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Smart Crop Protection System from Animals

Navale Siddhesh Shantaram, Kangane Vaishnav Vithoba,Khatal Saish Rajendra, Prof. P. D. Dahiphale
Department of Electronics & Telecommunication Engineering
Amrutvahini Polytechnic, Sangamner, Maharashtra, India

Abstract: *Crops in farms are many times damaged by animals like buffaloes, cows, goats, birds and wild elephants. This causes major losses for the farmers. Farmers cannot stay on the field for 24 hours and protect it. Toovercome this problem, an animal detection system has been designed to detect the presence of animals and it offers a warning and divert the animal without any harm. The designed system will continuously check for any animal to enter the field. IR sensors and ultrasonic sensor are used in this project to detect animal movement and to give a signal to the controller. Further the animals are being diverted by generating sound and signals, and this signal is being transmitted to GSM and instantly give farmers warning, so the farmers will be aware of the difficulty and available to the spot just in case the animals do not show off by the alarm. The complete safety of crops was ensured by this system from animals thus protecting the farmer's loss.*

Keywords: Crops

I. INTRODUCTION

India is an agrarian region. Agriculture has perpetually been India's most significant economic sector. While most of India's population is dependent on agriculture, the farmers still experience many issues. Due to overpopulation a deforestation occurs, water, food and shelter in forest areas are lacked by deforestation. Therefore, intrusion of animals in residential areas is being rising day by day which is being affecting the human life, property that creates conflict between human and animals.

Agriculture is the backbone of the economy, however, would result in massive crop loss due to animal intrusion in agricultural land. Elephants and other animals being coming into contact with humans have a negative impact in the several ways, such as crop destruction, damage to food stores, water supply, homes and other properties, injury and human death. Conflict between human beings may also be a serious problem where large quantities of money are wasted and life is at risk. In recent times the numbers of those types of conflicts are increasing. Farmers in India has been facing serious threats fromnatural calamities, pests and damage by animals leading to lower yields.

Ancient strategies are being followed by farmers aren't much effective and it's not being feasible to hireguards to keep an eye fixed on the crops and forestall the wild animals. Therefore, this zone is to be monitored continuously to prevent entry of this kind of animals or the other unwanted intrusion. So, animaldetection system is being vital in farm areas.

Crops in farms are many times damaged by animals like buffaloes, cows, goats, birds and wild elephants. This causes major losses for the farmers. Farmers cannot stay on the field for 24 hours and protect it. To overcome this problem, an animal detection system has been designed to detect the presence of animals and it offers a warning and divert the animal without any harm. The designed system will continuously check for any animal to enter the field.

IR sensors is used in this project to detect animal movement and to give a signal to the controller. Furtherthe animals are being diverted by generating sound and signals, and this signal is being transmitted to GSM and instantly give farmers warning, so the farmers will be aware of the difficulty and available tothe spot just in case the animals do not show off by the alarm. The complete safety of crops was ensuredby this system from animals thus protecting the farmer's loss.

II. LITERATURE SURVEY

Khatal Saish has proposed a home embedded security system which evaluates the development of a low-cost security system using small PIR (Piezoelectric Infrared) sensor built around a microcontroller with ultra- low alert power. PIR sensor detects the presence of individuals not at thermal equilibrium with the surrounding environment. On detecting the presence of any unauthorized person, it triggers an alarm & calls to a predefined number through a GSM module.

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After the MCU sends the sensor signals to the embedded system, the program starts the Web camera which captures the images that can be viewed and analyzed later.

The proposed surveillance system is based on an embedded system along with GSM module and sensornetworks. The movement of the warm body is detected by the PIR sensor. The system triggers an alarm detecting the presence of a warm body and simultaneously sends how many people have intruded via sending a SMS through GSM Module. When the security system is activated, additionally the CCTV camera is activated. This highly reactive approach has low computational requirement. Therefore, it is well suited for home surveillance system. This surveillance system is implemented using PIC micro controller,camera, GSM and sensors

Navale Siddhesh proposed a system for monitoring the status of crops growing continuously throughoutthe year. But in real time, cultivator faces too many problems in the farmland. This paper eases the work of the farmer in cultivated land through the usage of different kind of sensors. The two LDR sensors are interfaced with PIC16F877A embedded system whereas its top array receives solar radiation to supply thecharge and the bottom of the LDR array is for measuring leaf area index (LAI). The soil moisture sensor will measure the moisture level in the corn field, if the level decreases, then it automatically turns ON theDC motor. All this information of the cropland is sent to the farmer through GSM and displayed on the LCD screen.

Smart Crop protection system from living objects and fire using Arduino This paper motive to designingand executing the superior improvement in embedded device for Crops in farms are over and over ravaged with the aid of nearby animals like buffaloes, cows, goats, birds, and fireplace etc. This results in huge losses for the farmers. It is now not feasible for farmers to barricade complete fields or precede field 24 hours and protect it. Therefore, here we present computerized crop safety system from animals and fire. This is an Arduino Uno primarily based device the use of microcontroller. This technique makes use of a motion sensor to discover wild animals drawing near the sphere and smoke sensor to discover the hearth. In such a case the sensor alerts the microcontroller to require action. The microcontroller nowsounds an alarm to woo the animals away from the sector further as sends SMS to the farmer and makescall, in order that farmer may fathom the difficulty and come to the spot just in case the animals don't recede by the alarm. If there's a smoke, it immediately turns ON the motor. This provides us entire safetyof plants from animals and from fireplace for this reason protecting the farmer's loss. Farmers to stay related to his subject from somewhere and anytime. Various sensors are used to screen and collect records about the area conditions. Collectively the about the farm circumstance is disbursed to the farmerthru GSM technology.

