ISSN: 2454-9940

INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

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www.ijasem.org

INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940

www.ijasem.org

Vol 18, Issue 1, 2024

SCARY AUTOMATIC CROW

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Abstract

Scarecrows are used by farmers to keep predatory birds and other animals away from their crop. A farmer put the scarecrow in the middle of the field to keep birds and animals from eating his crop.We can observe that the scarecrow stays perfectly still whenever birds fly by. For our project, we'll be adding a few features to this scarecrow, such as a buzzer for alarm purposes, a PIR sensor for bird detection, and the ability to flap its arms up and down. The purpose of the flapping mechanism is to convert the rotational motion of the motor into the flapping motion of the hands in the opposite direction. As the crank turns, the connecting rods elevate and lower the hand.You may defend your crop from birds by making them afraid of your field.In the garden, it serves a dual purpose. Photoreceptor, flapping mechanism, linear motion, and buzzer are important words.

I.INTRODUCTION

Farmers often employ scarecrows to protect their crops from field animals and birds. The scarecrow's ability to frighten away birds and other animals helps farmers protect their crops. In order to keep birds and animals away from farmers' crops, a scarecrow is constructed in the hamlet using old clothes and wood, giving it a menacing appearance. You may also see scarecrows at airports and in gardens. You can't rely on a scarecrow to keep your crops safe at night. So, you may choose to use Automatic Scarecrow instead of Normal Scarecrow if you like. Smart Scarecrow is another name for an automatic scarecrow. The efficiency of a regular scarecrow cannot compare to that of an automated or intelligent scarecrow. Protect your crops from birds and animals with an automatic scarecrow. No matter the time of day, it works. It operates on its own. Sensors, movable arms, and an alert system are all part of the automatic scarecrow's equipment.As we have seen, the scarecrow remains motionless whenever birds visit the area. The goal of the flapping mechanism is to transform the rotary motion of the motor into the linear motion of the scarecrow's hands, so that when birds enter the field, the scarecrow can detect their presence using a PIR sensor and then proceed to flap its arms up and down, accompanied by a buzzer to sound an alarm. As the crank turns, the connecting rods lift and lower the hand.By frightening the birds, you may keep them out of your field and protect your harvest.It does double duty in the garden.

II. METHODOLOGY

Our project process is structured as follows: 2.1 Details of the Mechanism The Design of Circuits (2.2) Section 2.3: Coding Section 2.4: Parts 2.1 Details of the Mechanism To control the upward and downward movement of the scarecrow's hands, we implemented a flapping mechanism in our project. Here are the specifics of the flapping mechanism: Mechanism for flapping In order to make the flapping hands move in a straight line, the flapping mechanism uses connecting rods to translate the rotational motion of the motor into the up-and-down movement of the hands. Elements such as a crank, a connecting rod, an arm that flaps, a support structure, nuts, and bolts make up the flapping mechanism. The crank is connected to a connecting rod at one end and to a flapping bar at the other; when the crank turns, it pushes on the connecting rod, which in turn pushes on the flapping rod.

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ISSN2454-9940

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Vol 18, Issue 1, 2024

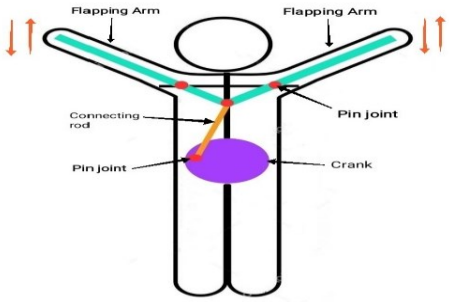


Figure2.1:FlappingMechanism

2.1 Circuitdesigning

Circuitconsistsofthefollowingcomponents:

Arduino UNOMotor DriverMotor PIR SensorBuzzerBattery ConnectingWires

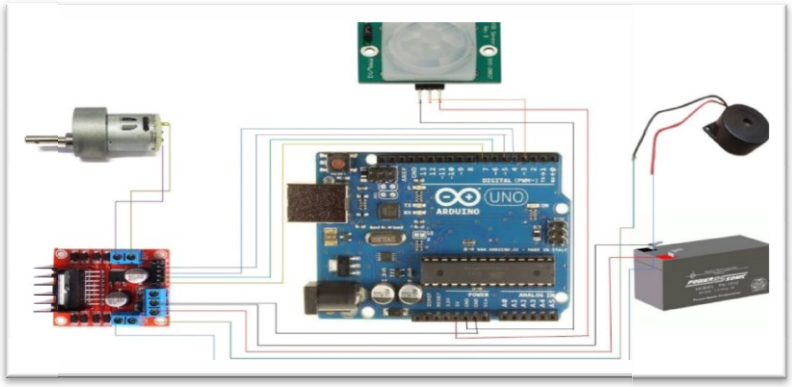


Figure2.2:CircuitDiagram

2.2 Programming

TheprogrammecodefortheArduino Unoisshownbelow.

```
intPIR=3;int BUZL = 4;intBUZR=5;
int MOT_L = 6;intMOT_R=7;

void setup() {Serial.begin(9600);

 pinMode(PIR,INPUT);pinMode(BUZL, OUTPUT);pinMode(BUZR,OUTPUT);
 pinMode(MOT_L, OUTPUT);pinMode(MOT_R,OUTPUT);

}
voidloop()
 {

 inta=digitalRead(PIR);Serial.println(a);


 if(a==1)
{
 digitalWrite(BUZL,HIGH);digitalWrite(BUZR,LOW);digitalWrite(MOT_L,HI
```

```
GH);digitalWrite(MOT_R,LOW);
}

else{digitalWrite(BUZL,LOW);digitalWrite(BUZR,LOW);digitalWrite(MOT_
L,LOW);digitalWrite(MOT_R,LOW);
}
delay(10);


}
```

2.3COMPONENTS:

TherearealotofcomponentsusedwhilewearemakingourprojectAutomaticScarecrow.Wehaveexplainedourprojectcomponentsintotwoparts,oneisMechanicalComponentsanotherisElectricalandElectronic components.

