

CLOUD BASED FARM MONITORING USING IOT

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Abstract:

Progressing nations like India have a gigantic zone of work in progress and development. Regardless, because of the anticipated drafts and jumble up of the green pass on, there is a requirement for phenomenal importance to invigorate our agribusiness gadgets being adjusted to end up sharp. The goal of the work is productive usage of the characteristic assets like water, sunlight based power and achieve high harvest yielding. The proposed framework is a robotized clever agribot that tackles sun oriented force and screen the utilization of water for the yield dependent on soil dampness, temperature, and mugginess levels.It's two-way controlled, one is Automatic and the subsequent one is Bluetooth controlled. The robot is customized so that it stops for like clockwork in the field to permit the sensors to peruse the separate qualities. The robot module gets power supply through a battery, which gets re-energized ceaselessly through the sun based board when not being used.

Keywords—GDP, GSM, LED, AVR, Wi-Fi.

I. INTRODUCTION

India is a nation to a great extent dependent on Agriculture. Horticulture contributes 18% of India's Gross homegrown item (GDP). Horticulture gives work to half of the labor force in India. Indian Agriculture relies upon a great deal of assets like water assets, climatic conditions, workforce, power, and fuel energy. There are numerous difficulties looked by the agribusiness area in view of different components. Numerous nations have agribusiness as their principle wellspring of living. Accessibility of water assets assumes a vital part in farming return and benefits. As the accessibility of normal water is exceptionally subject to precipitation and reservation of water, there is a requirement for a substitute wellspring of water supply. As India is a country that has enormous areas of labor force and income associated with farming, there is a requirement for the innovative work in horticulture designs by utilizing advancements that expand the yielding and effectively uses the assets. The greater part of the engine siphons use fuel energy which has their own challenges in keeping up the engines. The current water system

strategies need the robotization of siphons and can't anticipate the running season of the siphons because of which they need the avoidance of abuse of assets like power and water. Examination and constant observing of the ranch are required for more powerful harvest yield.

Developing nations like India have a colossal zone of work in progress and development. Regardless, by virtue of the anticipated drafts and jumble up of the green pass on, there is a requirement for uncommon importance to invigorate our agribusiness gadgets being altered to end up sharp. The article proposes a system for the fitting association of lacking developing materials of construction with IoT. This structure comprises of three portions: distant detecting place focuses, IoT doorway/passage and an association's worker. For each sensor place point will relate with detecting frameworks like temperature, dampness, and soil stickiness. For each sensor place point given Wi-Fi openness to send sensor gathered information and acquiring power signs to an association worker by IoT. The association workers store assessments, procedures sensor gathered information, and it makes controlling movements in context of the recently characterized boundaries.

II. LITERATURE REVIEW

In this paper the methodology screens different boundaries and keeps up the qualities based soil conditions. The rancher gets a SMS in regards to the siphon activity state. (1) Microcontroller and GSM module are associated with MAX232. Sensors are planted in various pieces of the field, and the sensors esteems are associated. In the proposed work, the utilization of GSM module just encourages the rancher to know the siphon activity state. The proposed model just accentuation on the condition of siphon activity and transmission of the message to the rancher through the GSM module [1].

The proposed model uses Arduino microcontroller and sensors to gather the information and transfer through Wi-Fi module. The proposed framework additionally utilizes a LDR sensor to assess the power of daylight present over the plants. This framework screens the yield over regular assets like daylight and water fundamental for planets. Soil dampness sensors are utilized to measure the amount of dampness in the dirt. On the off chance that the dirt dampness is not exactly the normal level, the siphon engine is determined to for 30 seconds. This model screens over the photosynthesis in plants [2]. This keen farming framework constantly screens the wellbeing of yields and helps in boosting the nature of the harvest.

In the proposed structure includes three basic parts; moisture is separating part, control an area, and yield partition. Earth wetness was seen utilizing YL69 soil sensor. Control unit was developed utilizing ATmega 328 microcontroller dependent on Arduino stage. Yield is water structure framework which is worked by the control unit by turning it on or off subordinate upon soil dampness substance. 2 times of arrangement were gotten a handle on; equipment and programming. Significant working standard behind this framework is in accomplice earth wetness sensor, which is inserted into the plant, to Arduino microcontroller.