2.1 Objective

- The main objective is to protect the crops in farm area from animals.
- To use IR sensor to detects the animal while crossing it, by sensing the movement of the animalentering in the fields.
- To design the system that will continuously check for any animals entering inside the field.
- To design the system that will also detecting the fire.
- Design a system that sounds when animal tries to enter into farm

2.2 Features of System

- Simple circuit and easy to operate.
- Fast and simple installation and Automatic operation
- Location flexibility and low-cost maintenance

III. CIRCUIT DIAGRAM & MAIN COMPONENTS

Circuit Diagram and Working

The project is about smart crop protection system from animals

In this we use Arduino uno, IR sensor, buzzer, LED lights and Gsm module

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The working:

When the system is start at that time the green led blinks continuously so that we come to know the system is started at the same time the red led located on gsm module blinks continuously when the red led blinks once within a 3 second then the connection is form and the now its ready to work .The sim card is located in gsm module through which call or message is associated to farmer and the supply is given to system through the female pin the buzzer is present there through which animal will run away.jumper wires are used for connections

When The animal enters into the farm and try to destroy the crops at that time the IR sensor which is used will detect the animal ranging at some area and at the same time buzzer will start sounding and dueto gsm module call will arrived towards the owner and owner will get alert and due to this crop distortionwill be less and the crop will get protected

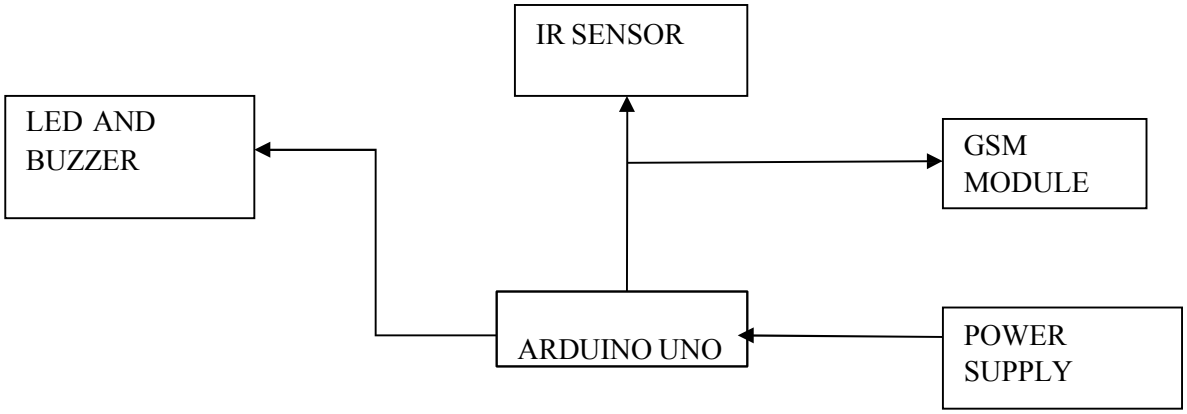

Figure 3.1 BLOCK DIAGRAM

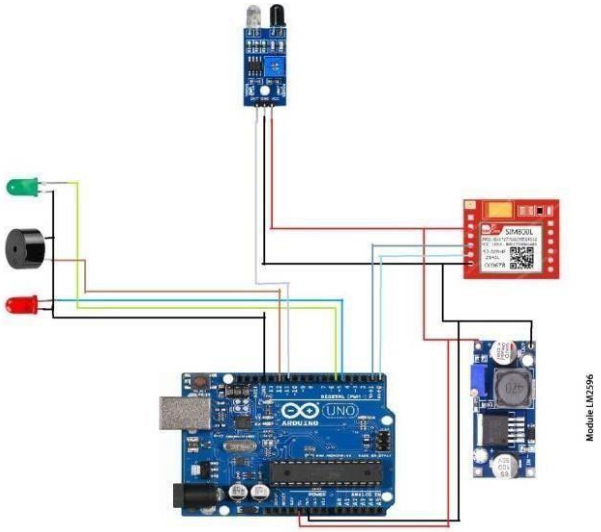

Figure 3.2 Circuit Diagram

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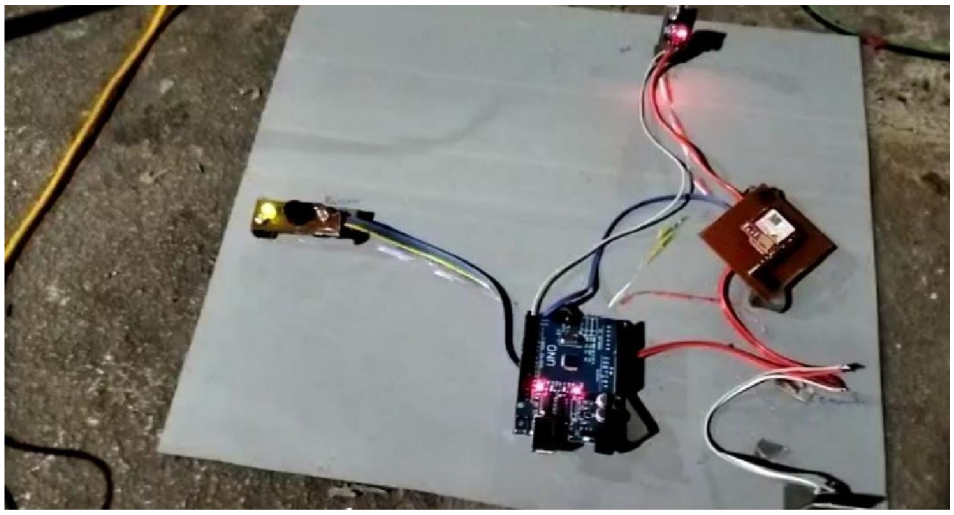

