

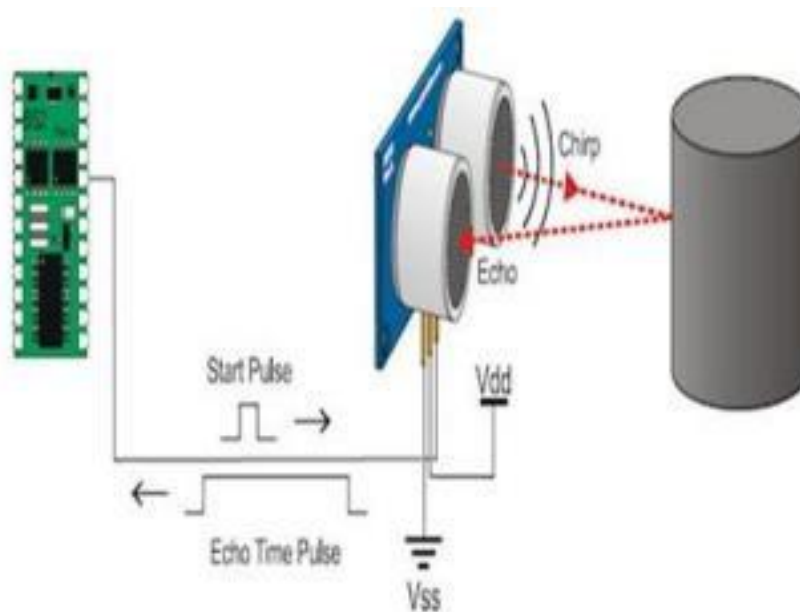
Automatic Fencing System (Afs)

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ABSTRACT



Automatic Fencing System (AFS) employs a simple mechanism to detect and indicate the animals which are crossing the fields of agricultural land. This circuit indicates the animals which are crossing and affecting the land. So, it saves the animals which are affected by the high voltage current applied in a fencing. It also detects the intruder who enters into the land and causes damages with the bad impression. It helps the farmers who are near the forest and animals visiting places. It is very simple to use. It can also be used in the house to detect the new entries of thieves.

1. INTRODUCTION

1.1 ABOUT INDUSTRY VERTICAL (DOMAIN):

We select the trending technology it is called IOT (INTERNETOF THINGS) in agriculture land. **IOT smart farming** solutions is a system thatis built for monitoring the crop field with the help of sensors (light, humidity, temperature, soil moisture, crop health, etc.) and automating the irrigation system. The farmers can monitor the field conditions from anywhere.



In IOT technology we see more developed things:

- Smart home security systems.
- Farming techniques
- Plant scanners.

1.2 PLACES WHERE WE USE:

We built this system which it uses for agricultural fields wherethe animals are cause damage for crops and human lives. This also can be usedin home to prevent robberies and it can be used restricted areas.



Fig 1.1 Agriculture Land

1.3 END USER:

- **FARMERS** - It is more used in agricultural land .By use this theyget more benefits.
- **SECURITY PURPOSES** - It is also used for some VIP's fortheir protection.
 - It saves the life of animals and endangered species.
 - It saves the humans life.

BENEFITS:

- It saves the endangered species from hunting.
- It saves agricultural land of farmers.
- It ensures entering of animals and exiting of animals.
- For security purposes it reduces the robberies.
- It doesn't consume more current.
- Battery power is used.
- Easily operate by humans.

