A SURVEY ON SMART AGRONOMIC AUTOMATED IRRIGATION SYSTEM USING IOT

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ABSTRACT:

A major economic growth of any part of the world is totally Depend on agronomics. Soil is the critical part of a successful agriculture and it is an original source of nutrients. If the Hydration Level of the soil is optimum for plant growth, so that the water could be easily penetrated into the soil and absorbed by plants. Increase or Decrease of soil moisture leads to many plant disease, to overcome this problem we propose to Build a smart Agronomic system that uses the advantages of Forefront technology such as Internet of things, Wireless Sensor Network and Cloud Computing to help Agronomers to improve the way of Agronomic field using sensors like temperature and humidity sensors, soil moisture capacitive sensors. This sensors Collects information about the Agronomic field and Favour agronomers to take precise decision. The issues due to abnormal irrigation becomes increasingly prominent, which affects the crop health and also human who depends on crop. We propose smart automation on irrigation system to protect it from unwanted disease and disaster. And also we can increase productivity and perfect utilization of water. This Process can be monitored and Accessed easily by Collecting data's and disseminate the same data and that could be stored in cloud or local. The data Accessing Process ensures the Accuracy, improves the ability Performance and Uprightness of data. The Fetched data Information are upgraded to the cloud dataset so that it can be Observed/recuparate/anatomized for ensuing utilization. The upgraded data are Superintendent in database Software package, this accessible

information is for the Agronomers can discover the evidence as per the desideratum using Android app. Test Outcome shows that the proposed system is very meticulous, coherent and best appropriate for today's agronomics.

Keywords: Temperature and Humidity sensors (DHT22), Soil moisture sensor, LDR sensor, at mega 328 microcontroller, RF module, Automation, Android app.

INTRODUCTION:

People without agriculture may end up badly, a day without agriculture would put more than 22 million people out of work approximately not only that people will die due to Starvation. We know that population keeps on increasing yearly and in need of high production of crops to tolerate such population. Therefore, their constitution hang on deliberately the agronomic circumstance in which they live. Hence, conscientious attentiveness considering safety measures and congenial for agronomic circumstance. As a major vital part of the agronomic circumstance, strong attention should also be paid for Automated Inundation system, since irrigation plays a keen role in both create and destroy of the crop. Frequently observing inundation is mandatory to make sure that the people get enough food and stay healthy and safeguard their environment.

In day to day reality agronomic monitoring system keeps agronomers to stay alert to any disaster or disease that probably present in an agronomic circumstance that takes place everyday. A spectacular agronomic monitoring system must indicate the users about the source and the reason for disaster (for real time example: increased soil moisture might lead to root rot disease in plants). A smart agronomic superintend system with numerous features is proposed in this paper agronomic superintend system. This agronomic superintend system could discover and gives data information to users and also operates automatically without involving human.

Approximately 60-70% population of India directly depend or indirectly depend on agronomic growth. That effects on food security and economic growth of India. With help of precision, agriculture process can easily superintend or observe of crop growth based on collected information (soil condition and weather information) from a crop field. This processing mechanism can also called as satellite framing or site-specific crop management (SSCM), manually can't able to fetch agronomic circumstance information because it is a difficult task. New agronomist emerging out without knowledge of soil characteristics because skimpy soil testing labs accurately not obtainable in many states of the country. So now what is the mandatory in using Internet of Things in agronomics? The answer to this problem is collecting data manually; Exactly it is a difficult for agronomers to work from the crop field. So it is tough for farmers to get positive levels of accuracy. To solve this difficulty, IoT(Internet of Things) is only the solution. It plays vital role

in collecting information. IoT has been already in raising with enumerous multiple technology. In this paper, a survey on smart agronomic Internet of Things with cloud computing is taken out to comprehend the recent IoT based technical developments in smart agronomic is explained in section, section describes a textual designing model for IoT and wireless sensor network based agronomic with cloud computing, section determined a analysing hardware of architecture, section describes a mathematical explanation, section determines a future work.

RELATED WORK:

Zhao Liqiang and et al[1][2][3] have discussed an agronomic implementations of wireless sensor network for farm field superintend . This system fully equipped with two type sensor nodes to calculate humidity, temperature and an image sensing node for comparison of information to take a good decision making for ease crop with in a time. The parameters are temperature, humidity and images. By following these methods can achieve high stability of sensors with consumption of low power. With a long period of superintending the agronomic field area.

Keerthi.v and et al[4] have tackle about a greenhouse superintend system based on agronomic IoT with a cloud. In a greenhouse, management can superintend various agronomic circumstance parameters efficiently using sensor devices such as light sensor, temperature sensor, relative humidity sensor and soil moisture sensor**.** Periodically (30 seconds) the sensors are all about gathering information of agronomic field area, being logged, saved online using cloud computing and Internet of Things.

Rajalakshmi.p and et al[5] have tackle to superintend a crop-field system is build by using sensors and relating to the decision from a server based on sensor data, the inundation system is automated. With the use of wireless transmission the sensor data forwarded towards to web server database. If irrigation is automated that means if the humidity and temperature fields fall downward towards the dormant range. The user can superintend and remote controls the system with the help of app hence issues the user a web interface.

