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Livestock Management System

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Abstract: Currently, advancements in farm automation and technological techniques contribute significantly to boosting farm productivity, with a notable focus on cattle health monitoring systems in research. This system encompasses infrastructure, hardware, and software components aimed at enhancing cattle health, crucial for overall farm productivity. Given the challenges posed by managing numerous cattle in dairy farms, continuous monitoring of individual health becomes imperative. Leveraging sensor technology to monitor vital signs such as temperature and heart rate allows for early detection of health issues, reducing the need for frequent health inspections and long-term healthcare costs for the animals.
Keywords: Infrastructure, early detection, health inspections, long-term healthcare costs, cattle health monitoring systems, sensor technology.

I. INTRODUCTION

Agriculture plays a vital role in the development of progressive countries, acting as their backbone. Nowadays, agriculture encompasses various activities like farming, forestry, dairy. Dairy farming has evolved globally, shifting towards large scale operations which focuses on maximising profits because of demand for milk products.This shift has led to a growing need for technologies, such as agricultural mechanization and sophisticated machinery.

Over the past twenty years, one significant area of research in agricultural mechanization is the development of automated animal health monitoring systems. This paper focuses in the realm of cattle health monitoring, there's a focus on affordable sensor Methodology. These sensors Identify abrupt changes in body parameters resembling thermal reading and pulse sensor. The collected data, accessed wirelessly through IOT technology, aids in the early detection of diseases in cattle.

II. LITERATURE SURVEY

1) In 2001, a system was made to put animal information into a computer manually. It helped people find their animals using electronic tags like collars and ear tags.

2) In 2003, a special unit called BMOO(Bovine Mobile Observation Operation Unit) was created to talk to sensors and send data to farmers and using Bluetooth. It used tiny computers called microcontrollers to keep animals close together and stop diseases from spreading.

3) In 2012, a new way to watch over cow health was invented. It used small wireless sensors and smart algorithms to keep an eye on cow data without needing a lot of power.

4) In 2017, a system was developed for monitoring cattle health with temperature probes- LM35, heart rate sensor and motion sensor where the cattle health information is sent to nearby doctor directly.

III. PROBLEM MOTIVATION

Farmers face a challenge as they can't monitor their cattle round the clock, and predicting health issues beforehand is tough. This can negatively impact the health of the cattle. Therefore, there is a need for an automatic health monitoring system that quickly and accurately records health parameters. This system ensures timely and proper treatment for the cattle.

IV. PROPOSED SYSTEM

For developing this livestock management system we used some IOT sensors like temperature sensor and pulse rate sensor.
A MongoDB database for storing the lively sensed data from the sensors. We used Flutter for developing web application.
The project is segmented into three parts (Detectors,Connectivity, Applications).

V. SENSORY SYSTEM

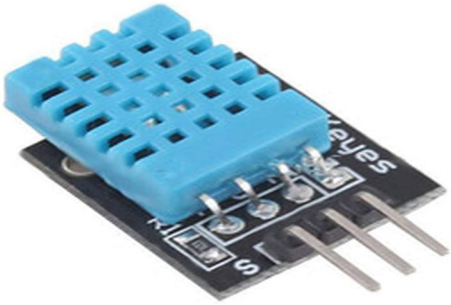
The sensors used in livestock management systems are temperature sensor, pulse sensor, GPS sensor

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A. Temperature Sensor

The DHT11 sensor deployed is a fundamental digital module for measuring temperature and humidity. Cattle typically maintain a temperature range of 38-39 degrees Celsius. Any deviation from this range suggests potential illness in the cattle.



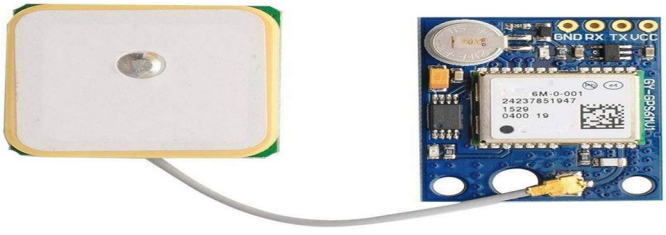
B. Pulse Sensor

Pulse sensor used is MAX30100, It is also known as a heart rate sensor, It is a device designed to measure heartbeat or pulse rate. It typically works by detecting the changes in blood flow of the cattle which is caused by the contraction and relaxation of the heart.



C. GPS Sensor

GPS sensor used is NEO-6M it is a basic GPS(Global Positioning System) sensor. It's commonly used to track the location. If the cattle faces any problem then the location of cattle will directly go to the farmer. This GPS module consists of 3 pins they are VCC, TX and ground, where we connect the NEO_6M to a node MCU.



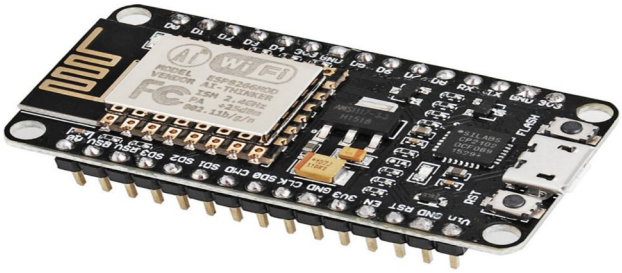
VI. COMMUNICATION

The communication module used in livestock management system is node mcu.