Fig. 3.3 Working model

Arduino Uno

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 Digital Input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter. Revision 2 of the Uno board has a resistor pulling the 8U2 HWB line to ground, making it easier to put into DFU mode. Revision 3 of the board has the following new features:

Fig 3.4 Arduino Uno

Pinout: added SDA and SCL pins that are near to the AREF pin and two other new pins placednear to the RESET pin, the IOREF that allow the shields to adapt to the voltage provided from the board. In future, shields will be compatible both with the board that use the AVR, which operate with 5V and with the Arduino Due that operate with 3.3V. The second one isa not connected pin, that is reserved for future purposes.

Arduino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins(of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator (CSTCE16M0V53-R0), a USB connection, a power jack, an ICSP header and a reset button.

It contains everything needed to support the microcontroller; simply connect it to a computer with a USBcable or power it with an AC-to-DC adapter or battery to get started... You can tinker with your Uno without worrying too much about doing something wrong, worst-case scenario you can replace the chipfor a few amounts of money and start over again.

"Uno" means one in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino, now evolvedto newer releases.

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The Uno board is the first in a series of USB Arduino boards, and the reference model for the Arduinoplatform; for an extensive list of current, past or outdated boards see the Arduino index of boards.

Arduino is an open-source prototyping platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. We can tell your b oard what to do by sending a set of instructions to the microcontroller on the board. To do so we use theArduino programming language (based on wiring), and the Arduino Software (IDE), based on Processing.

The Arduino Uno can be powered via the USB connection or with an external power supply. The powersource is selected automatically. External (non-USB) power can come either from an AC-to-DC adapter(wall-wart) or battery. The adapter can be connected by plugging a 2.1mm center-positive plug into theboard's power jack. Leads from a battery can be inserted in the ground and Vin pin headers of the POWER connector. The board can operate on an external supply of 6 to 20 volts. If supplied with less than 7V, however, the 5V pin may supply less than five volts and the board may be unstable. If using more than 12V, the voltage regulator may overheat and damage the board. The recommended range is 7to 12 volts.

Table 1 shows specification of Arduino Uno

What Does it Do?

The Arduino hardware and software was designed for artists, designers, hobbyists, hackers, newbie's, and anyone interested in creating interactive objects or environments. Arduino can interact with buttons, LEDs, motors, speakers, GPS units, cameras, the internet, and even yoursmart-phone or your TV! This flexibility combined with the fact that the Arduino software is free, the hardware boards are pretty cheap, and both the software and hardware are easy to learnhas led to a large community of users who have contributed code and released instructions for a huge variety of Arduino-based projects.

Table 1. Specification

FEATURES	SPECIFICATIONS
Microcontroller Operating voltage	ATmega3285v
Input voltage (recommended)Input Voltage (limits)	7-12v
Digital I/O Pins Analog Input Pins	6-20v
DC Current per I/O Pin DC Current For 3.3V Pin Flash	14
Memory	6
SRAM EEPROM	40mA
Clock speed	50mA
	32 KB
	2KB
	1KB
	16Mhz

What's on the board?

There are many varieties of Arduino boards (explained on the next page) that can be used for different purposes. Some boards look a bit different from the one below, but most Arduinos have the majority of these components in common

Power (USB / Barrel Jack)

Every Arduino board needs a way to be connected to a power source. The Arduino UNO can be powered from a USB cable coming from your computer or a wall power supply (like this) that is terminated in a barrel jack. In the picture above the USB connection is labeled (1) and the barrel jack is labelled. The USB connection is also how you will load code onto your Arduino board.

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Pins (5V, 3.3V, GND, Analog, Digital, PWM, AREF)

The pins on your Arduino are the places where you connect wires to construct a circuit (probably in conjunction with a breadboard and some wire. They usually have black plastic
„headers" that allow you to just plug a wire right into the board. The Arduino has several different kindsof pins, each of which is labeled on the board and used for different functions GND (3): Short for
Ground". There are several GND pins on the Arduino, any of which can be used to ground your circuit.
5V (4) & 3.3V (5): As you might guess, the 5V pin supplies 5 volts of power, and the 3.3V pinsupplies 3.3 volts of power. Most of the simple components used with the Arduino run happilyoff of 5 or 3.3 volts. Analog
(6): The area of pins under the „Analog In" label (A0 through A5 on the UNO) are Analog Inpins. These pins can read the signal from an analog sensor (like a temperature sensor) and convert it into a digital value that we can read.
Digital (7): Across from the analog pins are the digital pins (0 through 13 on the UNO). Thesepins can be used for both digital input (like telling if a button is pushed) and digital output (likepowering an LED).
PWM (8): You may have noticed the tilde (~) next to some of the digital pins (3, 5, 6, 9, 10, and 11 on the UNO). These pins act as normal digital pins, but can also be used for somethingcalled Pulse-Width Modulation (PWM). We have a tutorial on PWM, but for now, think of these pins as being able to simulate analog output (like fading an LED in and out).
AREF (9): Stands for Analog Reference. Most of the time you can leave this pin alone. It is sometimes used to set an external reference voltage (between 0 and 5 Volts) as the upper limitfor the analog input pins.

