

## **ABSTRACT**

The increasing encroachment of wildlife into agricultural lands near forest areas has led to significant damage to crops, posing a severe threat to farming and wildlife conservation efforts. To address this issue, we propose an innovative animal detection system that employs a multi-tiered approach to safeguard agricultural land. The system utilizes ultrasonic sensors to detect the presence of animals at a certain distance, triggering an initial alert through a buzzer to notify the farmer. Upon detection, an AI-powered model analyzes the animal's characteristics, identifying the specific species responsible for the disturbance. This system operates in three progressive levels of intervention. The first level triggers an early warning signal, while the second level uses advanced AI techniques to identify the animal species causing the disruption, ensuring no unnecessary disturbance to non-threatening animals. The third level involves a decisive action, where, if the identified animal continues to approach, an automatic shock circuit is activated to deter the intruder without harming it. This solution aims to prevent crop destruction, improve agricultural safety, and maintain the ecological balance by managing wildlife interactions in agricultural zones effectively.

## **LIST OF TABLES**

<b>S.NO</b>	<b>TABLE NO</b>	<b>DESCRIPTION</b>	<b>PAGE NO</b>
1	3.8.2.1	Technical Specification	20
2	3.8.3.1	16*2 LCD Pinout Diagram	32
3	3.8.3.2	Important Command Codes For LCD	34
4	3.8.4.1	Ultrasonic Sensor Pin Configuration	37
5	5.1	System Testing	51

## **LIST OF FIGURES**

<b>FIGURE NO</b>	<b>NAME OF THE FIGURE</b>	<b>PAGE NO</b>
3.1	Architecture Diagram	10
3.2	Usecase Diagram	11
3.3	Block Diagram	12
3.4	Object Detect In That Range	14
3.5	Animal Identification Using AI	15
3.6	Shock Mechanism On Process	16
3.7	Arduino Uno	19
3.8	Arduino Uno Technical Specification	21
3.9	Arduino Programming	24
3.10	Input And Output Of Arduino Pin	27
3.11	LCD Diagram	31
3.12	16*2 LCD Pinout Diagram	32
3.13	Displaying Custom Characters On 16*2 LCD	35
3.14	Ultrasonic Sensor	36
3.15	HC – SR04 Sensor Working	38
3.16	Transmitting Waves	38

3.17	Buzzer	40
3.18	DF Player	40
3.19	Pin Map	41
3.20	Pin Map Configuration	42
3.21	Basic Steps Of Embedded C Programming	42
3.22	Basic Structure Of Embedded System	44
3.23	Arduino Software	45
4.1	Hardware Implementation Flowchart	46
4.2	Software Implementation Flowchart	49
5.1	Prototype	52
5.2	Detecting The Animal	53
5.3	Displaying Data On LCD With The Distance	53
A.3.1	Open Anaconda Prompt	65
A.3.2	To Open VS Code	66
A.3.3	Coding Part	66
A.3.4	Execution Prompt	67
A.3.5	Output Screen	67

A.3.6	Output_1	68
A.3.7	Detecting The Image_1	68
A.3.8	Detecting The Image_2	69
A.3.9	Detecting The Image_3	69
A.3.10	Detecting Kit	70
A.3.11	After On The Kit	70
A.3.12	Displaying The Information In LCD	71
A.3.13	Detecting The External Disturbance By Vibrator	71
A.3.14	Showing The External Disturbance On The LCD	72
A.3.15	Message Notification To The Farmer	72
A.3.16	Distance Is Detected By Ultrasonic Sensor	73
A.3.17	Distance Is Below The Range So Shock Is Enabled	73

