

Design of an Intelligent Management System for Agriculture Monitoring Based on the Internet of Things



J Swetha Priyanka, T Parimala

Abstract: Water is the significant resource in human life. Around 80 % to 90 % water utilized in agriculture field. As because of step by step development in maturation and populace water utilization is additionally increments. There is a challenge before each nation to lessen the ranch water utilization and give new and sound nourishment. Today robotization is one of the significant jobs in human life. The framework isn't just gives comfort yet in addition diminish vitality, proficiency and efficient. At whatever point there is change in warmth, moistness and current status of downpour of the environment these sensors identifies the modification in temperature and stickiness and gives a punctuate sign to the raspberrypi. Presently a day the enterprises are utilizing a computerization and control machines which are high in expense and not appropriate for utilizing in a ranch and nursery turf. So in this work we structure a savvy water system innovation dependent on IOT utilizing Raspberry pi. The framework can be utilized to organize the water engine consequently and can likewise screen the development of plant by utilizing webcam. We can observe live spouting of ranch on mobile phone using machine application by using Wireless-Fidelity sort out. Raspberrypi is the essential heart of the general framework.

Key Words: Raspberry Pi, Wi-Fi, Sensors, IOT, automation

I. INTRODUCTION

India is one of the biggest freshwater client on the planet, and our nation utilizes enormous measure of new water than other nation. There is a lot of water utilized in horticulture turf as opposed to domestic and modern division. 65% of all out water is supplies as a surface water. Nowadays water has turned out to be one of the significant font on the globe and a large portion of utilized in the farming ground. While the dirt dampness sensor and temperature sensor are set in the starting point locale of the vegetation, the structure can remoted this information through the remote framework. The raspberrypi is the core of the framework and the webcam is attached with Raspberrypi through Wireless-Fidelity Module. Python programming language is utilized for robotization reason. The framework is a system of remote sensors and a remote base station which can be utilized to give the sensors information to robotize the water system framework.

The framework can used the sensors, for example, mud dampness sensor and temperature sensor and also ultrasonic sensor. The raspberrypi is adjusted to the same a degree that if the any dirt clamminess or warmth factor cross a deciphered edge point, the water plot structure is robotized, for example, the exchange related with the raspberrypi will ON or OFF the motor.

This paper displays an effective, genuinely modest and simple computerized water arrangement framework. This framework once introduced it has a lesser amount of price and is anything but difficult to utilize. By utilizing the webcam with suitable appliance on telephone we can without much of a stretch internet checking the genuine circumstance of the crop and sensors, for example, dust dampness and hotness are utilized to give the data about variation happens in the pasture. It is more worthwhile than the customary horticulture procedures.

II. RELATED WORK

Subsequent to broad study in the horticultural field, numerous specialists establish that the farming region and its efficiency are diminishing continuously. Among the Use of various innovation in the field of farming we can build the generation just as diminish physical endeavors. This paper demonstrates the innovation utilized in agribusiness part dependent on Internet Of Things and Raspberrypi. Chandan kumar Sahu anticipated a framework on "A Low Cost Smart Irrigation Control System". It incorporates various remote sensors which are place in different ways of the ranch field. Every sensor is made with a remote systems association gadget and the information gotten by the "ATMEGA318" microcontroller which is on the "ARDUINO-UNO" advancement board. The Raspberrypi is utilized to propel different sorts of information similar to instant notifications and pictures through web correspondence to the microcontroller procedure [1]. Supraha Jadhv projected, mechanized water framework utilizing remote sensor system and raspberrypi that organize the exercises of drip water system framework effectively [2]. Sebastian Hentzelt anticipated a thesis on the dampen circulation framework and offered result to disintegrate the initial restricted ideal organize issue (OCP) [3]. Joaquin Gutierrez endeavored a paper that examination mechanized water system framework utilizing a remote sensor system and General Packet Radio Service component rather than the Raspberrypi [4]. Ms. Deweshvree Rane Proposed "Audit paper dependent on regular Irrigation System Based on RF Module" it relies upon the Radio Frequency module, this device is used to communicate or got radio sign flanked by two contraptions.

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Its plan is mind boggling in light of the affectability of radio path and the exactness of the parts [5]. Karan Kansara projected "Sensor based programmed water framework with Internet of Things", this water framework is utilized a downpour firearm tube, one end associated with the water siphon and another to the foundation of plant. It doesn't give irrigate as a characteristic precipitation like sprinkler and furthermore it utilizes just soil dampness measuring element[6].