Reset Button

Just like the original Nintendo, the Arduino has a reset button (10). Pushing it will temporarilyconnect the reset pin to ground and restart any code that is loaded on the Arduino. This can bevery useful if your code doesn't repeat, but you want to test it multiple times. Unlike the originalNintendo however, blowing on the Arduino doesn't usually fix any problems.

Power LED Indicator

Just beneath and to the right of the word "UNO" on your circuit board, there's a tiny LED nextto the word „ON" (11). This LED should light up whenever you plug your Arduino into a powersource. If this light doesn't turn on, there's a good chance something is wrong. Time to re-checkyour circuit!

TX RX LEDs

TX is short for transmit; RX is short for receive. These markings appear quite a bit in electronicsto indicate the pins responsible for serial communication. In our case, there are two places on theArduino UNO where TX and RX appear – once by digital pins 0 and 1, and a second time next tothe TX and RX indicator LEDs (12). These LEDs will give us some nice visual indications
whenever our Arduino is receiving or transmitting data (like when we're loading a new programonto the board).

Main IC

The black thing with all the metal legs is an IC, or Integrated Circuit (13). Think of it as the brains of our Arduino. The main IC on the Arduino is slightly different from board type to boardtype, but is usually from the AT mega line of IC"s from the ATMEL company. This can be important, as you may need to know the IC type (along with your board type) before loading up a new program from the Arduino software. This information can usually be found in writingon the top side of the IC. If you want to know more about the difference between various IC"s,reading the datasheets is often a good idea.

Voltage Regulator

The voltage regulator (14) is not actually something you can (or should) interact with on the Arduino. But it is potentially useful to know that it is there and what it's for. The voltage regulator does exactlywhat it says – it controls the amount of voltage that is let into the Arduino board. Think of it as a kind ofgatekeeper; it will turn away an extra

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voltage that might harm the circuit. Of course, it has its limits, sodon't hook up your Arduino to anything greater than 20 volts.

The Arduino Family

Arduino makes several different boards, each with different capabilities. In addition, part of being open-source hardware means that others can modify and produce derivatives of Arduinoboards that provide even more form factors and functionality.

Information of IR Sensor

An infrared sensor is an electronic device, that emits in order to sense some aspects of thesurroundings. 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 as a passive IRsensor.

Fig 3.5 IR Sensor

Usually in the infrared spectrum, all the objects radiate some form of thermal radiations. These typesof radiations are invisible to our eyes that can be detected by an infrared sensor. The emitter is simplyan IR LED (Light Emitting Diode) and the detector is simply an IR photodiode which is sensitive toIR light of the same wavelength as that emitted by the IR LED. When IR light falls on the photodiode, the resistances and these output voltages, change in proportion to the magnitude of the IR light received.

An infrared sensor is an electronic device that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion as well asthe presence of an object due to intervention or interruption. These types of sensors measure only infrared radiation, rather than emitting it that is called as a passive IR sensor.

Usually in the infrared spectrum, all the objects radiate some form of thermal radiations. These typesof radiations are invisible to our eyes that can be detected by an infrared sensor. The emitter is simply an IR LED (Light Emitting Diode) and the detector is simply an IR photodiode which is sensitive to IRlight of the same wavelength as that emitted by the IR LED. When IR light falls on the photodiode, theresistances and these output voltages, change in proportion to the magnitude of the IR light received.

An IR sensor is a device which detects IR radiation falling on it. There are numerous types of IR sensors that are built and can be built depending on the application. Proximity sensors (Used in Touch Screen phones and Edge Avoiding Robots), contrast sensors (Used in Line Following Robots) and obstruction counters/sensors (Used for counting goods and in Burglar Alarms) are some examples, which use IR sensors.

Working Mechanism

An IR sensor is basically a device which consists of a pair of an IR LED and a photodiode which arecollectively called a photo-coupler or an opto-coupler. The IR LED emits IR radiation, reception and/or
intensity of reception of which by the photodiode dictates the output of the sensor. Now, there are so many ways by which the radiation may or may not be able to reach the photodiode.

Direct incidence

We may hold the IR LED directly in front of the photodiode, such that almost all the radiation emitted, reaches the photodiode. This creates an invisible line of IR radiation between the IR LED and the photodiode. Now, if an opaque

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object is placed obstructing this line, the radiation will not reach the photodiode and will get either reflected or absorbed by the obstructing object. This mechanism is used in object counters and burglar alarms.

Indirect Incidence

High school physics taught us that black color absorbs all radiation, and the color white reflects all radiation. We use this very knowledge to build our IR sensor. If we place the IR LED and the photodiodeside by side, close together, the radiation from the IR LED will get emitted straight in the direction to which the IR LED is pointing towards, and so is the photodiode, and hence there will be no incidence ofthe radiation on the photodiode. Please refer to the right part of the illustration given below for better understanding. But, if we place an opaque object in front the two, two cases occur:

Reflective Surface

If the object is reflective, (White or some other light color), then most of the radiation will get reflectedby it, and will get incident on the photodiode. For further understanding, please refer to the left part of the illustration below. Non-reflective Surface If the object is non-reflective, (Black or some other dark color), then most of the radiation will get absorbed by it, and will not become incident on the photodiode.It is similar to there being no surface (object) at all, for the sensor, as in both the cases, it does not receiveany radiation.

Power Supply

An AC adapter, AC/DC adapter, or AC/DC converter is a type of external power supply, often enclosedin a case similar to an AC plug. Other common names include plug pack, plug-in adapter, adapter block,domestic mains adapter, line power adapter, wall wart, power brick, wall charger, and power adapter.

Figure 3.6 Power Supply

External power supplies are used both with equipment with no other source of power and with battery- powered equipment, where the supply, when plugged in, can sometimes charge the battery in addition to powering the equipment.