A. ESP8266 Node MCU

It is an IOT development board ESP8266 WiFi module. NodeMCU provides wireless connectivity. This is low cost, small and maintains encryption .It is an open source development board.

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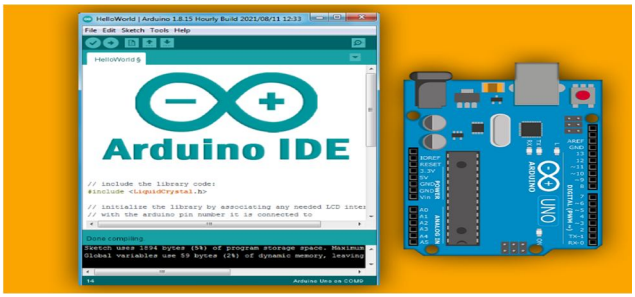


VII. SOFTWARE

The software used in livestock management system are Arduino IDE, MongoDB and flutter.

A. Arduino IDE

The Arduino Integrated Development Environment (IDE) a user friendly Program utility for Development of Arduino microcontroller boards. It offers an simple platform for composing, compiling, and transferring code to Arduino devices, catering to novices and seasoned developers alike.



B. MongoDB

MongoDB stands out as a widely-used open-source database management system, categorized as a NoSQL database. Its design specifically addresses the management and storage of extensive volumes of unstructured or semi-structured data.



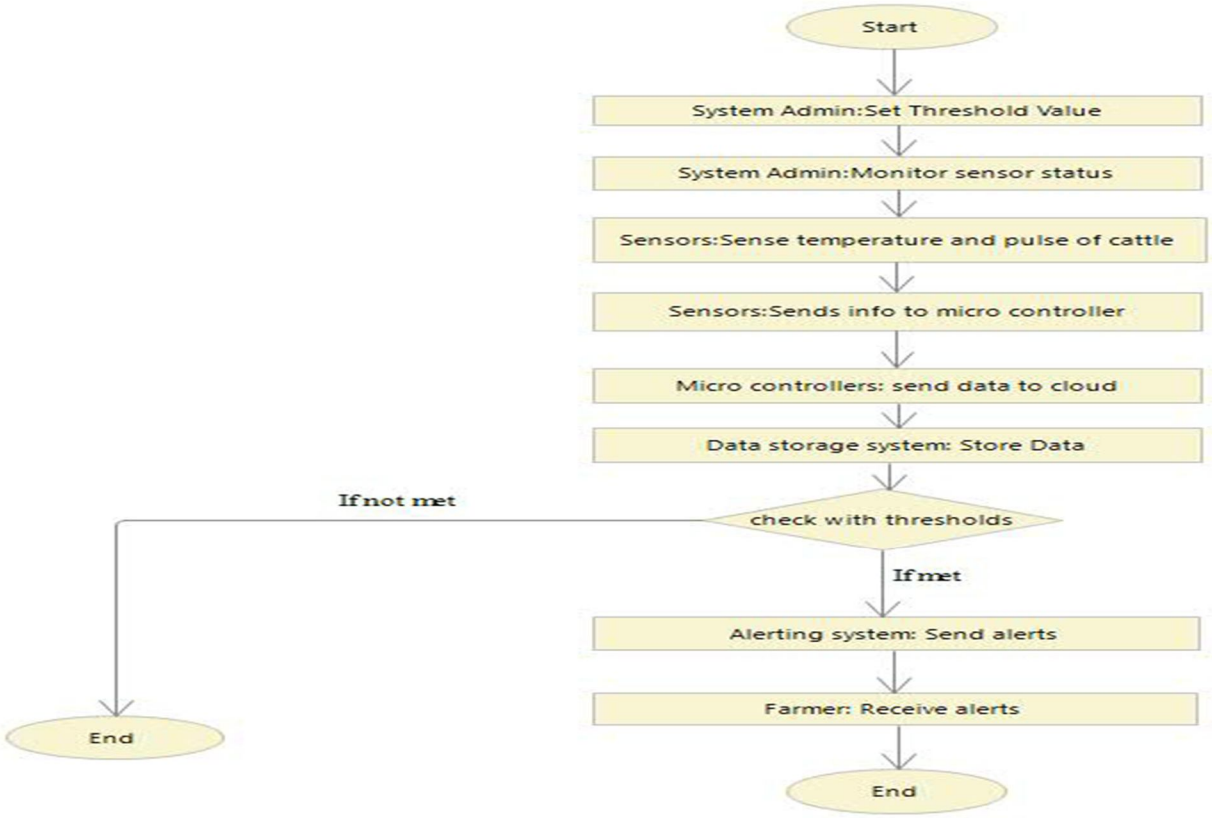
C. Flutter

Flutter, an open-source software development framework developed by Google, empowers developers to construct user interfaces and applications across multiple platforms using a unified codebase.



