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# IOT Based Smart Agricultural System

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**ABSTRACT:** As India is a leading country in the Agricultural field, the major portion of our livelihood and our economy depends on agriculture. Taking this into considerations and also the problems faced by our farmers analyzing scope of improvement and enhancement was greater. The major issues farmers face due to which the crops may fail is they either use many combinations for crop growth or sometimes inaccurate predictions. So to overcome this, we can improvise the traditional agricultural techniques with IoT. IoT is basically an ecosystem which includes many web based smart devices such as sensors and processors. Using these technologies we can help in computing accurate data as this is computer based and will erase maximum human errors. The proposed system will make use of sensors to provide information such as soil moisture, temperature and additively use PIR sensors which will even detect bird pests and using appropriate devices required action can be taken. Farmers will have access to all the information. A database will be provided so the data is successfully stored providing a better schedule for further activities farmer should ideally perform. We will not only provide the information detected by the sensors but also provide predictions based of all the previous evident information collected and processed. It will help farmers in many ways one of the major will be handling water scarcity.

**KEYWORDS:** IoT, Agriculture, Smart farming, Sensors, Controllers, Bird pests, Automation.

## I. INTRODUCTION

Agriculture being India's largest source of economy as well as employment, a major population is dependent on agriculture based occupations for livelihood. Majority of the farming is done using traditional methods of farming which is by manual means. Use of automation techniques can decrease manual intervention which will lessen the human errors in the entire process. Smart farming will help farmers take important decisions for their crops based on the data that is acquired. It will also result in helping the farmer access the entire data associated with his wherever he is.

The Agriculture based business keeps on analyzing newer and efficient ways to improve the cultivation. The quality and quantity of crops particularly in rice fields get deteriorated by bird pests, so minimization of this issue is also possible using smart agricultural system. There is a market requirement of proficient and most efficient techniques for empowering the Agriculturists.

The most important factors affecting the crop cultivation is water, soil contents and protection of the crops. These important factors can be easily managed efficiently using smart agriculture system proposed in this paper. As using water conservatively has been one of the most important factors affecting mankind. This issue has also been taken into consideration , providing a smart irrigation facility for avoiding overuse of water.

Smart Farming system is dependent on majority of engineering fields such as computer science, electronics and telecommunication as well as mechanical which in co-ordination provide best possible outcomes in this sector. The proposed system is automation based so controlling and monitoring are the basic tasks for functioning.

## II. RELATED WORK

In [1] , from this paper we can know better about farming techniques, it proposes a model to collect information with the help of the sensors and deliver the same using Wi-Fi network server. Additionally the server can also take various actions based on the information. This majorly works on collection of information and delivering the same to the recipient.

In [2], this paper includes work based on IoT where sensing the soil parameters is done and water can be provided to the crops using smart irrigation. All this is done to increase crop production, reduce the cost of the yield and have the best possible yield.

In [3], this paper had a detailed study of all the sensors involved in Agriculture. Also it has surveys presenting various case studies regarding techniques and all the devices necessary in smart farming. This paper has presented a general information on the use of WSN using various sensors and sensor nodes available for smart agriculture .

### III. ARCHITECTURE

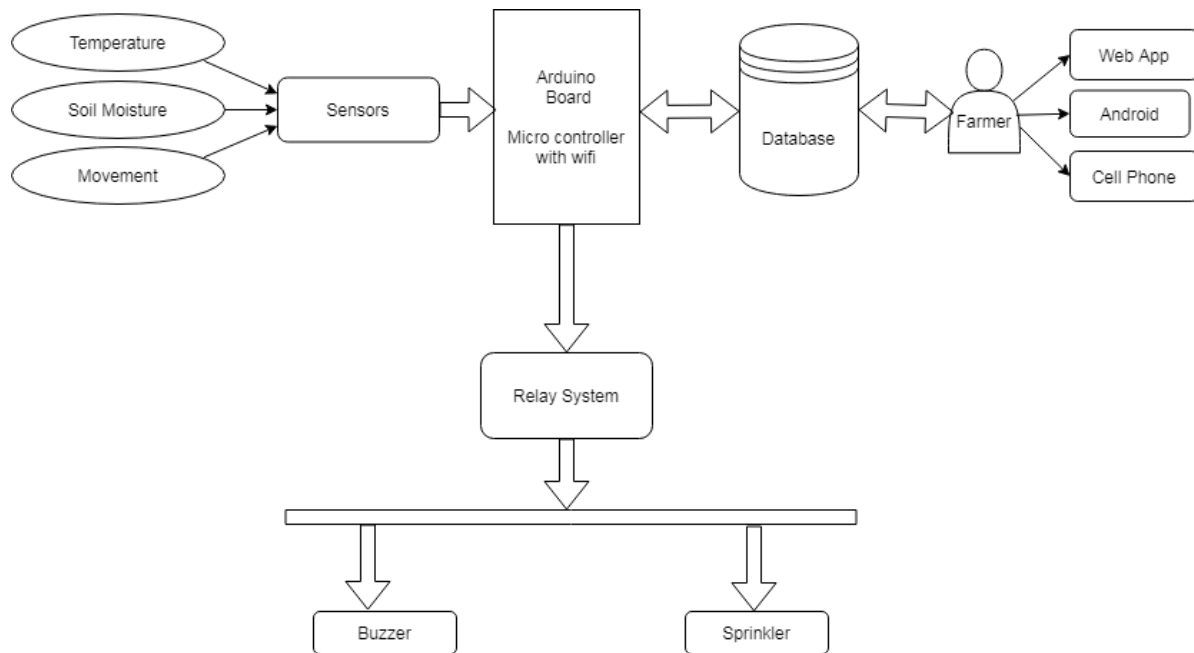


Fig: Architecture of Smart Agricultural System

As shown in the figure, the basic architecture will contain sensors that will sense the data and give information to the microcontroller. The microcontroller firstly send this information to the database for storing and further use for the farmer through three major interfaces that are Cell Phone, App and Web App. Secondly, with the use of the information and the offset it activates the relay system and taking immediate actions as required.

#### Advantages:

- Increase Crop production.
- Efficiency during the whole day.
- Feasible Use of water and other resources.
- Bidirectional communication.
- Automation and Control Without human involvement which leads faster and timely output.

### IV. CONCLUSION

Proposed system provide a feasible solution for use of water and also control temperature, Humidity which helps for improving crop production. The use of PIR sensors and buzzer in the detection of of bird pests is quite effective when used in fields. The buzzer is effective in removing bird pests.

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