Use of an external power supply allows portability of equipment powered either by mains or battery without the added bulk of internal power components, and makes it unnecessary to produce equipment for use only with a specified power source; the same device can be powered from 120 VAC or 230 VAC mains, vehicle or aircraft battery by using a different adapter.

Another advantage of these designs can be increased safety; since the hazardous 120- or 240-volt mains power is transformed to a lower, safer voltage at the wall outlet and the appliance that is handled by the user is powered by this lower voltage.

Originally, most AC/DC adapters were linear power supplies, containing a transformer to convert the mains electricity voltage to a lower voltage, a rectifier to convert it to pulsating DC, and a filter to smooth the pulsating waveform to DC, with residual ripple variations small enough to leave the powered device unaffected. Size and weight of the device was

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largely determined by the transformer, which in turn was determined by the power output and mains frequency. Ratings over a few watts made the devices too large and heavy to be physically supported by a wall outlet.

The output voltage of these adapters varied with load; for equipment requiring a more stable voltage, linear voltage regulator circuitry was added. Losses in the transformer and the linear regulator were considerable; efficiency was relatively low, and significant power dissipated as heat even when not driving a load.

Early in the twenty-first century, switched-mode power supplies (SMPSs) became almost ubiquitous for this purpose. Mains voltage is rectified to a high direct voltage driving a switching circuit, which contains a transformer operating at a high frequency and outputs direct current at the desired voltage. The high- frequency ripple is more easily filtered out than mains-frequency. The high frequency allows the transformer to be small, which reduces its losses; and the switching regulator can be much more efficient than a linear regulator. The result is a much more efficient, smaller, and lighter device. Safety is ensured, as in the older linear circuit, because a transformer still provides galvanic isolation.

A linear circuit must be designed for a specific, narrow range of input voltages (e.g., 220–240 VAC) and must use a transformer appropriate for the frequency (usually 50 or 60 Hz), but a switched-mode supply can work efficiently over a very wide range of voltages and frequencies; a single 100–240 VAC unit will handle almost any mains supply in the world.

However, unless very carefully designed and using suitable components, switching adapters are more likely to fail than the older type, due in part to complex circuitry and the use of semiconductors.

Unless designed well, these adapters may be easily damaged by overloads, even transient ones, which can come from lightning, brief mains overvoltage (sometimes caused by an incandescent light on the same power circuit failing), component degradation, etc.

A very common mode of failure is due to the use of electrolytic capacitors whose equivalent series resistance (ESR) increases with age; switching regulators are very sensitive to high ESR (the older linear circuit also used electrolytic capacitors, but the effect of degradation is much less dramatic). Well- designed circuits pay attention to the ESR, ripple current rating, pulse operation, and temperature rating of capacitors.

Many inexpensive switched-mode AC adapters do not implement adequate filtering and/or shielding for electromagnetic interference that they generate. The nature of these high speed, high-energy switching designs is such that when these preventative measures are not implemented, relatively high energy harmonics can be generated, and radiated, well into the radio portion of the spectrum. The amount of RF energy typically decreases with frequency; so, for instance, interference in the medium wave (US AM) broadcast band in the one-megahertz region may be strong, while interference with the FM broadcast band around 100 megahertz may be considerably less. Distance is a factor; the closer the interference is to a radio receiver, the more intense it will be. Even Wi-Fi reception in the gigahertz range can be degraded if the receiving antennae are very close to a radiating AC adapter.

A determination of if interference is coming from a specific AC adaptor can be made simply by unplugging the suspect adapter while observing the amount of interference received in the problem radio band. In a modern household or business environment, there may be multiple AC adapters in use; in such a case, unplug them all, then plug them back in one by one until the culprit or culprits is found.

INFORMATION OF JUMPER WIRES

Fig. 3.7 Jumper Wires

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A jump wire (also known as jumper, jumper wire, jumper cable, DuPont wire or cable) is an electrical wire, or group of them in a cable, with a connector or pin at each end (or sometimes without them – simply "tinned"), which is normally used to interconnect the components of a breadboard or other prototype or test circuit, internally or with other equipment or components, without soldering.
Individual jump wires are fitted by inserting their "end connectors" into the slots provided in a breadboard, the header connector of a circuit board, or a piece of test equipment.

INFORMATION OF BUZZER

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric (*piezo* for short).

Figure 3.8 Buzzer

Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as amouse click or keystro

GLOBEL SYSTEM OF MOBILE COMMUNICATION (GSM)

Sim800L Module is low cost, low form factor GSM module based on Sitcom's SIM800L chipset. Sim800L module supports quad-band GSM and GPRS network.
This breakout board is perfect for application where size and cost are a constraint. Sim800l gsm module also supports quad band which means that it can work anywhere in the world. This low-costmodule is perfect for launching your next IoT project. Using this module, you can almost make yourown cell phone.

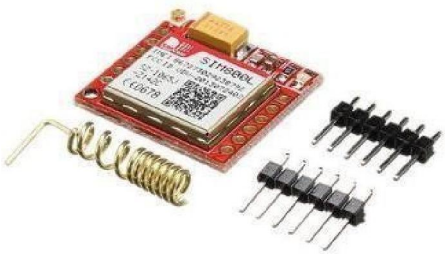

Figure 3.9 GSM Module

Using this module, you can:

- Send Text Messages (SMS)
- Make or receive Phone calls
- Connect to Internet via GPRS
- TCP/IP

The main drawback of this module is works on 3.7 to 4.2 volts so you cannot power it directly through Arduino or Raspberry Pi. Moreover, the sim800L GSM and GPRS module requires up to 2 amperes current so accordingly design your power supply. You can use a 3.7-volt lip battery to directly power the GSM module.
You can communicate with SIM800l module via UART port, supports command including 3GPP TS27.007, 27.005 and SIM COM enhanced AT Commands

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Light Emitting Diode (LED)

A light-emitting diode (LED) is a two-lead semiconductor light source. It is p-n junction diode that emits light when activated. The long terminal is positive and the short terminal is negative. When a suitable current is applied to the leads, electrons are able to recombine with electron holes within the device, releasing energy in the form of photons.