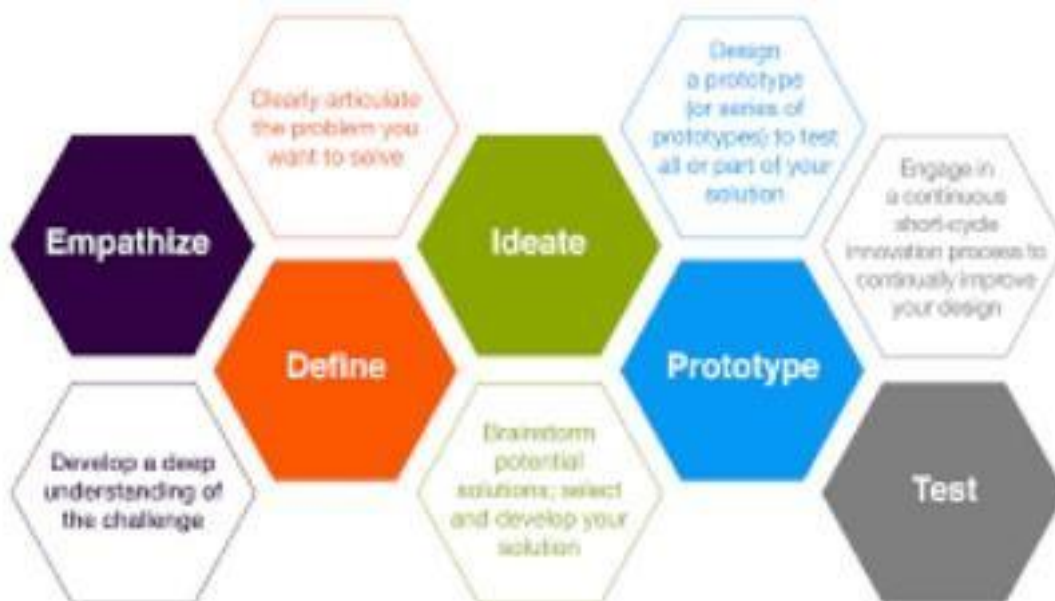


2. DESIGN THINKING

Design thinking is a non-linear, iterative process that teams use to understand users, challenge assumptions, redefine problems and create innovative solutions to prototype and test. **Design thinking** is a human centered **approach** to innovation—anchored in understanding customer's needs, rapid prototyping, and generating creative ideas—that will transform the way you develop products, services, processes, and organizations.

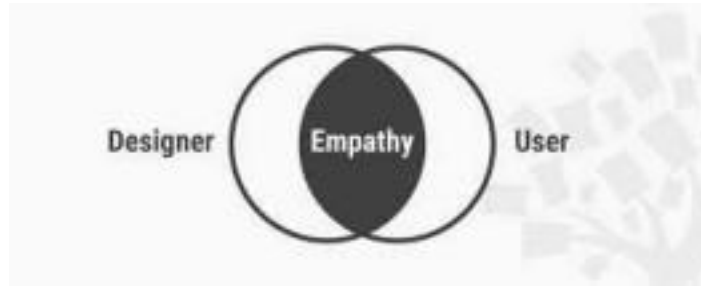


2.1 PHASES OF DESIGN THINKING



2.1.1 ABOUT EMPATHY

The first stage of the Design Thinking process is to gain an empathic understanding of the problem you are trying to solve. This involves consulting experts to find out more about the area of concern through observing, engaging and empathizing with people to understand their experiences and motivations, as well as immersing yourself in the physical environment so you can gain a deeper Personal understanding of the issues involved.



2.1.1 ABOUT DEFINE:

During the Define stage, you put together the information you have created and gathered during the Empathize stage. This is where you will analyze your observations and synthesize them in order to define the core problems that you and your team have identified up to this point. You should seek to define the problem as a problem statement in a human-centre manner.



2.1.1 ABOUT IDEATE:

During the third stage of the Design Thinking process, designers are ready to start generating ideas. You've grown to understand your users and their needs in the Empathize stage, and you've analyzed and synthesized your observations in

the Define stage, and ended up with a human-centered problem statement. With this solid background, you and your team members can start to "think outside the box" to identify new solutions to the problem statement you've created, and you can start to look for alternative ways of viewing the problem. There are hundreds of Ideation techniques such as Brainstorm,

Brainwrite, Worst Possible Idea, and SCAMPER.



2.1.1 ABOUT PROTOTYPE:

The design team will now produce a number of inexpensive, scaled-down versions of the product or specific features found within the product, so they can investigate the problem solutions generated in the previous stage. Prototypes may be shared and tested within the team itself, in other departments, or on a small group of people outside the design team. This is an experimental phase, and the aim is to identify the best possible solution for each of the problems identified during the first three stages. The solutions are implemented within the prototypes, and, one by one, they are investigated and either accepted, improved and re-examined, or rejected on the basis of the users' experiences.