G. Parameswaran proposed "Aurdino based savvy water system framework utilizing Internet of Things", the analyst has not utilized RaspberryPi rather the work is finished utilizing aurdino organizer exclusive of utilization of dirt dampness sensors [7].

PROPOSED SYSTEM

Block Diagram:

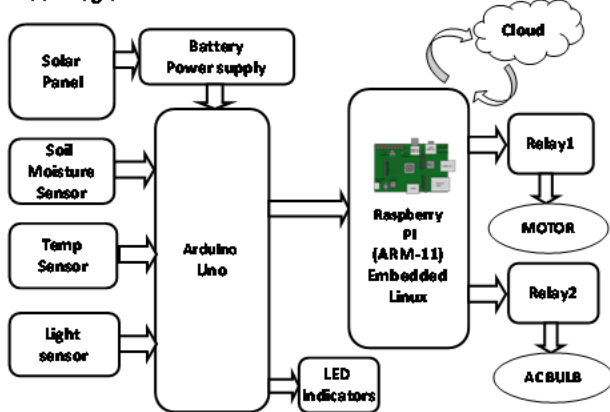


Fig.1: Block diagram

The above figure demonstrates that most important square chart of Irrigation organize structure. In that fundamental replica is a Raspberry Pi3 model, Relays, Light Dependent Resistor, measuring elements. In this manage structure three sensors are, for instance, soil moistness sensor, temperature measuring units are related with the raspberryPi3 model in like manner Wireless-Fidelity affiliation is related with the model. The association of raspberry Pi is known to the transfer 1 and hand-off 2 which are again agreed to the engine and light individually. Light Dependent Resistor association is specified to the transfer 2. From above figure demonstrates that getting area of the principle component i.e., Monitoring unit. In that two segments are available one is Wi-Fi system and client. This association once again transmit to the raspberry pi3 component.

III. WORKING PRINCIPLE

As the RaspberryPi is the heart of the framework. The RaspberryPi Model B fuses various improvements and new includes. This highlights of raspberry pi are superior authority utilization, expanded availability along with more prominent Input-Output which made this incredible, little and frivolous Amplification Refractory Mutation based PC. The RaspberryPi can't straightforwardly constrain the hand-off. It has just zero volts or 3.3 V. It requires 12V to make electro mechanical transfer. All things considered it utilizes a driver route which gives 12V sufficiency to impel the hand-off. Different sensors are associated with the Raspberry Pi board provides an obstruction variety at the

yield. This yield sign is practical to the comparator and sign molding path which has potentiometer to choose the dampness point above which the yield of comparator goes elevated. This yield sign is provided to the RaspberryPi board. On the off chance that the dirt dampness worth is over the dampness level, at that point the 3 stage enlistment engine will be OFF, while the dampness intensity is down engine will be ON during the hand-off. LDR (Light Dependent Resistor) is utilized to control the light consequently and by utilizing this we can screen the homestead during the evening time too.

IV. WORK FLOW OF THE FRAMEWORK

Stage 1: Start.

Stage 2: The framework can be initialize on RaspberryPi.

Stage 3: The dampness sensor continuously checks for the water level of the engine.

Stage 4: The dirt dampness measuring unit tests the dirt dampness intensity always.

Stage 5: The Universal Serial Bus camera introduced with the Raspberry Pi provides the total post of the crop land and this can be checked in the inward organize framework.

Stage 6: The sensor always faculties the temperature and dampness of the ground and keep informed the values in the net server.

Stage 7 : On the off chance that the passable degree of water is decreases, at that point the hand-off which is associated with the RaspberryPi will turn ON the engine.

Stage 8: Additionally, if the dirt ends up dry, the engine which is associated with the sensor will be gone ON to damp the field.

Stage 9: In the event that the stage 8 is finished, it will go to the stage 4.

Stage 10: Essentially, if the stage 7 is finished, the direction will go to the stage 3.