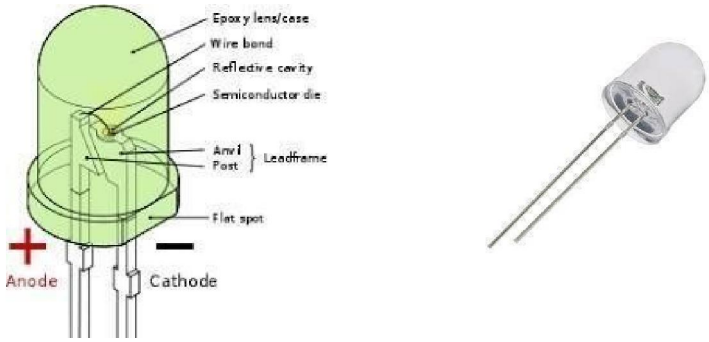

Fig. 3.10 LED Structure

This effect is called electroluminescence, and the color of the light (corresponding to the energy of the photon) is determined by the energy band gap of the semiconductor. LEDs are typically small (less than 1 mm2) and integrated optical components may be used to shape the radiation pattern.

Appearing as practical electronic components in 1962, the earliest LEDs emitted low intensity infrared light. Infrared LEDs are still frequently used as transmitting elements in remote-control circuits, such asthose in remote controls for a wide variety of consumer electronics. The first visible-light LEDs were oflow intensity and limited to red. Modern LEDs are available across the visible, ultraviolet, and infraredwavelengths, with very high brightness.

LEDs are versatile semiconductor with a number of attributes which make them perfect for most applications. Their features include:

- Long Life: LEDs can last over 100,000 hours (10+ years) if used at rated current No annoying flicker as we experience with fluorescent lamps.
- LEDs are impervious to heat, cold, shock and vibration.
- LEDs do not contain breakable glass.
- Solid-State, high shock and vibration resistant
- Extremely fast turn on/off times Low power consumption puts less load on the electrical systems increasing battery life

CAUTIONS:

LEDs produce a focused light source and extra care should be used for your eyes, though intensity is notvery high. While testing the LEDs a resistance must be applied to it Also, being a semiconductor device, they are sensitive to static charges.

How To Operate This Project:

Step 1- Give the supply to circuit through female pin Step 2- Red led blinks Continuously in Normal position

Step 3-when connection is completed and network is available to GSM Module red led blinks once inthree seconds

Step 4-when the animal is detected through IR sensor buzzer sounds

Step 5 - when animal is detected call goes to owner. Step 6 – owner departure towards farm.

Step 7 – The buzzer continue its process till animal moves away from the ranging area of sensor .

IV. PERFORMANCE ANALYSIS

Following Codes Shows Arduino Uno code for Smart Crop ProtectionSystem From animals :

```
//crop protection system const int buzzer Pin = 12;const int flamePin = 11; int Flame = HIGH; int redled = 5;
int greenled =6; void setup()
{
```

