

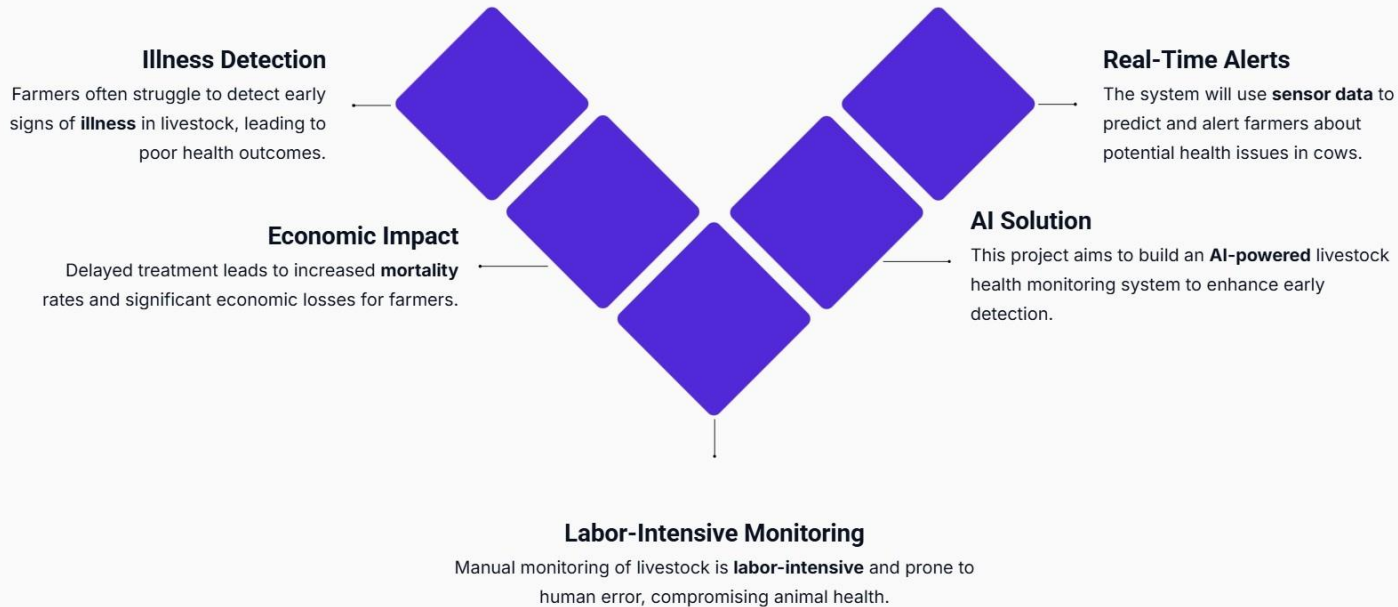
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AI-BASED LIVESTOCK HEALTH MONITORING SYSTEM: ENHANCING ANIMAL HEALTH MANAGEMENT

This presentation explores the innovative development of an AI-based livestock health monitoring system that enhances animal health management through predictive analytics, real-time alerts, and data-driven insights, ultimately benefiting stakeholders in the agricultural sector.

AI-POWERED LIVESTOCK HEALTH MONITORING SYSTEM

Utilizing AI and sensors to detect livestock health issues early and effectively



UNDERSTANDING LIVESTOCK HEALTH DATA

Analyzing key attributes for cow health monitoring

1

Animal Info
Environmental Conditions
Physiological Metrics

Behavioral Insights

3

Health Indicator

2

Activity Levels
Rumination Time
Feed Intake
Water Intake

Attributes

Health Status

CHARACTERISTICS OF DATA TYPES IN HEALTH MONITORING

Exploring time series, multivariate data, and labeled classifications in livestock health monitoring.

1 Time Series Data Collection

Time Series refers to observations that are recorded consistently every 6 hours, allowing for detailed tracking of changes over time and enabling timely interventions in livestock health.

2 Multivariate Observations

In **Multivariate** data, each observation consists of multiple features, providing a comprehensive view of the factors affecting livestock health and allowing for more robust analysis.