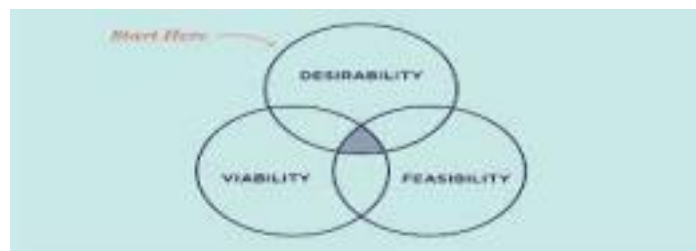
2.1.1 ABOUT TEST:

Designers or evaluators rigorously test the complete product using the best solutions identified during the prototyping phase. This is the final stage of the 5-stage model, but in an iterative process, the results generated during the testing phase are often used to redefine one or more problems and inform the understanding of the users, the conditions of use, how people think, behave, and feel, and to empathize. Even during this phase, alterations and refinements are made in order to rule out problem solutions and derive as deep an understanding of the product and its users as possible.



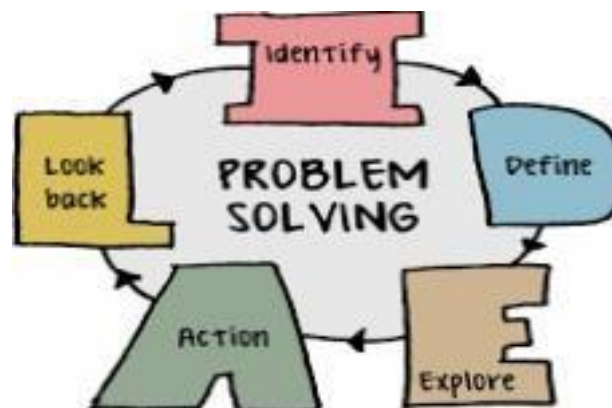
2.2 PURPOSE OF DESIGN THINKING:

Designers or evaluators rigorously test the complete product using the best solutions identified during the prototyping phase. This is the final stage of the 5 stage-model, but in an iterative process, the results generated during the testing phase are often used to redefine one or more problems and inform the understanding of the users, the conditions of use, how people think, behave, and feel, and to empathize. Even during this phase, alterations and refinements are made in order to rule out problem solutions and derive as deep an understanding of the product and its as possible.



4. PROBLEM DEFINE

During the Define stage, you put together the information you have created and gathered during the Empathize stage. This is where you will analyze your observations and synthesize them in order to define the core problems that you and your team have identified up to this point. You should seek to define the problem as a problem statement in a human-centred manner.



4.1 USER REQUIREMENTS:

- BATTERY.
- AGRICULTURE LAND.
- AFS.

5. IDEATE

Ideation is a creative process where designers generate ideas in sessions (e.g., brainstorming, worst possible idea). It is the third stage in the Design Thinking process. Participants gather with open minds to produce as many ideas as they can to address a problem statement in a facilitated, judgment-free environment.



5.1 EXISTING IDEAS:

- SOLAR FENCING SYSTEM.
- ALERT SYSTEM USING APPLICATION.
- DRONE MONITORING.
- IOT SYSTEMS etc,

5.2 LIST OF POSSIBLE IDEAS TO SOLVE THE PROBLEM:

- Monitoring System.
- Restrictions technology.
- Automatic cut off system.

5.3 CHOSEN IDEA TO PROCEED FOR SOLUTION:

- Power consumption is low.
- Skills is not required.
- Not affect anything.

a. TECHNICAL FEASIBILITY

A **Technical feasibility** study assesses the details of how you intend to deliver a product or service to customers. It's the logistical or tactical plan of how your business will produce, store, deliver, and track its products or services.

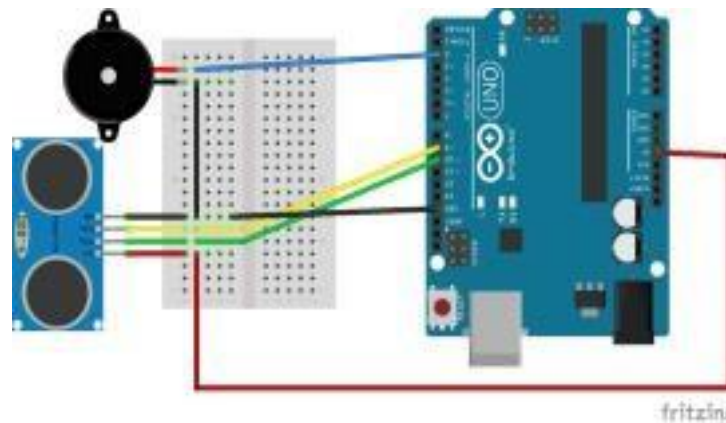
- We save **Animals** which entering into the lands.
- **Farmers** will get more benefits using our product.
- We save **farmers** who were killed by animals.
- **Farmers** can get profits after using our product.

b. ECONOMICAL FEASIBILITY

The **economic feasibility** step of business development is that period during which a break-even financial model of the business venture is developed based on all costs associated with taking the product from idea to market and achieving sales sufficient to satisfy debt or investment requirements.