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```
pinMode(buzzerPin, OUTPUT); pinMode(redled, OUTPUT); pinMode(greenled, OUTPUT); pinMode(flamePin, INPUT); Serial.begin(9600);
}
void loop()
{
Flame = digitalRead(flamePin); if(Flame== LOW)
{
Serial.println("ATD8237497008;"); // ATDxxxxxxxxxx; semicolon should be at the last ;AT command that follows UART protocol; digitalWrite(buzzerPin, HIGH);
digitalWrite(redled, HIGH); digitalWrite(greenled,LOW);
Serial.println("AT+CMGF=1\r"); //Sets the GSM Module in Text Mode delay(1000);
// Delay of 1 second
Serial.println("AT+CMGS=\"+918237497008\"\r"); // Replace x with mobile number Serial.println("ALERT! ANIMALS DETECTED\r");// The SMS text you want to send Serial.println((char)26);// ASCII code of CTRL+Z for saying the end of sms to the module
//delay(100);
}else{
digitalWrite(buzzerPin, LOW); digitalWrite(greenled,HIGH); digitalWrite(redled,LOW);
}
}
```

Arduino Software (IDE)

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runson Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software. This software can be used with any Arduino board. For latest software referto link.

https://www.arduino.cc/en/Main/Software

Arduino was born at the Ivrea Interaction Design Institute as an easy tool for fast prototyping, aimed at students with or without a background in electronics and programming.

Arduino is an open-source prototyping platform based on easy-to-use hardware and software.

Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a message - and turn it into an output - activating a motor, turning on an LED, publishing something online and many more.

You can tell your board what to do by sending a set of instructions to the microcontroller on theboard.

To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE), based on Processing.

Inexpensive

Arduino boards are relatively inexpensive compared to other microcontroller platforms.

Cross-platform

The Arduino Software (IDE) runs on Windows, Macintosh OSX, and Linux operating systems. Most microcontroller systems are limited to Windows

Simple, clear programming environment

The Arduino Software (IDE) is easy-to-use for beginners, yet flexible enough for advanced users to takeadvantage of as well.

Open source and extensible hardware

The plans of the Arduino boards are published under a Creative Commons license, so experienced circuitdesigners can make their own version of the module, extending it and improving it.

Open source and extensible software

The Arduino software is published as open-source tool and the language can be expanded through C++libraries

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4.3. How to use Arduino IDE Tool

Steps for using Arduino IDE:

Step 1: Get an Arduino board and USB cable:

In this tutorial, we assume you're using an Arduino Uno You also need a standard USB cable (A plug toB plug): the kind you would connect to a USB printer, for example.

Step 2: Download the Arduino environment:

(https://www.arduino.cc/en/Main/Software**)** Get the latest version from the download page. When the download finishes, unzip the downloaded file. Make sure to preserve the folder structure. Double-click the folder to open it. There should be a few files and sub-folders inside.

Step 3: Connect the board:

The Arduino Uno, Mega, Demilune and Arduino Nano automatically draw power from either the USBconnection to the computer or an external power supply.

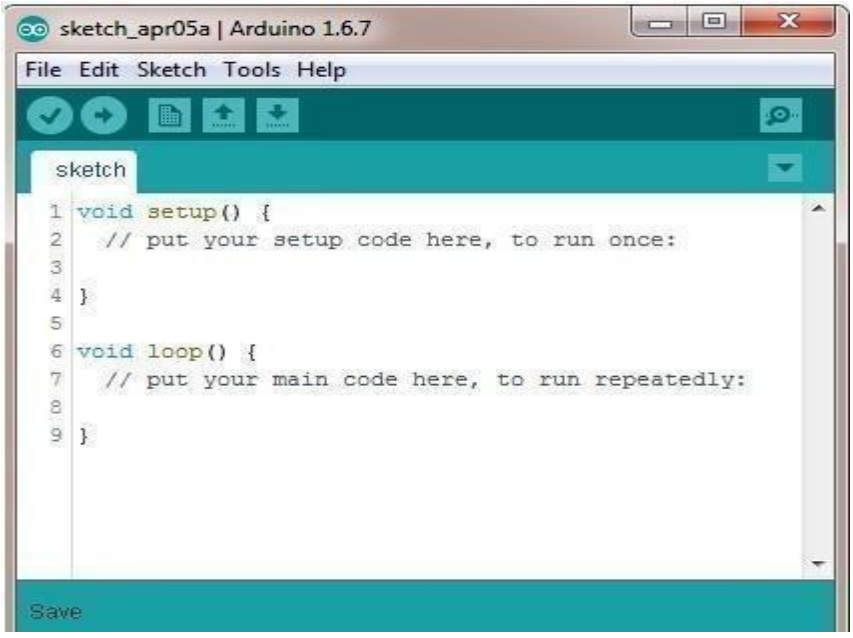
If you're using an Arduino Decimal, you'll need to make sure that the board is configured to draw powerfrom the USB connection. The power source is selected with a jumper, a small piece of plastic that fits onto two of the three pins between the USB and power jacks. Check that it's on the two pins closest to theUSB port. Connect the Arduino board to your computer using the USB cable. The green power LED (labelled PWR) should go on.

Step 4: Install the drivers:

Installing drivers for the Arduino Uno or Arduino Mega 2560 with Windows7, Vista, or XP

Step 5: Launch the Arduino application:

Double-click the Arduino application. (Note: if the Arduino software loads in the wrong language, youcan change it in the preferences dialog. See the environment page for details.



Step 6: Open the blink example

Open the LED blink example sketch: File > Open > Temp_and_humid.ino

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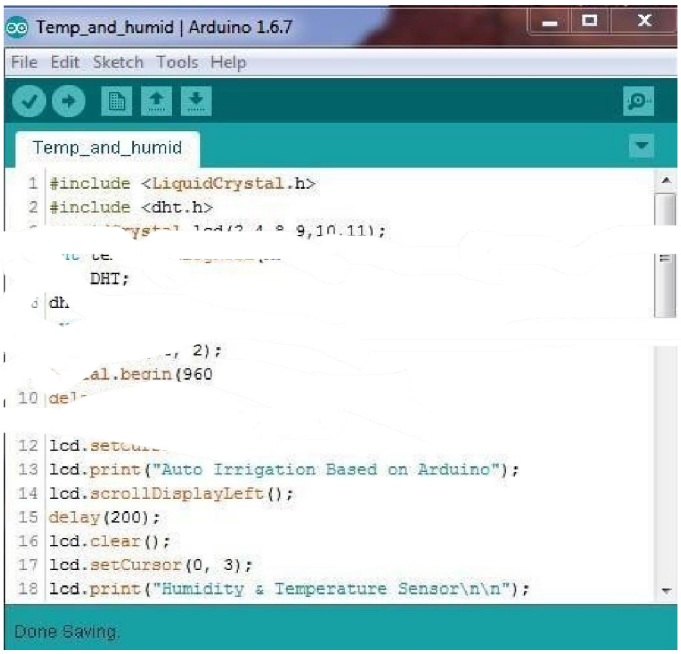
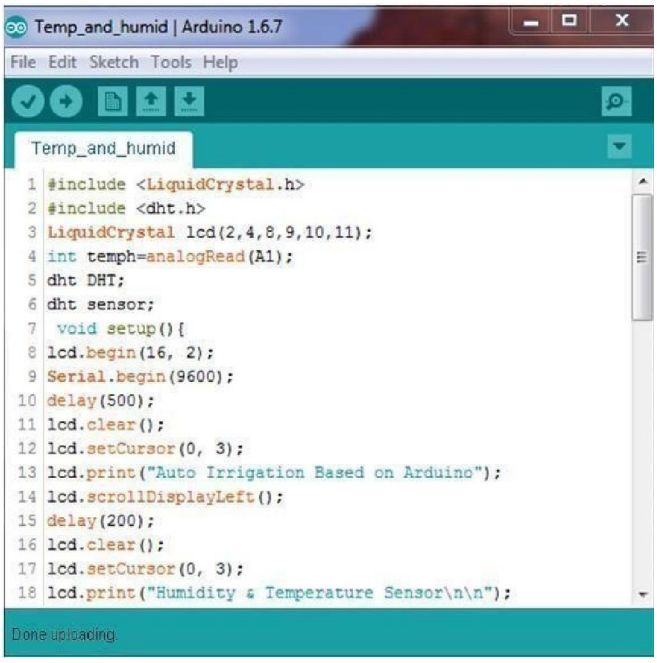


Step 7: Select your board:
You'll need to select the entry in the Tools > Board menu that corresponds to your Arduino.
Step 8: Select your serial port:
Select the serial device of the Arduino board from the Tools | Serial Port menu. This is likely to be COM3 or higher (COM1and COM2 are usually reserved for hardware serial ports). To find out, you can disconnect your Arduino board and re-open the menu; the entry that disappearsshould be the Arduino board. Reconnect the board and select that serial port.

