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POULTRY AmGUARD

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ABSTRACT
Poultry farming plays a crucial role in meeting the growing demand for poultry products worldwide. However, maintaining optimal environmental conditions within poultry farms is essential for the health and productivity of the birds. This project proposes the integration of various gas sensors along with a DHT11 sensor for temperature and humidity monitoring, to create an advanced environmental monitoring system for poultry farms. The data collected from these sensors will be processed by a microcontroller, and an IoT connection will enable remote access to real-time environmental data. By implementing this system, poultry farmers will be able to closely monitor key environmental parameters, detect potential hazards such as gas leaks, and take timely corrective actions to ensure the well-being and productivity of their poultry.

Keywords:
Poultry farming, Advanced environmental monitoring system, Gas leaks, Microcontroller, Potential hazards

INTRODUCTION

Poultry farming is a vital sector of the agriculture industry, providing a significant source of protein-rich food products such as eggs and poultry meat. However, the success of poultry farming relies heavily on maintaining optimal environmental conditions within the poultry houses. Factors such as temperature, humidity, and air quality can greatly impact the health, growth, and productivity of the birds. Traditional monitoring systems in poultry farms often lack real-time data and remote accessibility, making it challenging for farmers to promptly identify and address environmental issues. To address these challenges, there is a growing need for advanced monitoring and control systems that provide accurate and timely information about key environmental parameters. In response to this need, this project proposes the integration of gas sensors, including MQ7, MQ2, and MQ137, along with a DHT11 sensor for temperature and humidity measurement, into a comprehensive environmental monitoring system for poultry farms Furthermore, the Rural Health Unit (RHU) is committed in working towards the attainment of the Sustainable Development Goals with the collaboration of the local government, health sectors and its partners on health. The constantly changing heath environment and issues require evidence-based strategies for the service providers, stakeholders, and local government leaders to upgrade health service delivery, financing, regulation, governance, and information system. In the part of the clients, a self-reliant community is targeted to develop so that each family, as basic unit of society, maintains an optimum level of functioning.

OBJECTIVES

To develop an advanced environmental monitoring system for poultry farms, integrating gas sensors (MQ7, MQ2, and MQ137) along with a DHT11 sensor for temperature and humidity measurement, to enable real-time data collection and remote accessibility, thereby facilitating timely detection of environmental hazards and ensuring the health and productivity of poultry.

METHODOLOGY

Most business people and farmers employ conventional techniques for raising poultry. The management of traditional poultry farms is inadequate for preserving chicken health and growth. All poultry-related tasks, such as replenishing the water tank, regularly feeding the chickens, cleaning up chicken excrement, and controlling the lighting in the farm, are carried out by hand. As a result, a lot of labor is needed, and some aspects of the current system are taken into account. There is no effective system in place to handle ammonia gas. The health of chickens is dangerously impacted by ammonia gas. Therefore, infections in poultry are brought on by an excess of ammonia gas. Controlling ammonia gas in farms is crucial. Natural processes regulate humidity and

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temperature. The temperature and humidity are not specifically controlled. Increases in the Methodology ambient temperature and humidity are also harmful to chicken. In conventional farms, the chicken receives intermittent manual feedings and watering When workers don't deliver feed or water on schedule, it negatively affects the growth and output of chickens. More personnel are also required. Therefore, an automated system is required. According to research, the chicken must receive adequate light for optimal egg production. For a chicken, 16 hours of light each day are necessary. The sun provides some of the necessary light (for around 12 hours), and the other portion needs to be manually provided. Therefore, proprietors of poultry farms need a suitable lighting setup. The chicken's health is not preserved by taking the mentioned elements into account. Along with the mentioned factors, other factors like manual labor should be taken into account in this project in order to boost production and obtain healthy chicken. The sensor is positioned in the chicken farm to measure the temperature and humidity of the surrounding area. When the temperature and humidity levels surpass the threshold, the exhaust fan and ventilation window will turn ON. The graphed readings from the DHT22 and MQ135 sensors, both with and without a cooling fan, exhaust fan, or light, are shown in the following Figure. The findings demonstrate that a steady atmosphere inside the barn with a temperature of about 32 degrees Celsius, maintained by a cooling fan and light, is great for raising healthy chicks.

RESULTS AND DISCUSSION

The system sensors read all environmental parameters in the poultry farm. Esp-32 microcontroller is used to monitor the values received from sensors and perform corresponding actions. If input value is greater than the threshold values, send high output to the port else if the input values are less than threshold values then again, the parameters will be read. Four environmental parameters such as temperature, humidity, ammonia gas. The objective of this project is to develop an advanced environmental monitoring system for poultry farming by integrating gas sensors and a DHT11 sensor for temperature and humidity measurement. The system aims to provide real-time data on air quality, temperature, and humidity within poultry houses, enabling poultry farmers to ensure optimal conditions for poultry health and productivity. Additionally, the project seeks to establish IoT connectivity for remote monitoring and control, enhancing the efficiency and sustainability of poultry farming practices.

The system's sensors are tasked with capturing all environmental parameters present in the poultry farm. Utilizing an Esp-32 microcontroller, the system monitors the data received from the sensors and executes corresponding actions accordingly. When the input value surpasses the predefined threshold values, a high output is dispatched to the port. Conversely, if the input values fall below the threshold, the system re-evaluates the parameters. The system encompasses four crucial environmental parameters: temperature, humidity, and the presence of ammonia gas. The primary objective of this project is to design and implement an advanced environmental monitoring system tailored for poultry farming. This involves integrating gas sensors alongside a DHT11 sensor to accurately measure temperature and humidity. The overarching aim is to furnish real-time data concerning air quality, temperature, and humidity levels within poultry houses. Such data empowers poultry farmers to uphold optimal conditions conducive to the health and productivity of their poultry. Furthermore, the project endeavors to establish IoT connectivity to facilitate remote monitoring and control, thereby augmenting the efficiency and sustainability of poultry farming practices.

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CONCLUSION

In conclusion, the integration of advanced gas sensors, temperature, and humidity monitoring capabilities, along with IoT connectivity, offers a promising solution for enhancing environmental monitoring in poultry farming. By providing real-time data, remote accessibility, and proactive management capabilities, this system empowers poultry farmers to optimize conditions within poultry houses, ultimately improving poultry health, welfare, and productivity. The comprehensive approach presented in this project addresses the shortcomings of existing monitoring systems, heralding a new era of efficient and sustainable poultry farming practices.in recent years, it has been done so in a scientific way. In India and other parts of the world, backyard poultry have evolved into

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commercial poultry farming, a lucrative and respectable business. Small farmers and landless labourer's find support in
the poultry farming industry since it can be used as a secondary or supplemental source of income. In reality, India's agricultural sector now cannot function without chicken farming. As a result, an effective automated monitoring system is provided by the project architecture as proposed. Typical poultry farms can become a modern one by utilising IoT., automated chicken farm. The chicken's growth and health are improved with this automated poultry farm. Therefore, a chicken owner can run a successful poultry farming business and earn a good living.
Future enhancement: Future upgrades include the addition of a fire alarm system, The creation of an automatic fire extinguisher system, and the addition of more website content regarding a poultry farm, such as reminders for bird vaccinations and employee information. for poly houses and food preservers, the same approach can be used.

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