Appraisal of soil moisture is finished by a sensor which advances the data and limits concerning the earth saturation to the microcontroller controlling the siphon. In this event, the component of soil dampness plunges under express respect, Microcontroller conveys pennant to move module which by then runs a siphon, and a particular extent of water is given to plant. Right when enough water is passed on, the siphon quits achieving designated work. Supply of force has an errand to control the hard and fast construction, and the supported voltage should regard the data supply go for the microcontroller, that is, from 7V to 12V.

Hand-off module is a key circuit including a solitary semiconductor controlled circumspectly by the microcontroller. Redone plant watering structure utilizing Arduino microcontroller UNO R3 is modified with extreme target which offers jump in on clues to the engine by techniques for engine driver module. Soil sensor is connected with A0 stick to Arduino board recognizing soaked quality substance present in earth. In whatever point earth wetness content qualities goes down, the sensor perceives the industriousness change, offering a sign to a microcontroller with a target that siphon can be actuated. Proposed thought can be utilized for modified plant watering framework [3].

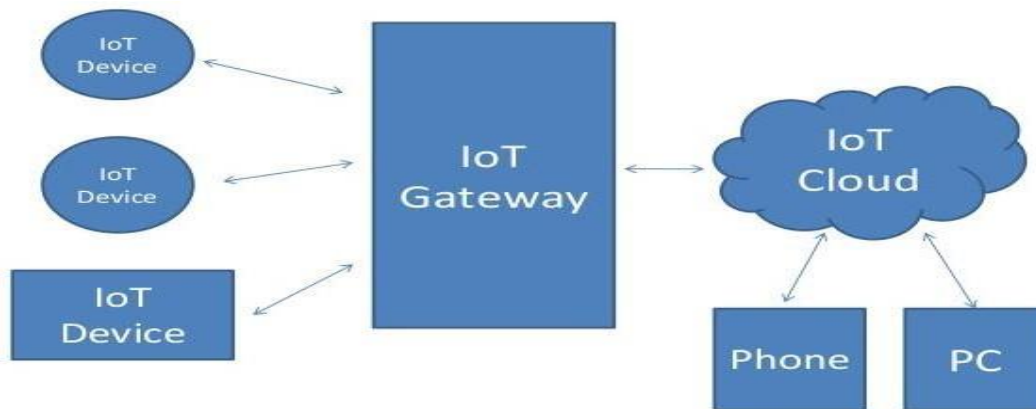
In [5] plant manual for seed improvement: An Agribot, Machine understanding is making improvement that has progressed towards various fields of construction and progress. Sharp robots are eaten by bit being executed in development, Very close Agribot expected to recognize authority over agrarian zones and used in various irritating, dull undertakings including agro-business. These are changed into the inevitable possible destiny of agro-business.

In [6] the arrangement and action of Wi-Fi agribot joined structure, the proposed model incorporates an agribot that helps with finding the circumstance of the seeds planted. The proposed model uses an Arduino board embedded with ATMEGA 328 microcontroller. Underbody material exhibit empowers agribot knowing whether the seed is planted nearby stunning isolating and centrality. AgriBot can tunnel, sow a seed in the opening, spread soil over seed, and apply pre progress fertilizers or potentially herbicides close by checking director. AgriBot at that point can move distinctive agribots in a word territory which needs help planting over the region and continue ahead by going on through Wi-Fi..

III. PROPOSED METHOD

The proposed framework is a robotized keen agribot that bridles sun based force and screen the use of water for the harvest dependent on soil dampness, temperature, and stickiness levels. The sun powered energy is caught utilizing photovoltaic receptor cells and used for charging the battery of the robot. This system comprises of three sections: distant detecting community focuses, IoT doorway, and an association's worker. For each sensor community point will relate with detecting frameworks like temperature, dampness, and moistness. For each sensor community point given Wi-Fi availability to sending sensor gathered information and acquiring power signs to an association worker by IoT. The association workers get, store

Fig1. Block Diagram



The Fig1, addresses the model of the proposed structure. The model involves three modules. The fundamental module includes a mechanized module that contains an Arduino board that joins each valuable portion. The ultrasonic sensor is used to control the preview of the robot in avoiding the obstacles. The robot stops for at normal stretches in its trip to accumulate the assessments of sogginess, temperature, and moisture and updates it to the cloud. The Agribot is constrained by sun based energy.

