

# Automatic Cattle Feeder Using IOT

K Chiranjeevi<sup>1</sup>, R Sai Deepika<sup>2</sup>, G Praveen<sup>3</sup>, S Nikhitha<sup>4</sup>, K Sachin<sup>5</sup>

Associate Professor, Dept. of Electronics & Communication Engineering<sup>1</sup>

UG Students, Dept. of Electronics & Communication Engineering<sup>2,3,4,5</sup>

Christu Jyothi Institute of Technology & Science, Jangaon, Telangana, India

**Abstract:** In modern agriculture, the efficient and timely feeding of livestock is crucial for optimal growth and production. Traditional feeding methods often lead to inconsistencies and inefficiencies, affecting the health and productivity of cattle. This project aims to develop an automatic cattle feeder using Internet of Things (IoT) technology to ensure precise, scheduled, and monitored feeding. The proposed system integrates stepper motors, a real-time clock (RTC), and a network of IoT devices to automate the feeding process. The ESP8266 controls the servo motors to dispense a predefined amount of feed at scheduled intervals. IoT connectivity is achieved using a Wi-Fi module (such as the ESP8266) connected to the Arduino. Farmers can set feeding schedules, adjust feed quantities, and monitor the system's status in real-time from anywhere with internet access. Additionally, the system can send notifications and alerts regarding feeding times, feed levels, and any operational issues..

**Keywords:** agriculture

## I. INTRODUCTION

An automatic cattle feeder system is an advanced solution designed to streamline the feeding process for livestock. It comprises a feed storage unit connected to a delivery system that transports feed to the cattle. Advanced sensors monitor the feed levels and the animals' eating habits, ensuring each animal receives the right amount of food. Intelligent control mechanisms adjust the feed distribution based on factors such as the cattle's age, weight, and breed. With the integration of IoT technology, the system allows for remote monitoring and control, providing real-time data and alerts. The benefits of this system include reduced labor costs, minimized feed wastage, improved feed utilization, and enhanced cattle productivity. It is a user-friendly and low-maintenance tool that promotes efficiency and sustainability in livestock management. An automatic cattle feeder system is designed to streamline and automate the feeding process for livestock, ensuring consistent and efficient distribution of feed. Here's an overview of how it works: An automatic cattle feeder system is designed to streamline and automate the feeding process for livestock, ensuring consistent and efficient distribution of feed.

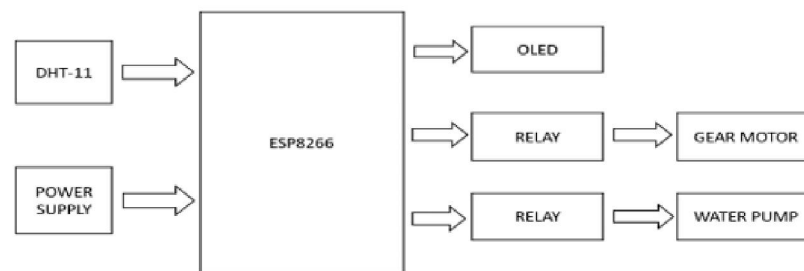


FIGURE:BLOCK DIAGRAM

Figure 1 : Block Diagram



### DHT 11 SENSOR

- The DHT11 sensor provides both **temperature (°C)** and **humidity (% RH)** readings, essential for monitoring the cattle's environment.
- By tracking environmental conditions, it helps feed cattle only when the **temperature and humidity are within a comfortable range**.
- Uses a **digital signal** to communicate with microcontrollers like Arduino, which simplifies the wiring and coding.
- The DHT11 is a **low-cost** and **easy-to-use** sensor, ideal for beginner-level or student projects like a mini cattle feeder.
- Consumes minimal power, making it suitable for systems powered by batteries or solar panels.
- Can be used to **monitor barn or outdoor conditions**, ensuring food is dispensed under healthy environmental settings.
- Directly connects to **Arduino UNO or Nano** using a single digital pin and standard DHT libraries.
- Provides **adequate precision** for general monitoring ( $\pm 2^{\circ}\text{C}$  temperature,  $\pm 5\%$  humidity), though not ideal for critical environments.

## II. AUTOMATIC CATTLE FEEDER USING IOT

The automatic cattle feeder using IoT works by leveraging sensors and internet connectivity to monitor and control feeding schedules. The system is programmed to dispense feed at set times, ensuring cattle receive regular meals. Sensors monitor feed levels, sending alerts when replenishment is needed. The system can be remotely monitored, allowing farmers to track feeding schedules, feed levels, and cattle health in real-time. Data is collected and analyzed to optimize feeding strategies and reduce waste. The system's automation capabilities eliminate human error, ensuring consistent feeding schedules. Alerts are sent to farmers in case of issues like feed shortages or equipment malfunctions. The system can be integrated with other farm management tools, enhancing overall farm efficiency. By leveraging IoT technology, farmers can optimize cattle feeding operations, reduce labor costs, and improve cattle health. The automatic cattle feeder is a reliable and efficient solution for modern cattle farming. It enables farmers to focus on other critical tasks while ensuring their cattle receive the nutrition they need. Overall, the system streamlines cattle feeding operations, promoting better health, growth, and productivity.

