IoT Based Smart Agriculture Monitoring System

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ABSTRACT:Agriculture is an integral part of Indian economy. Over 60%Indian population based upon agriculture and one third of income of nation arises from agriculture practices. Hence it plays a vital role in the development of the country. Various issues are continuously hampering the development of country. Possible solution is to opt for modernized agriculture. Hence agriculture can made smart using IOT and other technologies. Smart agriculture increases crop yield, decreases of water wastage

The aim / objective of this project is to propose IoT based Smart Farming assisting farmers in getting Live Data (Temperature, Soil Moisture) for efficient environment monitoring which will enable them to increase their overall yield and quality of products. The IoT based Smart Farming System being proposed via this report is integrated with Arduino Technology mixed with different Sensors and a WIFI module producing live data feed that can be obtained online from Thingsspeak.com. The product being proposed is tested on Live Agriculture Fields giving high accuracy over 98% in data feeds.

KEYWORDS: LCD,MCU,LED,IOT,LDR

I . INTRODUCTION

Agriculture is the primary occupation in India and is the backbone of Indian economic system. Agriculture provides employment opportunities to rural people on a large scale in underdeveloped and developing countries in addition to providing food.

It is the process ofproducing food, fiber and many other desired products by the cultivation and raising ofdomestic animals. Agriculture is the primary source of livelihood for about more than 58% of India's population. Climate changes will have significant impact on agriculture by increasing water demand and limiting crop productivity in areas where irrigation is most needed. Irrigation system, rain fed agriculture, groundwater irrigation is some of the methods introduced to produce healthier crops which may not use water efficiently. In order to use water efficiently asmart system is designed. In the system farmer need not make the water flow into fieldsmanually, but the system automatically does that efficiently. The traditional methods practicedby people may result in huge wastage of water. Hence, the concept of robotized farming withmix of IoT has been developed.

The technological advancements began to increase theefficiency of production remarkably thus, making it a reliable system. The knowledge ofproperties of soil determines the water supply to be driven in a smart way. The practice ofagriculture in a smart way helps to acquire knowledge of soil and temperature conditions.

Developing the smart agriculture using IoT based systems not only increases the production but also avoids wastage of water. The soil moisture sensor, humidity and temperature sensorcontinuously monitor the soil and environmental conditions, sends the live data to smartphonevia cloud service. While raining, the moisture content may increase several times. A rain-dropdetecting sensor intimates the controller if there is rainfall, making the water supply to reduceor stop depending upon the moisture content at the moment. The crop requirements such asamount of humidity, temperature and moisture content are to be studied and can be installedagain in the controller to meet its circumstances. In this paper, the system uses few sensors
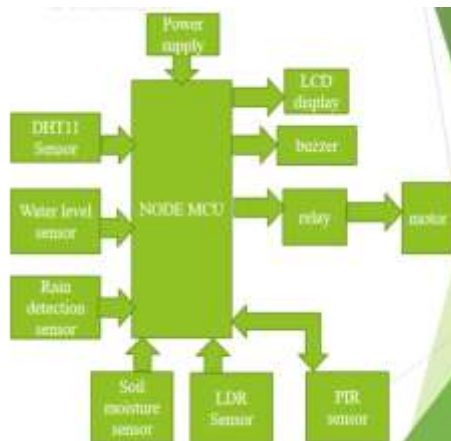
which gives the amount of moisture in the soil, the humidity and temperature of the region, anda rain detecting sensor which and can be used in deciding whether the crop is suitable forgrowing.

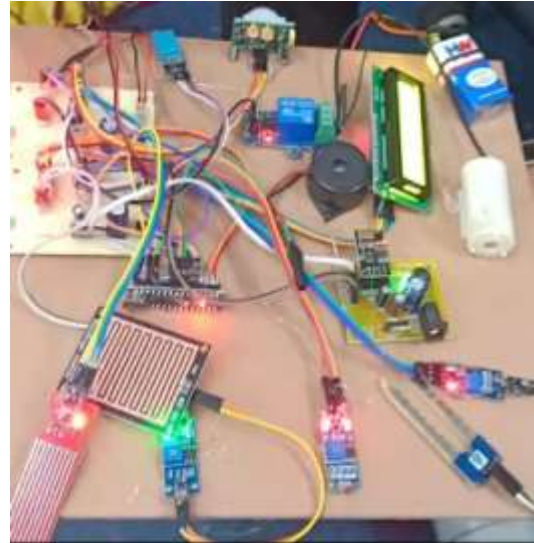All these sensors along with NodeMCU are connected to the internet and a Smartphone.

II . FLOW CHART
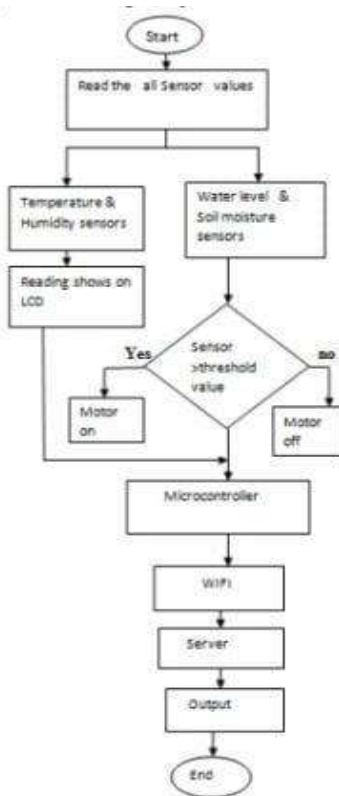
III. MODELING AND ANALYSIS

IV.RESULTS AND DISCUSSION

Temperature value display

Humidity value display

V.CONCLUSION

In this paper, IoT technology is used to sense and analyse the temperature, humidity level, soil moisture level and the rain condition and DC motor is controlled using NodeMCU. All these values are sent to the smart phone using Wi-Fi. Due to the usage of this system, adequate water is pumped and rain is also utilized efficiently. This system is very much helpful to farmers as they need to regularly pump water and check the status of each crop. From anywhere in the world, farmers can know the values of humidity, temperature and

soil moisture and if the DC motor is ON through the blank app present in their smartphones.

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