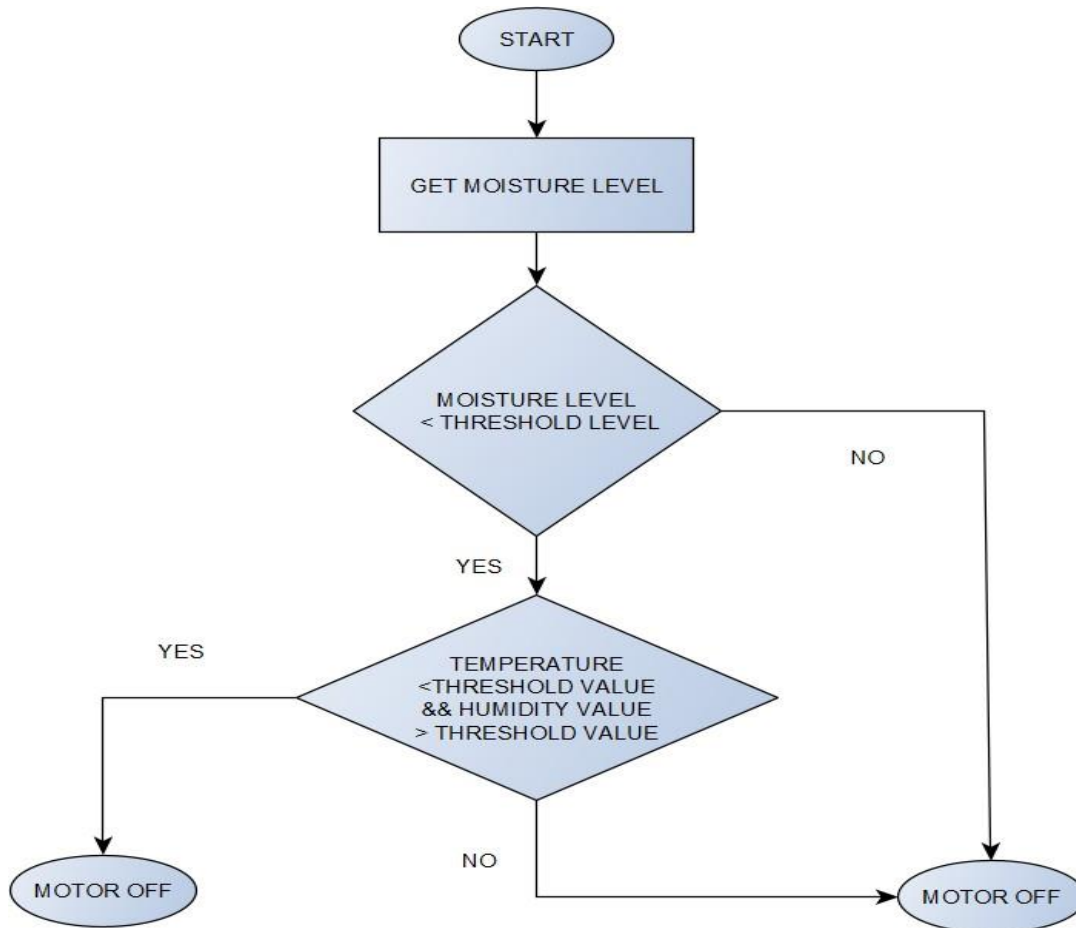


Fig2. Flow chart representing the algorithm

The above graph in Fig2 addresses the calculation continued in the post-preparing of the framework; this structure comprises of three sections: far off detecting community focuses, IoT entrance, and an association's worker. For each sensor community point will relate with detecting frameworks like temperature, dampness, and stickiness. For each sensor place point given Wi-Fi availability to sending sensor gathered information and acquiring power signs to an association worker by IoT. The association workers get, store assessments, procedures sensor gathered information, and it makes controlling movements in context of the recently characterized boundaries. The above calculation utilizes soil dampness, temperature, and moistness esteems to characterize the siphon activity time. At where the dampness level is gathered, the primary condition is looked at whether the dirt dampness esteem surpasses as far as possible.