- **MechanicalComponents:**

a) Metalpipe
b) Wood
c) NutandBolts,Screws
d) Thinsteelrods

- **ElectricalandElectronicComponents:**

a) ArduinoUNO
b) Motor,MotorDriver
c) PIRSensor,Buzzer
d) Battery,ConnectingWires

❖ **MechanicalComponents:** ❖**ElectricalandElectronicComponents**

a) Metalpipe:

WehaveusedsquarehollowsectionmildsteelpipeformakingScarecrow'sstructure.Which provide strengthtothestructureofscarecrow.

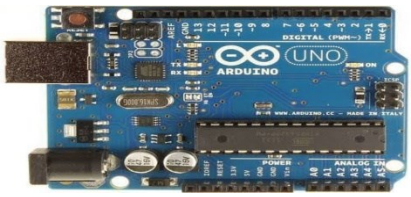
b) Wood:

Wehaveusedsolidwoodandplyformakingourproject'smechanism(Flappingmechanism).Solidwoodisusedtoprovide support to themechanism, and ply isused to make flappinghands,crankandconnectingrod.

c) NutandBolts,Screws:

a) ArduinoUNO:

Arduino UNO is a Microcontroller board used to readthe signal of the sensor and control the motor driver andbuzzer.



Figurea):ArduinoUNO

b) Motor,MotorDriver:

Motor driver is used to control the motor directions andmotor (DC Gear motor 12v) is used to drive the flappingmechanism.

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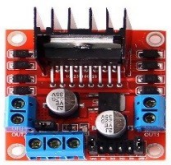


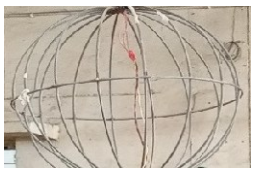
Figureb):Motor,MotorDriver

Nut and bolts, Screws are used to joint the componentsinto the structure and mechanism, Nut and bolts areused for temporary joint in the flapping mechanism toeasily flap the scarecrow arms upward and downwards.Screws are used forpermanentjointof the structureand the mechanism.

Figurec):NutandBolts,Screws

d)Thinsteelrods:

Thin rods areused tomakefaceoftheAutomaticScarecrow.



Figured):ThinSteelrods

c) PIRSensor,Buzzer

PIR Sensor is used to detect the motion of the birds andanimals.Alarm isused forproduce noise to scare thebirdsandanimals.

Figurec):PIRSensor,Buzzer

d) Battery,ConnectingWires

12v Battery is used to give power supply to the Arduinoand Motor driver. Connecting wires are used to connectall theelectrical connections.

Figured):Battery,ConnectingWires

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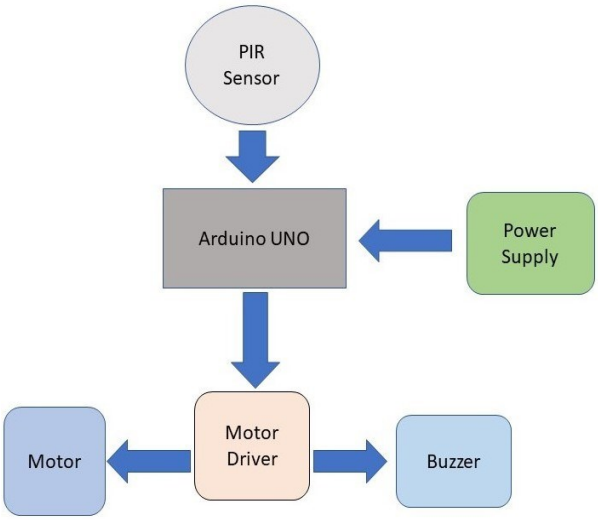
III. WORKING

We have divided our project working into two parts one is mechanism working and another is circuit working. In mechanismworking, Flappingmechanism is used to move the Scarecrow arm in upward and downward direction. A crank rotates and isconnected to the connecting rod with movable joint and this connecting rod is further connected to the two arms by the movablejoint,which movesinupwardanddownwarddirection.A T-shapejointisusedtoprovidesupporttothemechanism.



In Circuit working, A PIR Sensor detects the motion of the birds and animals, it sends signal to the microcontroller (ArduinoUNO), where motor driver and battery is connected to the Arduino. Further Arduino send the signals to the motor driver fromwhereitsends signalstothe motorandBuzzer.

AutomaticScarecrowmodelisshowninbelowfigure;

Figure(III):ProjectPicture

IV. NECESSITY

An Automatic Scarecrow is required to save the crops from the birds and animals. It is effective in both day and night.It worksAutomatically.AutomaticScarecrowprovidesalltimesecuritytothecropsfromthebirdsandanimals.Scarecrowisusedinfieldsto save the crops and vegetables from birds and animals.Scarecrow is used in gardens to save the flowers.Scarecrow is used ingardenstosave theFruits.

V. CONCLUSIONANDFUTURESCOPE

A Scarecrow does not effective in the night to provide the security for the crops. So there is an option of using **AutomaticScarecrow** instead of using Normal Scarecrow. Automatic Scarecrow can also be called as **Smart Scarecrow**. An AutomaticScarecrow or Smart Scarecrow is more efficient than a Normal Scarecrow. Automatic Scarecrow provides all time security to thecrops from the birds and animals. It is effective in both Day and Night. It works Automatically. Automatic Scarecrow is equippedwith Sensors,MovableArmsandalarmingdevice.

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