Smart Farming System and Disease Detection Using IOT

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Abstract- *Nowadays the system of irrigation exercise is not based totally on maximizing output for plant life when in contrast to regular mode of exercise so giant scale modifications are wished to modernize manufacturing through raspberry pi. The sensors are linked to raspberry pi that controls the field activity. The sensors experience every endeavor taking place in the field. The farmer will come to comprehend about the field state of affairs through messages and can neatly do watering to the field in a very environment friendly manner besides overdoing it and the pleasant of the plants is saved. Detection of plant sickness through some computerized approach is advisable as it reduces a giant work of monitoring in massive farms of crops, and at a very early stage itself it detects the illnesses i.e. when they show up on plant leaves. This paper bears the cost of a calculation for image processing approach which is utilized for computerized discovery and order of plant leaf illnesses.*

Keywords- Raspberry Pi, Soil moisture sensor, Water level sensor, Humidity sensor, Temperature sensor, GSM module etc.

I. INTRODUCTION

Agriculture is an important source of profits for the biggest population in India and is a main contributor to Indian economy. In the previous decade it was found that there is not much crop improvement in the agriculture sector. Food costs are constantly growing due to the fact that the crop charge declined. There are a wide variety of elements which are accountable for this. It may also be due to water waste, low soil fertility, fertilizer abuse, or diseases.

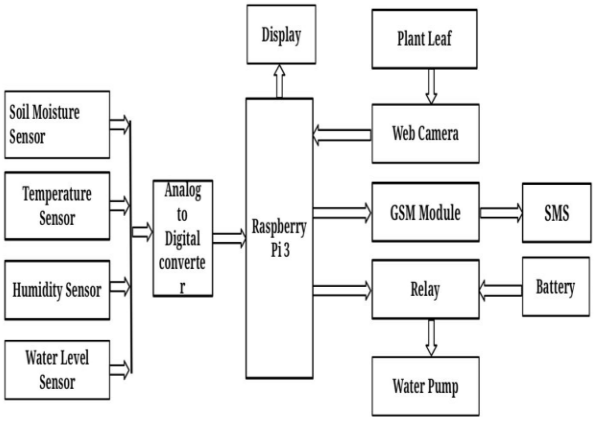
It is fundamental for making viable intercession in horticulture and the arrangement is IOT in incorporation with remote sensor organizations. Internet of things (IOT) is a method of connecting everything to the internet. It is connecting objects or things such as cars, homes, electronic devices, which are previously not connected with each other.

The primary reason for IOT is making sure shipping of the proper data to the proper humans at the proper time. In agriculture, irrigation is the essential issue as the monsoon rain falls are unpredictable and uncertain. Identification of illnesses is very essential in any discipline to stop the losses. Wellbeing observing and jumble discovery on vegetation is exceptionally fundamental for practical horticulture. The examination of leaf sickness proposes the exploration of outwardly detectable examples considered on the leaf. Leaf infection identification requires a monstrous amount of work, data in the plant illnesses, and furthermore requires more prominent preparing time.

This paper gives a calculation to the image processing approach which is utilized for electronic discovery and order of plant leaf sicknesses.

II. METHODOLOGY

2.1.BLOCKDIAGRAM



2.2.RASPBERRY PI

Raspberry Pi board is a miniature marvel, packing considerable computing power into a footprint no larger than a credit card.

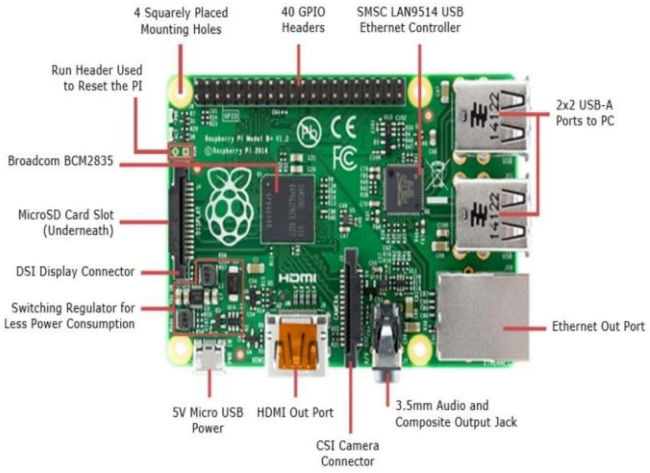


FIG.NO.2.1.RASPBERRY PI 3

2.3. SENSORS USED

TEMPERATURE SENSOR:

Temperature is a physical parameter that describes the average kinetic energy of molecules, it is not a measure of energy itself, but it is proportional to the average kinetic energy of molecules. That means that the hotter molecules are, the more they move and the higher is the temperature. By contrast, when molecules do not move at all, i.e., their kinetic energy is zero, so the temperature is 0Ok