Step 9: Upload the program:
Now, simply click the "Upload" button in the environment. Wait a few seconds - you should see the RX and TX led on the board flashing. If the upload is successful, the message "Done uploading."will appear in status bar



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V. SUMMARY

Advantages

- It is protecting the Crops from animals, When the farmer is not in farm.
- It diverts the animal by producing sound and signal further, transmitted to GSM and which gives an alert to owner of crop immediately
- The pro-posed monitoring scheme is to provide an early warning about possible intrusion and damage by animals.
- It's required no human supervisions.
- It's is also highly economical. ➢ It is an effective, accurate and adaptive system.

Limitations

- It only detects animals in sensors range
- Sensor range is small
- Over all area couldn't be cover

Application

- It is used to protect the farm.
- It is used in fruit/vegetable garden

Others Application

- It is use to detect the fire.
- It is use in banks for security purpose. ➢ Use in school and hostel

VI. CONCLUSION

Farmers encounter severe threats in rural parts of India like damage done by birds and animals. Hence, to overcome this issue we have designed a system in which sound is played to scare the animals and birds, so that it will automatically run away. The GSM module makes a call to the farmer to alert him. Therefore, the designed system is affordable and useful to the farmers. The designed system won't be harmful to animals and person, and it protects the farm areas. The problem of crop vandalization by wild animals and fire has become a major social problem in current time. It requires urgent attention as no effective solution exists till date for this problem. Thus, this project carries a great social relevance as it aims to address this problem. This project will help farmers in protecting their orchards and fields and save them from significant financial losses and will save them from the unproductive efforts that they endure for the protection their fields. This will also help them in achieving better crop yields thus leading to their economic wellbeing.

6.1 Future Scope

In the future, there will be very large scope, this project can be made based on large processing in which wild animal and fire can be detected and if it comes towards farm then system will be directly activated through wireless networks. Wild animals can also be detected by using wireless networks such as laser wireless sensors and by sensing this laser or sensor's security system will be activated

REFERENCES

[1]. Ms. Sneha Nahatkar, Prof. Avinash Gaur, Prof. Tareek M. Pattewa "Design of a Home Embedded Surveillance System with Piezoelectric Infrared Sensor & Ultra-Low Alert Power" International Journal of Advanced Research in Electronics and Communication Engineering (IJARECE) Volume 1, Issue 3, September 2012.

[2]. T.Gayathri, S.Ragul, S.Sudarshan, Corn farmland monitoring using wireless sensor network, International Research Journal of Engineering and Technology (IRJET), e-ISSN: 2395-0056, Volume: 02 Issue: 08 | Nov-2015

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[3]. M. Sathishkumar1, S.Rajini "Smart Surveillance System Using PIR Sensor Network and GSM" International Journal of Advanced Research in Computer Engineering & Technology (IJARCET)

[4]. Volume4 Issue 1, January 2015.] S. Sivagamasundari, S. Janani, "Home surveillance system based on MCU and GSM", International journal of communications and engineering, 2014, volume 06– no.6.

[5]. A. V. Deshpande, "Design and implementation of an intelligent security system for farm protection from wild animals," International Journal of Science and Research, ISSN (Online), pp. 2319–7064, 2016.

[6]. S. Pandey and S. B. Bajracharya, "Crop protection and its effectiveness against wildlife: A case study of two villages of Shivpuri national park, Nepal," Nepal Journal of Science and Technology, vol. 16, no. 1, pp. 1– 10, 2015.

[7]. K. Rao, R. Maikhuri, S. Nautiyal, and K. G. Saxena, "Crop damage and livestock depredation by wildlife: a case study from Nanda Devi biosphere reserve, India," Journal of Environmental Management, vol. 66, no. 3, pp. 317–327, 2002.

[8]. V. Bavane, A. Raut, S. Sonune, A. Bawane, and P. Jawandhiya, "Protection of crops from wild animals using intelligent surveillance system."

[9]. R. Vigneshwar and R. Maheswari, "Development of embedded based system to monitor elephant intrusion in forest border areas using internet of things," International Journal of Engineering Research, vol. 5, no. 7, pp. 594–598, 2016.

[10]. R. Bhardwaj, K. Bera, O. Jadhav, P. Gaikwad, and T. Gupta, "Intrusion detection through image processing and getting notified via SMS and image," 2018.