3 Importance of Labeled Data

The **Labeled** aspect of the data indicates that the health status is represented as a binary label, which is crucial for classification tasks in machine learning applications.

4 Observational Frequency

With observations recorded every 6 hours, the system ensures that it captures critical changes in health status, allowing for proactive management of livestock.

5 Feature-Rich Data

Having multiple features in each observation enhances the model's ability to identify patterns and relationships, leading to better predictive accuracy in health assessments.

6 Role of Health Status Labels

The inclusion of a binary **health_status** label allows for effective classification, aiding in the identification of healthy versus unhealthy livestock and facilitating targeted interventions.

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Illness Detection

Farmers often struggle to detect early signs of **illness** in livestock, leading to poor health outcomes.

Labor-Intensive Monitoring

Manual monitoring of livestock is **labor-intensive** and prone to human error, compromising animal health.

Real-Time Alerts

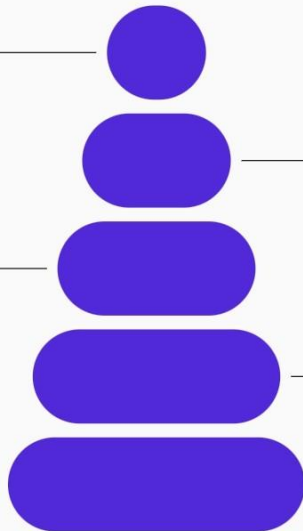
The system will use **sensor data** to predict and alert farmers about potential health issues in cows.

Economic Impact

Delayed treatment leads to increased **mortality** rates and significant economic losses for farmers.

AI Solution

This project aims to build an **AI-powered** livestock health monitoring system to enhance early detection.



OBJECTIVES OF THE LIVESTOCK HEALTH MONITORING SYSTEM

Developing AI solutions for effective livestock health management

Machine Learning Model

Classify cow health with **90% accuracy**.



Lightweight Web Application

Visualize health trends on **low-power devices**.



Real-time Alerts System

Analyze sensor data and send **health alerts**.

COMPREHENSIVE OVERVIEW OF LIVESTOCK HEALTH MONITORING DATASET AND INITIAL ANALYSIS

Insights from 12,000 entries on livestock health metrics

Dataset Features	Initial Data Checks	Key Health Metrics
Total Entries	Missing Values	Heart Rate
Data Columns	Duplicated Entries	Activity Score
Health Status	Data Quality	Rumination Minutes
Temperature Metrics	Preliminary Insights	Water and Feed Intake

UNDERSTANDING UNIVARIATE AND BIVARIATE ANALYSIS IN LIVESTOCK HEALTH

Exploring physiological indicators of health status in livestock through statistical methods

Univariate Analysis reveals key features.



Healthy animals show higher values in **rumination time**, **activity score**, **feed intake**, and **water intake**, indicating better health compared to sick animals.

1

Physiological stress indicators in sick animals.



Sick animals exhibit increased **heart rates** and **respiration rates**, suggesting significant **physiological stress** that must be monitored for effective health management.

2

Bivariate Analysis utilizes boxplots effectively.



The correlation between **health status** and various physiological features is analyzed through boxplots, providing a visual representation of the data relationships.

3

Data-driven insights for health monitoring.



Leveraging univariate and bivariate analyses aids in **making informed decisions** regarding livestock care and health interventions, enhancing overall farm productivity.

4

EVALUATION OF MACHINE LEARNING MODELS IN LIVESTOCK HEALTH MONITORING

Performance metrics of Logistic Regression, Random Forest, and SVM models

Model Accuracy Comparison



Model

JOIN ME IN REVOLUTIONIZING LIVESTOCK MANAGEMENT —LET'S INVEST IN THE FUTURE

To ensure the effective implementation of the AI-based livestock health monitoring system, stakeholders must prioritize investments in advanced technology infrastructure and comprehensive training programs. This will empower farmers and veterinarians to leverage the system

Call-to-action