Baltej Kaur and et al[6] have tackle a smart drip inundation system. In this, To reduce the Human involvement they develop an android application for easy use and it used for controlling and superintending remote accessing the crop area. Scarcity of water can be reduced by using the drip inundation system and based on the information that gathered from water level sensor the work is implemented. Various types of sensors are used to superintend the circumstance conditions.

Parameswaran.G and et al[7][8][9] have tackle a smart inundation systems using Internet of Things. To calculate humidity and levels of Water in soil and Few wireless sensors are Obtained. These sensor data are sent to a smart portal through a network and using another portal is called

Generic IoT border router wireless Br 1000. From that portal, the data is sent to a web service via network. based on development in agronomic with cloud computing.

Nikesh Gondchawar and et al[11] have tackle the IoT based smart agronomic system designated for performing different agronomic activities like spray, weed the crops and also sensing moisture level, scaring of birds and animals.

Gayathri.R and et al[12] have tackle a robot based on GPS and had developed for this agronomic process. Here one clever method of making decision is proposed for smart controlling the field and smart irrigation system for superintendent agronomic area along with database management Software.

Srisruthi.S and et al[13] have tackle to farm superintendent automatically and inundation technology which refer broad range of sensors to remotely stimulate and superintendent different parameters of the soil like temperature , humidity and stability by controlling the water supply and land fertilization.

Thulasi Priya.C and et al[14][15] have tackle GSM used dispensed imaging devices which are accessed through a wireless sensor network. GSM is usad to collect and pass images of the holding area to a remote host station. To the agronomers the Android mobile information relevant to pesticides amassment is sent through call or message. This methological process only finds pests won't recommends any method to jurisdiction the pests. For Jurisdicting the disease of crops one spray system is required for utilization of pesticides.

AGRONOMIC IMPEDIMENTS:

Agronomics mainly pivot on cloudiness, tendency of climate, and water convenient to Prosper. It is easily impacted by natural events and disaster.

Tendency of climatic different change can make a mess of our consumable food obtainability, truncate availability to food and affect quality of food. For example, extrapolate increase in antipode temperature, changes in cloudburst patterns, changes in extreme cloudiness events, and reductions in water availability may result in reduced productivity of agronomic.

The major disaster of agronomics is increase or decrease state of irrigation. Proliferate evaporation in inundate areas causes lack of stability in the aerosphere, as well as increase levels of rainy windward of inundate. These frequently changing climate are reasons for direct culmination of variation in naturally occurring moisture levels in the circumstances of aerosphere. Inundate is nothing but human orchestrate of the pertaining to hydrologic cycle to exploit crop fabrication and quality to decrease economic efforts of drouth. Necessity of inundate is important because falling of rain is comparitively less than the water prerequisite of the crops, sufficient rainfall is there but the momentous jurisdiction of rainfall is not as per the need. If irrigation is maintained in the correct proportion the soil moisture remains perfect and helps in plant growth which also results in increased productivity of food, modification of soil or climate leads to leaching in environment. Less danger of lamentable damage due to drouth, increased economic income and national cash

flow, increase labour employee, increased living standard, increased land value, security of nation hence self sufficiency, improve interaction and to facilitate navigation, supply of water to domestic and industrial areas. Improvement of ground level water storage, Generating power to hydro-electric power.

The impediments that causes disaster to the agronomic fields are back logging of water, formation of saline and alkaline of land, worse soil aeration, underground pollution of water, ends in coldest and dampest climatic change by causing outburst of infection like dengue, malaria, hindrance in air communication, reduction in temperature of soil, shallowness of roots, marshy lands, more nitrate formation, shortage of soil nutrients, acidity of soil, collection of other harmful salts and alkaline, decrease in activities of living organisms.

When there is excessing amount of soil moisture is present in the soil there develops plant diseases like root rot, physoderma brown spot, crazy top disease, phytopththora root rot.

When there is lack of soil moisture is present in the soil there develops a plant disease like all disease of cereals, charcoal rot of corn, charcoal rot of sorghum, charcoal rot of soybean, common scab of potato, onion white rot.

Here not only plants and crops are affected the living beings who consume this also get affected and not only that there will be a drop in our economic system, then there will be no sufficient production of crops or yields, since there is a continuous increase in population there must be also equal increase in crop production to meet individual needs its every living being right to have their healthy food there must be no scarcity of water and there must be well balanced economic ranges. To meet that economic ranges there must be increased production of crops to the increased production of population without any wastage of water.