- Farmers can buy our product our product is so cheap.
- Customers can buy our product through online websites.
- Even illiterate can buy using NO COST EMI Specifications.

5.4 CIRCUIT DIAGRAM:



Connect the Buzzer positive terminal to the Arduino pin 2 and the negative terminal to the Gnd. Connect the VCC pin of ultrasonic to +5v pin and the Gnd to the ground. Connect trig pin to pin 10 and echo pin to pin 9.

The pictures show you the connection.

6. PROTOTYPE



Fig 6.1 Prototype Model

Fig 6.2 Breadboards - Arduino Connection

6.1 SPECIFICATION OF HARDWARE

ARDUINO UNO BOARD

Arduino is an open-source electronics 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.

USB –A TO MINI USB CABLE

USB **cable** type A/B. Use it to connect Arduino Uno, Arduino Mega 2560, Arduino 101 or any board with the **USB** female a port of your computer. Cable length is approximately 1m. Cable color and shape may vary slightly from image as our stock rotates.

BREADBOARD

A **breadboard** is a solderless device for temporary prototype with electronics and test circuit designs. Most electronic components in electronic circuits can be interconnected by inserting their leads or terminals into the holes and then making connections through wires where appropriate.

BUZZER

A **buzzer** or beeper is an audio signalling 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.

6.2 SNAPSHOTS:

6.3 SOURCE CODE:

```
intconsttrigPin=
10;
intconstechoPin
=9;
intconstbuzzPin
=2;

voidsetup()
{
    pinMode(trigPin, OUTPUT); // trig pin will have pulses output
    pinMode(echoPin, INPUT); // echo pin should be input to get
    pulse widthpinMode(buzzPin, OUTPUT); // buzz pin is output to
    control buzzing
}

voidloop
()
{
    // Duration will be the input pulse width and distance will be the distance to the
    obstacle
in centimeters
    intduration, distance;

    // Output pulse with 1ms width on
    trigPindigitalWrite(trigPin, HIGH);
    delay(1);
    digitalWrite(trigPin,
    LOW);
    // Measure the pulse input in echo
    pin duration=pulseIn(echoPin,
    HIGH);
    // Distance is half the duration divided by 29.1 (from
    datasheet)distance= (duration/2) /29.1;
    // if distance less than 0.5 meter and more than 0 (0 or less means over range) if
    (distance<=50&&distance>=0) {

        } else {
```

```
// Buzz  
digitalWrite(buzzPin, HIGH);  
  
}  
  
// Don't buzz  
digitalWrite(buzzPin,  
LOW);  
  
// Waiting 60 ms  
won't hurt any one  
delay(60);  
}
```

4. TESTING

4.1 INPUT/OUTPUT

INPUT	OUTPUT
Distance > 90cm DETECTED)	BUZZER OFF(OBJECT NOT DETECTED)
Distance<90c	BUZZER ON(OBJECT DETECTED)

5. CONCLUSION

This is a simple alarm system made with help of buzzer, and an Ultrasonic sensor also known as Proximity/Distance Sensor (HC-SR04). One can stop the buzzer by pressing the button.

5.1 REAL TIME APPLICATIONS

➤ AFS allows you to divide the facility into an unlimited number of virtual zones to zoom in and **locate the right component immediately**. ➤ The virtual zones can also have different roles and user permissions set. By knowing who is going where in real-time, you can monitor and **prevent any unauthorized access**.

5.2 SCOPE FOR FUTURE IMPROVEMENT

The latest research report provides a complete assessment of the Global Electric Fence market for the forecast year 2022-2031, which is beneficial for companies regardless of their size and revenue. This Survey report covering the major market insights and industry approach towards in the upcoming years. The Electric Fence Market Report presents data and information on the development of the investment structure, technological improvements, market trends and developments, capabilities, and comprehensive information on the key players of the Electric Fence Market.

We use drone to monitoring for produce sound in animals crossed areas.

6. ANNEXURE

DT LINK:

<https://detecting-obstacles-and-warning-arduino-and-ultrasonic-13e5ea>