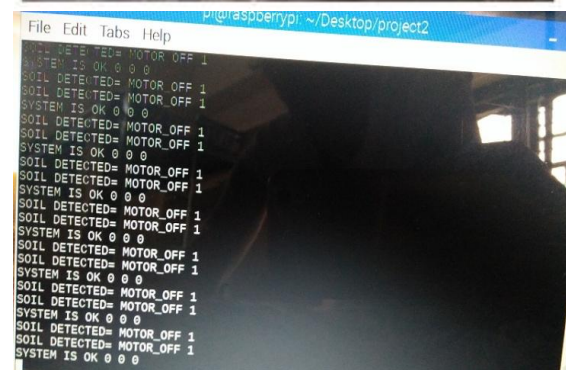


Fig.2: HARDWARE PART AND RESULT

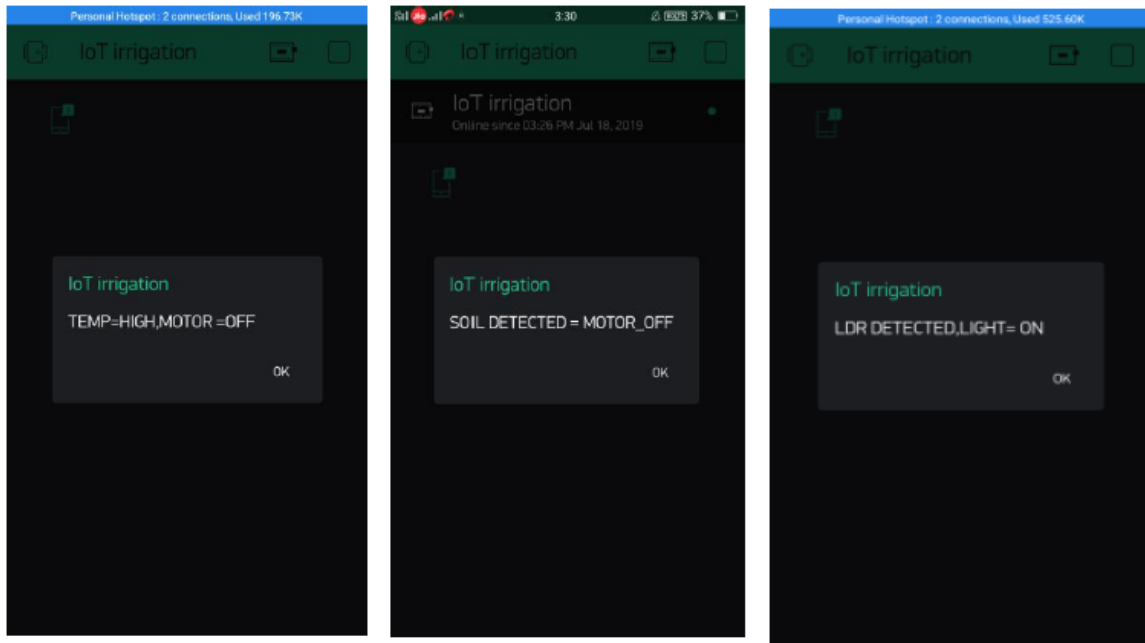


Fig.3: NOTIFICATION ALERT AND RESULT SHOWN ON ANDROID APP

V. CONCLUSION

The irrigation application on automation makes use of excellent sources to brighten the effectively of the irrigation. This gadget is also utilized in areas that face water deficiency to increase rural sustainability. On this task a model incorporates detecting point of interest hub and information stockpiling. The detecting point of interest hub is sent on the zone for detecting the dirt parameters which involves temperature, dampness, radiance and mugginess. With regards to the dirt parameters the mechanization is entire with the useful resource of turning the motor on and off the use of the brink values embedded within the regulations. The reputation for the vague is frightened to the customers by technique for messages using android application. The equal precept may also be increased to get correct of entry to the advantage from cloud the usage of spark fun. Amassing the information of the groundnut yield from 2015-2016 and evaluating it to the 2017 documents received from groundnut yield we are capable of identify that the preferred dampness content material fabric material to water the plant reduces and due to the fact that of this we are able to claim that we've got with no trouble conserved water. The potential of the instrument on numerous exams is mentioned to reap success and could also be used to analyses special vegetation.

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Mrs. J Swetha Priyanka with PG Degree in Embedded Systems working as an Assistant Professor in the Department of Electronics and Communication Engineering at Vardhaman College of Engineering. Published several papers like " Web of Things on Embedded Security", "Real time Embedded Web Technology based Organism for monitoring the traffic circumstance for accident control", "Accomplishment of Elegant public transport organism using IoT" and " Accomplishment of Elegant plant irrigation system activities monitoring using IoT".



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