 12v) is used to drive the flapping mechanism

Fig b): Motor, Motor driver

d) PIR Sensor, Buzzer

PIR Sensor is used to detect the motion of the birds and animals. Alarm is used for produce noise to scare the birds and animals.

Fig c): PIR Sensor, Buzzer

e) Battery, Connecting Wires

12v Battery is used to give power supply to the Arduino and Motor driver. Connecting wires are used to connect all the electrical connections.

Figure d): Battery, Connecting Wires

f) 360º Wireless Camera:

360-degree surveillance cameras use a fisheye lens to record the entire scene and events, allowing for total situational awareness with no blind spots. The footage captured is then dewarped in real time, allowing security officials to pan, tilt and zoom through the entire scene.

Fig e): 360º Wireless Camera

g) Charging controller:

A charge controller or charge regulator is basically a voltage and/or current regulator to keep batteries from overcharging. It regulates the voltage and current coming from the solar panels going to the battery.

Fig. g): charging controller

3. WORKING

The working of smart scare crow is takes places in two stages is as follows-

3.1.1 Working of buzzer/hand movement:

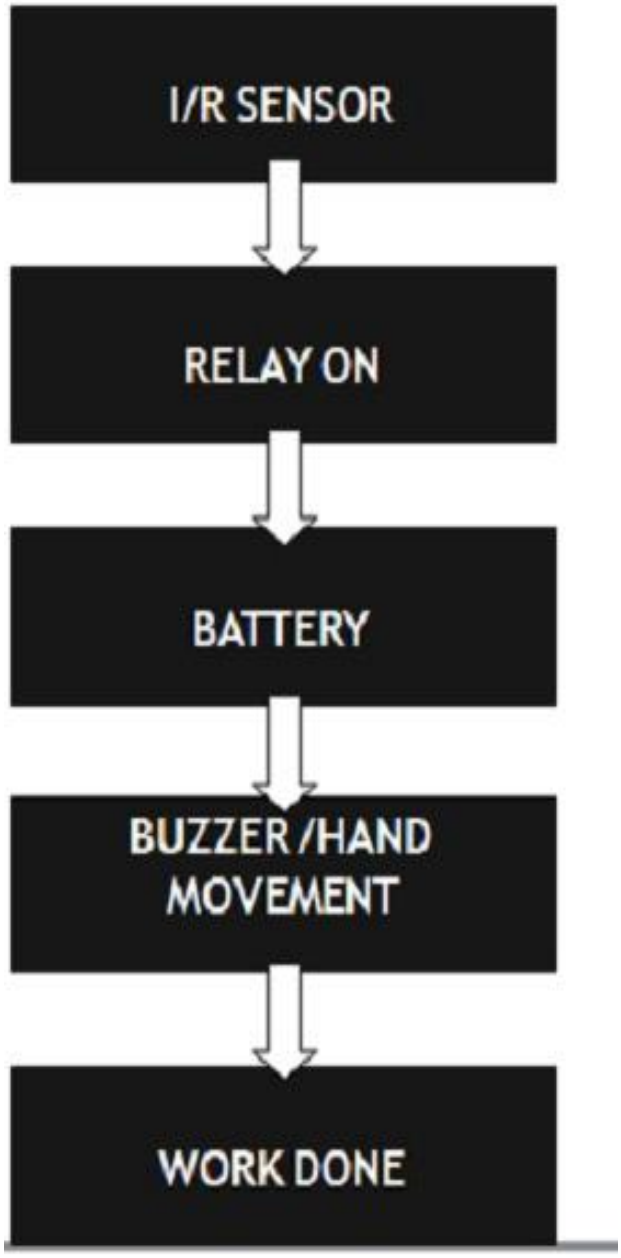

Fig. 3.1.1 Working of buzzer/hand movement

3.1.2 Working of wireless camera:

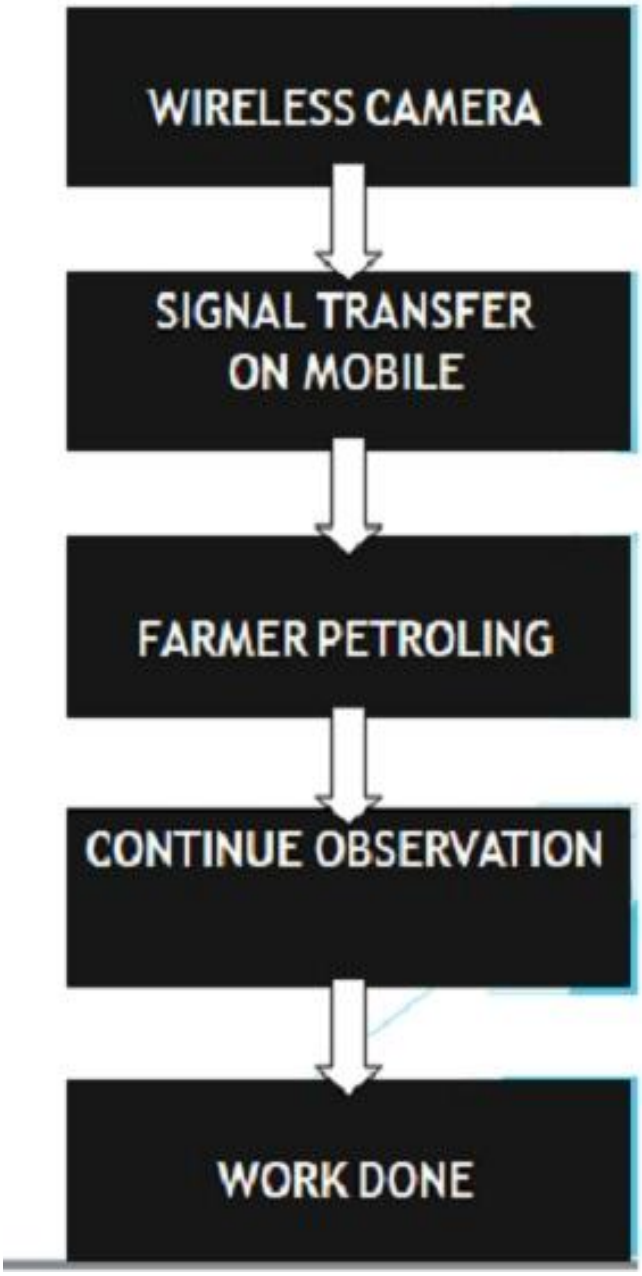

Fig. 3.1.2 working of wireless camera

4. RESULT AND CONCLUSION

a) An automatic smart scarecrow effective in the day & night to provide the security for the crops. So there is an option of using automatic smart scarecrow instead of using normal scarecrow.

b) An automatic smart scarecrow is more efficient than a normal scarecrow. Automatic smart scarecrow provides all time security to the crops from the birds and animals as well as from thief. Automatic smart scarecrow is equipped with sensors, movable arms, 360° rotating camera and alarming device.

5. REFERENCES

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