If the soil sogginess outperforms the value set to edge, by then the siphon motor is in this manner off state. In case the value set to edge isn't recognized, by then regard set to cutoff points of temperature and moisture are checked and in case the edge conditions are not reached, by then the siphon movement time is portrayed and the time is given as deferral to the exchange and the siphon motor is killed for a described time stretch. If the cutoff conditions are met, by then the system stays in the tuned off state, and the agribot continually screens the clamminess levels all through the yield field.

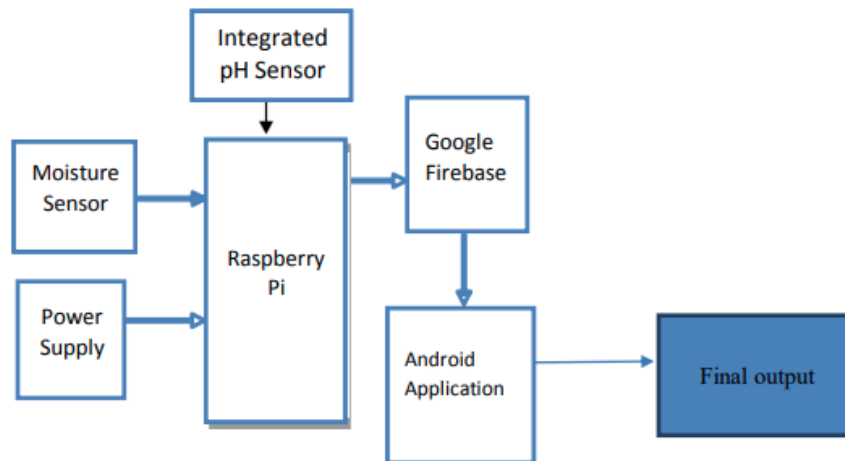


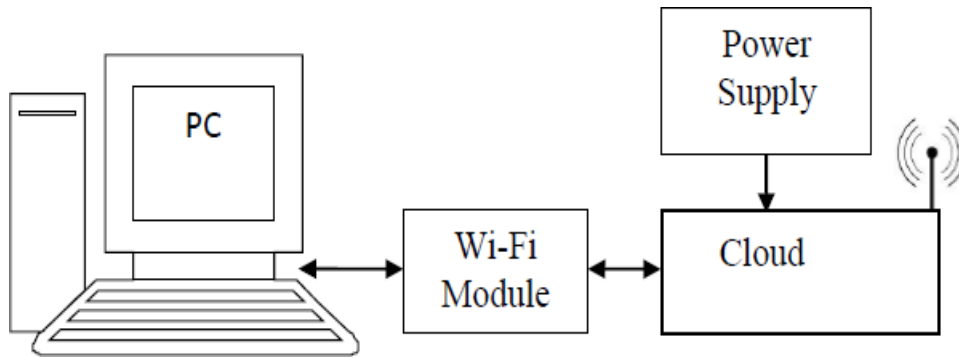
Fig3.Architecture Diagram

The automated module comprises of Arduino Uno R3 Atmega 328P (5V) as a microcontroller. The engine driver module L293D is associated with the yield port of the microcontroller and drives the robot. A Two wheel robot skeleton is utilized to demonstrate the robot with microcontrollers, sensors and engine driver. A ultrasonic sensor is introduced to the robot module to stay away from the snags by taking a turn before the customized distance. The agribot likewise has a Bluetooth control include and introduced with 8293D Bluetooth module. The sensors module comprises of computerized soil dampness sensor (working voltage 3.3-5V) to peruse the estimations of soil dampness esteems and move them to the cloud for additional handling. The sensor DHT 11 is utilized for perusing the estimations of temperature and stickiness and through the wifi module refreshes the incentive to the cloud. The WIFI module utilized is ESP8266.

The agrobot screens the yield field bridling sun based energy and gathers the sensor estimations of soil dampness, temperature, mugginess, and gas. The mechanical module comprises of Arduino microcontroller. The engine driver module is associated with the yield port of the microcontroller and drives the robot. A Two wheel robot frame is utilized to display the robot with microcontrollers, sensors and engine driver. A ultrasonic sensor is introduced to the robot module to evade the snags by taking a turn before the customized distance. The agribot likewise has a Bluetooth control highlight and introduced with Bluetooth module. The agribot stops for each characterized time frame and gathers the sensor esteems and updates to cloud through Wi-Fi module. The time span is figured in the further modules of the framework.

