

# Gaushala Safety – Automation of Cattle Livestock

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**Abstract:** *Automation of Cattle Livestock is a ground-breaking initiative aimed at transforming cattle care and management. In a nation where cattle play a pivotal role in rural economies, the absence of accessible veterinary care, delayed vaccinations, and disease outbreaks pose significant threats to cattle health and the livelihoods of dependent communities. This project offers a comprehensive solution by harnessing cutting-edge technology. It includes a robust cattle information management system, utilizing speech recognition for data input to accommodate diverse user literacy levels. The core feature is an intelligent vaccination scheduler, creating personalized vaccination plans based on individual cattle profiles, and sending timely reminders to owners. Additionally, it employs advanced image processing to detect early signs of disease. The project ensures accessibility through voice-enabled interaction and simplifies the registration of new cattle and along with that it includes the cattle tracker and shed cleaning. By enhancing cattle health, increasing accessibility, and promoting sustainable cattle rearing, Automation of Cattle Livestock seeks to empower farmers, protect livestock, and drive rural community development. This project represents a pioneering step toward a brighter future for both cattle and their caretakers in India.*

**Keywords:** Cattle Livestock.

## I. INTRODUCTION

Livestock rearing, particularly cattle farming, is an integral component of India's agrarian landscape, deeply interwoven into the fabric of rural communities and economies. Cattle, revered as sacred animals in the cultural tapestry of the nation, provide essential contributions to agriculture, dairy production, and draught power. However, despite their critical importance, the management of cattle in India faces multifaceted challenges that imperil the health and prosperity of these animals and, by extension, the livelihoods of countless individuals dependent on them. The key challenges confronting cattle management in India can be distilled into several critical issues. The first among these is the limited access to veterinary care and delayed vaccination programs. In vast swathes of rural India, veterinary services are often sparse, leaving cattle owners without essential resources to safeguard their animals' health.

### 1.1 Problem Statement

The absence of veterinary care and delayed vaccinations poses significant challenges for cattle, including disease outbreaks, reduced productivity, higher mortality rates, potential disease transmission, malnutrition, and economic losses for farmers. Poor reproductive outcomes, inadequate livestock management, tracking returned grazing cows, shed cleanliness, and low market prices further compound.

### 1.2 Proposed system

- Cattle Tracking: Develop a feature for farmers to input and manage detailed information about their cattle.
- Health Monitoring and Disease Detection: Integrate computer vision and image recognition algorithms to enable farmers to upload images of cattle for disease diagnosis.
- Vaccination Reminders and Alerts: Categorize cattle into groups (e.g., milking cows, dry cows) based on provided data.

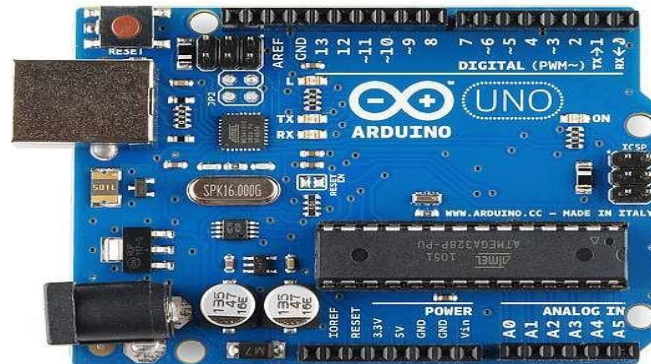
### 1.3 Objectives

- Skin disease detection facilitating timely vaccination interventions: Utilize machine learning techniques to train the system to recognize normalskin patterns and identify deviations associated with skin disease and create advanced image processing algorithms capable of accurately recognizing cattle skin disease regardless of any breed or age of cattle.
- Enable Summarization: Develop algorithms for summarizing digitized content to provide concise, easily digestible overviews of the cattle birth, conceive, death related data.
- Minimized Economic Losses: Mitigate economic losses for farmers by providing timely market price information for cattle by-products, helping them make informed selling decisions.
- Clean and Hygienic Environment: Promote a healthy environment for cattle through scheduled cleaning and maintenance reminders, reducing the risk of disease transmission.
- The general objective of this research is to design an appropriate detection model which recognizes Lumpy animal skin disease using image processing techniques and machine learning algorithms.
- The cattle monitoring using health parameter sensors and tracking.
- To prepare Animal Lumpy Skin Disease image data set for experimentation

## II. SYSTEM REQUIREMENTS

### 2.1 Hardware Requirements

Arduino/GenuinoUno 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 quartz crystal, a USB connection, a power jack, an ICSP header and a reset button



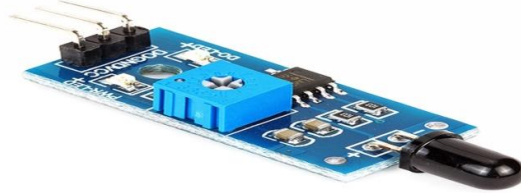
**Loadcell:** A load cell is an electro-mechanical sensor used to measure force or weight



**LCD Display:** The Liquid Crystal library allows you to control LCD displays that are compatible with the Hitachi HD44780 driver.



**Fire alarm:** A smoke detector is a device that senses smoke, typically as an indicator of fire.



**RFID Reader**

The RFID reader is also known as an interrogator, it provides the connection between the tag data and the software that needs the information



Typical RFID card for the project

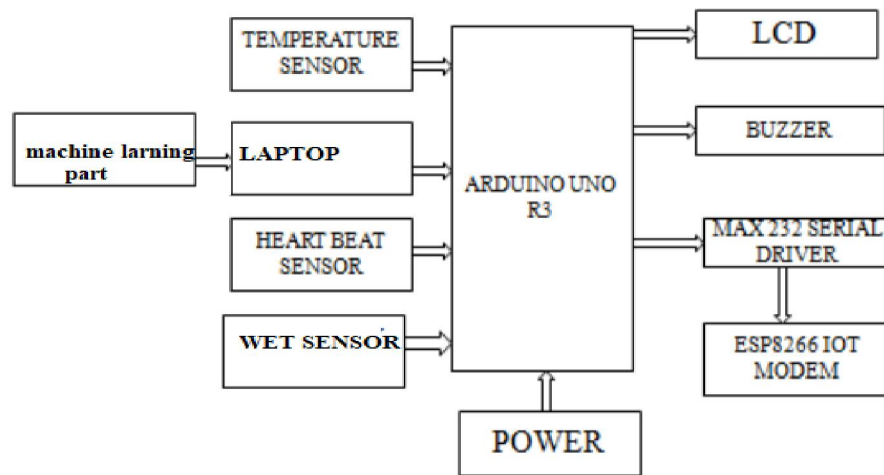
Lumpy disease detection  
Infected



Not infected



### III. BLOCK DIAGRAM



#### Advantages

- Easy Implementation
- Early Detection of Disease
- Cost Effective Method
- Easy to track the person.

#### Disadvantages

- Environmental Impact.
- Potential impact of animal welfare.

#### **IV. CONCLUSION**

In general, this study achieves better result towards detection of Lumpy skin disease and classify as Sever, Mild and Normal skin. The contribution of this study includes preparation of Lumpy skin disease Image dataset, construction of Lumpy skin disease Image classification model and Method to use local information to known incidence of animal Epidemic disease. The main challenge observed in this study is the non-existence of Lumpy skin disease Image data sate for experiment and Noises for properly detecting the region of interest.

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