## III. EXISTING SYSTEM

Automatic cattle feeders generally use one of several methods to manage feed distribution. Another approach utilizes sensors and cameras to monitor cattle behaviour and adjust feed quantities based on real-time data. Additionally, some systems are integrated with digital platforms that allow farmers to customize feeding schedules and monitor feed consumption remotely.

## IV. PROPOSED METHOD

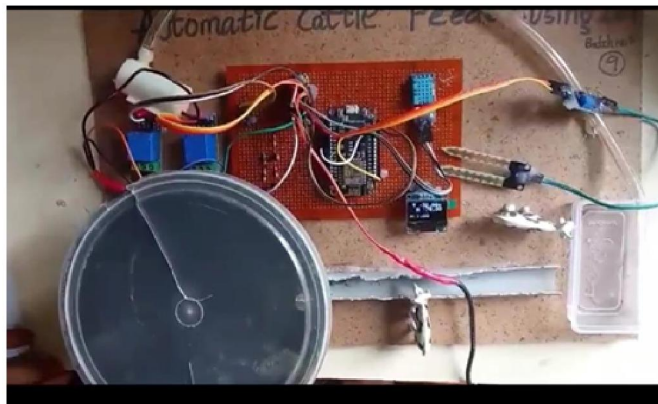
An IoT-based automatic cattle feeder uses sensors to track cattle weight and feeding habits. The system adjusts feed quantities and schedules. This approach optimizes nutrition and minimizes manual intervention. The system typically includes a feed storage unit, a delivery mechanism (such as a conveyor belt or auger), and advanced sensors to monitor feed levels and animal feeding patterns. Intelligent control mechanisms adjust the feed distribution based on factors like cattle weight, age, breed, and environmental conditions.

Integration with IoT technology allows for remote monitoring and control, providing real-time data and alerts to farmers. The proposed system also incorporates advanced control algorithms, such as fuzzy logic or machine learning, to adaptively adjust feed portions and optimize feed distribution. This ensures a balanced diet, minimizes feed wastage, and maximizes cattle nutrition. Additionally, the system is designed to be user-friendly, low maintenance, and scalable, making it a valuable tool for modern livestock management. The system aims to automate the cattle feeding process, making it more efficient, productive, and cost-effective.



## V. RESULTS AND DISCUSSIONS

The implementation of an automatic cattle feeder using IoT has yielded impressive results. The system has increased efficiency by automating feeding schedules, reducing labor costs, and improving feeding consistency. Cattle health has also improved due to regular and precise feeding, promoting better growth and development. Additionally, the system has reduced feed waste by dispensing exact amounts, minimizing unnecessary consumption. Real-time monitoring enables farmers to track feeding schedules, feed levels, and cattle health remotely. Data-driven insights from the system help farmers optimize feeding strategies and make informed decisions. Overall, the automatic cattle feeder has enhanced productivity, reduced operational costs, and increased farm profitability. The system's accuracy and reliability have eliminated human error, ensuring consistent feeding schedules. Furthermore, the data analysis capabilities of the system enable farmers to identify areas for improvement and make data-driven decisions. By leveraging IoT technology, farmers can now manage their cattle feeding operations more efficiently and effectively. The automatic cattle feeder has proven to be a valuable investment for farmers, improving cattle health, reducing costs, and increasing overall farm efficiency.



## VI. CONCLUSION

The automatic cattle feeder using IoT represents a significant advancement in agricultural technology, offering farmers enhanced control and efficiency in livestock management. By integrating IoT sensors and actuators, this system enables remote monitoring and automated feeding schedules tailored to the nutritional needs of cattle. One of the primary benefits of this technology is its ability to optimize feeding routines based on real-time data such as animal weight, feeding patterns, and environmental conditions. This ensures that cattle receive the right amount of feed at the right times, promoting better health and productivity. Moreover, the system can detect deviations in feeding behavior or health indicators, alerting farmers to potential issues promptly.

## REFERENCES

- [1]. G. Bhor, P. Bhandari, R. Ghodekar and S. Deshmukh, "Mini Radar," International Journal of Technical Research and Applications, pp. 68-71, 2016.
- [2]. D. B. Kadam, Y. B. Patil, K. V. Chougale and S. S. Perdeshi, "Arduino Based Moving Radar System," International Journal of Innovative Studies in Sciences and Engineering Technology (IJISSET), vol. 3, no. 4, pp. 23-27, 2017.
- [3]. T. P. Rajan, K. K. Jithin, K. S. Hareesh, C. A. Habeeburahman and A. Jithin, "Range Detection based on Ultrasonic Principle," International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering, vol. 3, no. 2, pp. 7638-7643, 2014.
- [4]. P. S. Abhay, S. K. Akhilesh, P. Amrit and Kriti, "A Review on Ultrasonic Radar Sensor for Security system," Journal of Emerging Technologies and Innovative Research (JETIR), pp. 137-140, 2016.
- [5]. P. P. Arun, M. A. Sudhakar, P. MeghaSunil and S. S. Balaji, "Ultrasonic Distance Meter," SVERIAN Scientific, pp. 1-4, 2015.