This sensor module is expected to build up a framework with an organization of sensors associated with a microcontroller to detect the data of various boundaries like soil dampness, temperature, moistness, and gas .The Prototype comprises of computerized soil dampness sensor to peruse the estimations of soil dampness esteems and move them to the cloud for additional handling. A sensor is utilized for perusing the estimations of temperature and moistness and through the WIFI module refreshes the incentive to the cloud. A WIFI module used to communicate the sensor esteems procured to the cloud. The cloud administration used to store the sensor readings and examine the readings.

Fig4. Receiver module



The Prototype comprises of advanced soil dampness sensor (working voltage 3.3-5V) to peruse the estimations of soil dampness esteems and move them to the cloud for additional handling. The sensor DHT 11 is utilized for perusing the estimations of temperature and mugginess and through the WIFI module refreshes the incentive to the cloud. The WIFI module utilized is ESP8266. The cloud administration utilized is Tamilgurukulam.com which is utilized to store the sensor readings and break down the readings.

IV. RESULTS AND DISCUSSION

The sensor readings are consistently refreshed to the cloud. The qualities are put away as demonstrated in table1. All the sensor readings (soil dampness, temperature, mugginess, and gas) are put away at the cloud at the particular timings. All the crude information can be utilized for additional investigation.

S.No	Temp	Humidity	GAS	SOIL	Time
1	33.00	35.00	92	-86	April 2 2019 12:58
2	33.00	35.00	39	-86	April 2 2019 1:04
3	33.00	35.00	61	-85	April 2 2019 1:04
4	33.00	35.00	59	-85	April 2 2019 1:04
5	33.00	35.00	60	-86	April 2 2019 1:04
6	33.00	35.00	60	-84	April 2 2019 1:04
7	33.00	35.00	56	-85	April 2 2019 1:05
8	33.00	35.00	56	-84	April 2 2019 1:06
9	33.00	35.00	55	-85	April 2 2019 1:06
10	33.00	34.00	52	-85	April 2 2019 1:07
11	33.00	34.00	53	-84	April 2 2019 1:07
12	33.00	34.00	51	-86	April 2 2019 1:07

Table1. Sensor values

The crude information at the cloud worker is addressed as diagrams. This graphical portrayal can be utilized for additional investigation.

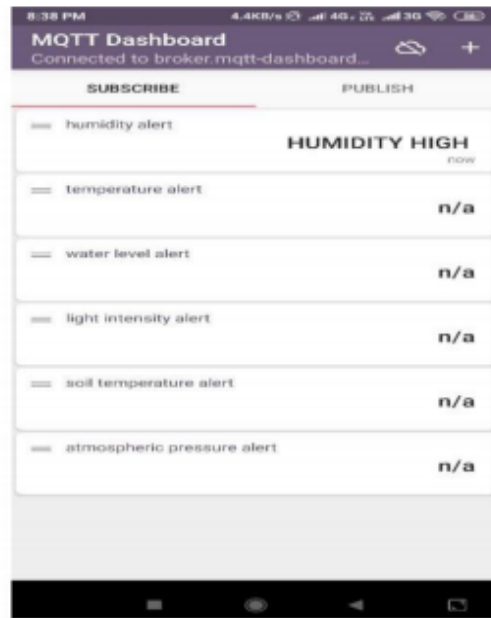


Fig 5 DashBoard

V.CONCLUSION

Proposed paper accentuation on building up an agribot that is utilized to accomplish proficient administration of cultivating assets like water, fuel and energy the executives. Agribot created discovers its way by utilizing ultrasonic sensor and can likewise be client constrained by Bluetooth. Created agribot is fueled by sun based energy. Agribot likewise diminishes the labor associated with cultivating. When contrasted with customary practices in brilliant water system where sensors are planted in explicit co-ordinates of field, agribot yields better outcomes with a streamlined equipment necessities and detecting the qualities all through the fields. Agribot gathers soil dampness, temperature, stickiness and gas esteems and updates them to the cloud. The qualities in the cloud are dissected and addressed in graphical structure for additional turns of events and expectations. Utilizing the sensor esteems gathered as boundaries, the siphon activity time is determined and consequently proficiently dealing with the cultivating assets.

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