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VIII. FLOWCHART

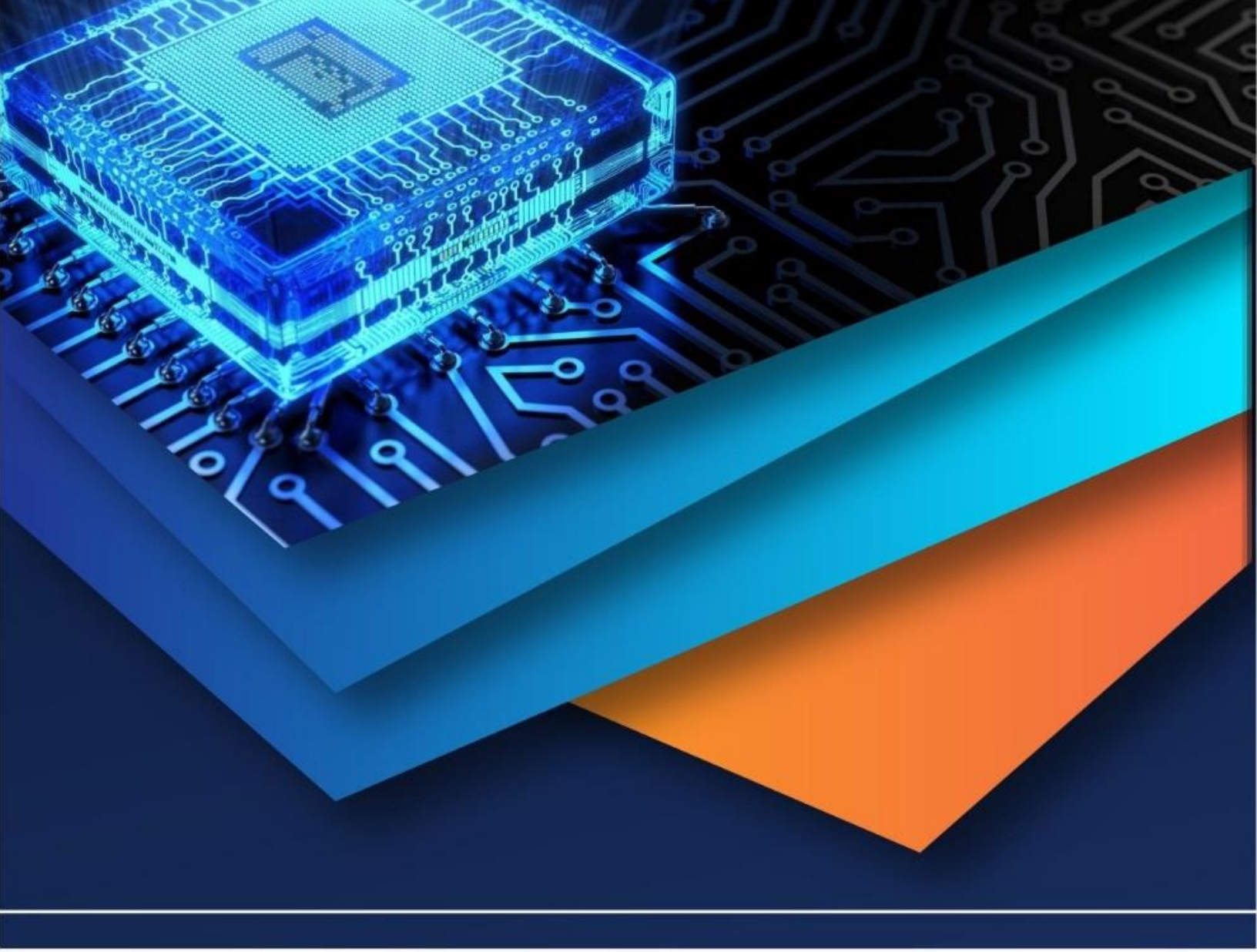


IX. CONCLUSION

In conclusion, the advancement of farm automation, particularly in the realm of cattle health monitoring systems, is revolutionizing the way we manage and care for livestock. With the integration of infrastructure, hardware, and software, these systems enable continuous monitoring of individual cattle health, detecting crucial indicators such as temperature and heart rate. This technology significantly reduces the need for extensive manual health inspections and ultimately cuts down long-term healthcare costs for dairy farmers. By prioritizing the well-being of each animal, we can enhance farm productivity while ensuring the welfare of our cattle population.

REFERENCES

[1] https://www.google.com/patents/US6211789
[2] http://people.cs.ksu.edu/~dan/Vet_Cancun_BMOO_Final.pdf
[3] http://www.bioinfopublication.org/files/articles/2_1_2_JGDC.pdf
[4] https://www.ijareeie.com/upload/2016/april/162_MB160501_Snehal_Paper_V0.pdf
[5] http://s2is.org/ICST-2014/papers/1569961281.pdf
[6] http://www.academia.edu/781755/Cattle_health_monitoring_using_wireless_sensor_networks
[7] http://dinus.ac.id/repository/docs/jurin/15258.pdf



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