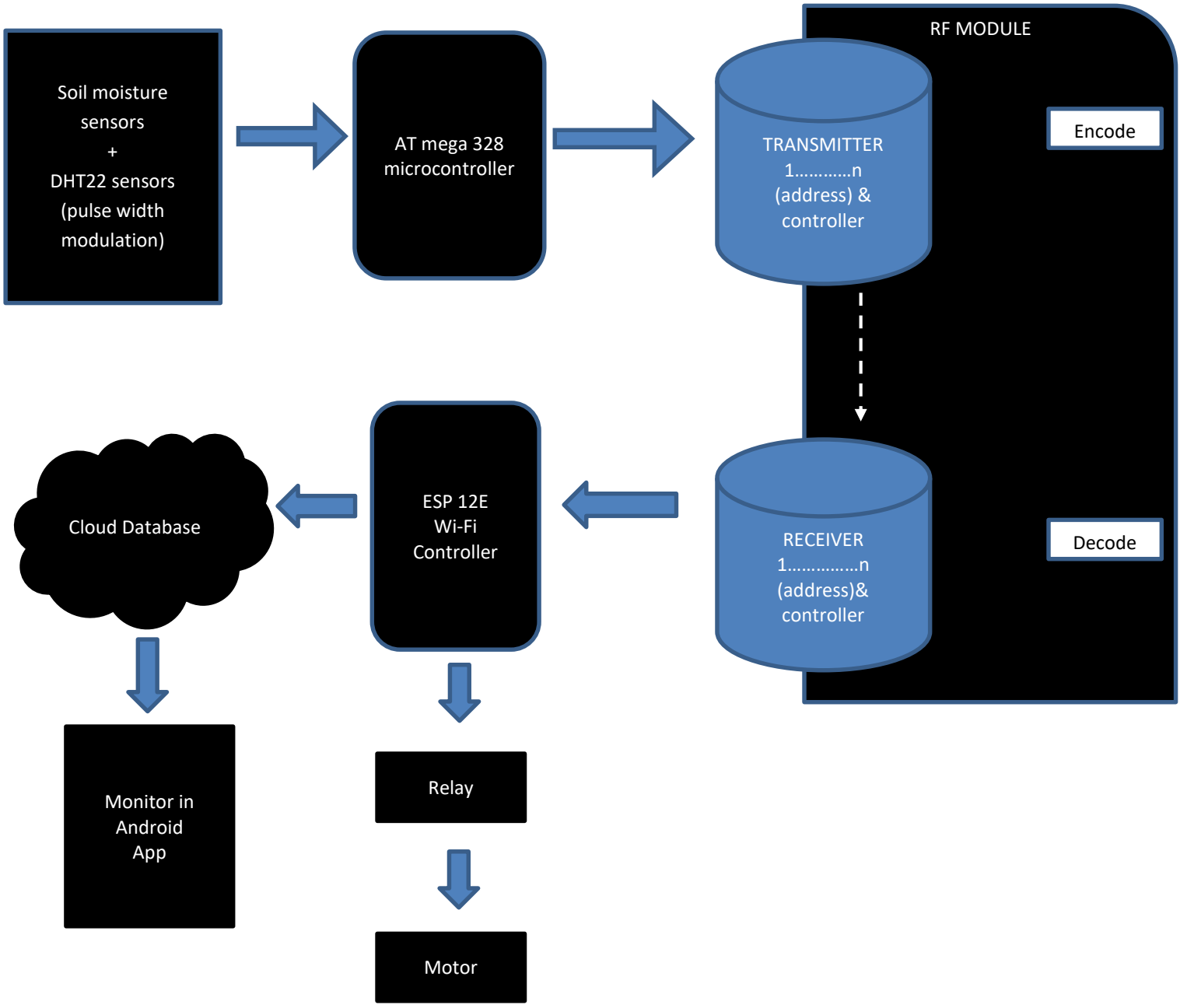
To overcome these all kind of troubles mentioned above there must be strict monitoring system, to have an efficient utilization of water there must be automated irrigation system and also correct accurate reading of soil moisture to indicate when to irrigate and when to stop the data's are collected and stored in cloud and analysis can be made by the user from his place.

PROPOSED WORK:

A good soil moisture leads to a spectacular production of crops .Here we set a low power consumption DHT22 sensors (temperature & humidity) which shows accurate readings comparative to other sensors and also soil moisture capacitive sensor which does not corrode through pulse modulation signal The data's are collected in transmitter which is an NRF module and it is received by the receiver that is user with the same NRF module ,these both NRF modules communicates via SSI and ESB communication protocol through rf frequency and Receiver receives data from those sensors and that stored in a cloud ,each and every data is monitored, all those data can be stored in local or cloud it depends on user. If the soil moisture is adequate the automated irrigation system is stopped using relay control, if the soil moisture value is dry the RF module sends message to receiver. Receiver circuit board integrated with controller which handles water pump control. By doing this the water irrigation is automated by monitoring the sensors value and each values are

stored in the cloud and the farmers get indicated through smart app. And those data's stored is also used for future analysis of plant disease,where the data is also used to analyse the cause of the disease.

BLOCK DIAGRAM:



CONCLUSION:

Wireless sensors are deployed, monitored the activation of Agronomic field and their collected information is transmitted to server so that the end user can easily see the data's related to soil moisture, temperature, humidity, impediments in server. System can segment the indication and automation so that a good superintendent and monitoring method by reducing the human involvement effectively .

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