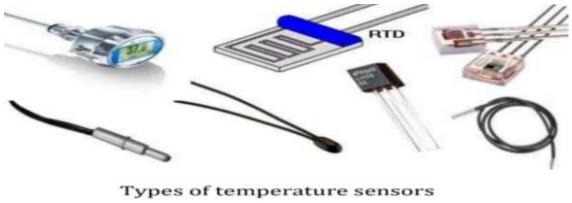


Fig.Temperature Sensor Types

SOIL MOISTURE SENSOR

Soil moisture sensors measure the volumetric water content in soil. Since the direct gravimetric measurement of free soil moisture requires removing, drying, and weighting of a sample, soil moisture sensors measure the volumetric water content indirectly by using some other property of the soil, such as electrical resistance, dielectric constant, or interaction with neutrons, as a proxy for the moisture content.

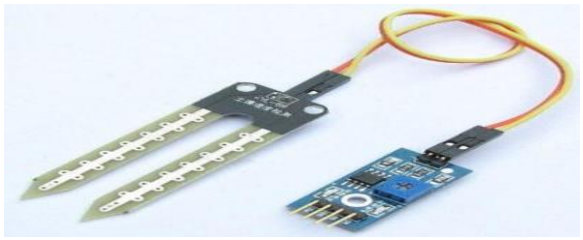


Fig.SOIL MOISTURE SENSOR

WATER LEVEL SENSOR

A water level indicator is a system that relays information back to a control panel to indicate whether a body of water has a high or low water level. Some water level indicators use a combination of probe sensors or float switches to sense water levels.

Fig.Water Level Sensor

2.4. IMAGE CLASSIFICATION USING IMAGE PROCESSING

The proposed system utilizes a programmed bug identification model. The pest pictures are gathered from the field utilizing Raspberry pi camera and are shipped off the worker. The order model was prepared with realized picture sets of various bugs and their marks. At the point when the I-SAM framework questions the worker with a recently caught picture from the field, it will be taken care of to the grouping model that gives the related bug name. This irritation mark was looked in a pesticide data set to track down the appropriate pesticide for the sickness. The sickness and pesticide data will be sent back to the I-SAM framework that utilizes GSM module to alarm ranchers through a SMS.

III. RESULTS AND DISCUSSION

This project implements an innovative idea to identify the affected crops and provide remedy measures to the agricultural industry. The infected region of the leaf is segmented and analysed. It provides a good choice for the agricultural community particularly in remote villages. This is

the last part of the project to get a complete design of the smart farming system and plant disease detection using IoT.

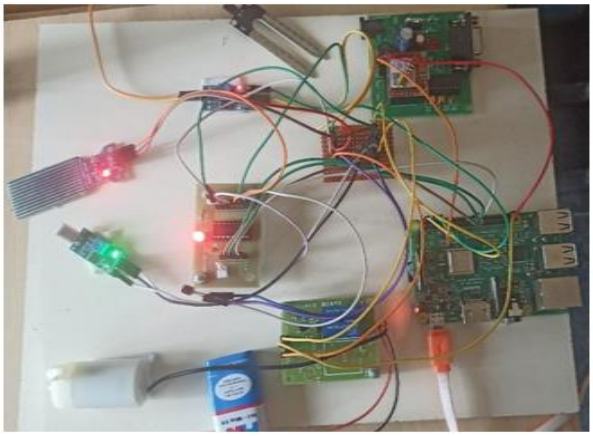


fig. The overall snapshot of the hardware

The output of the project model will be displayed on screen and a message will be sent to the user using GPS module.

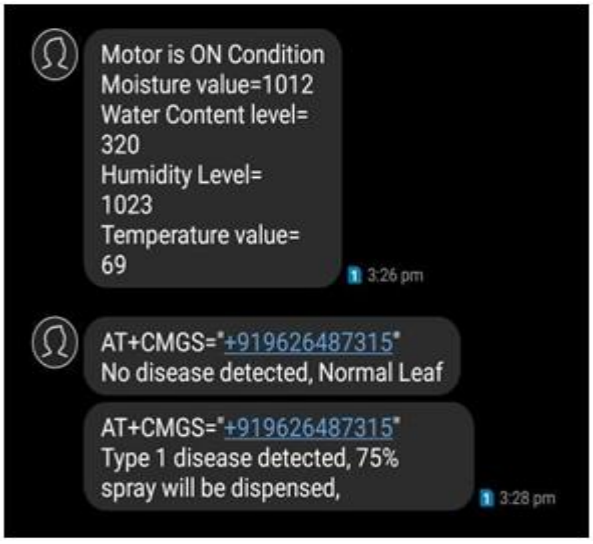
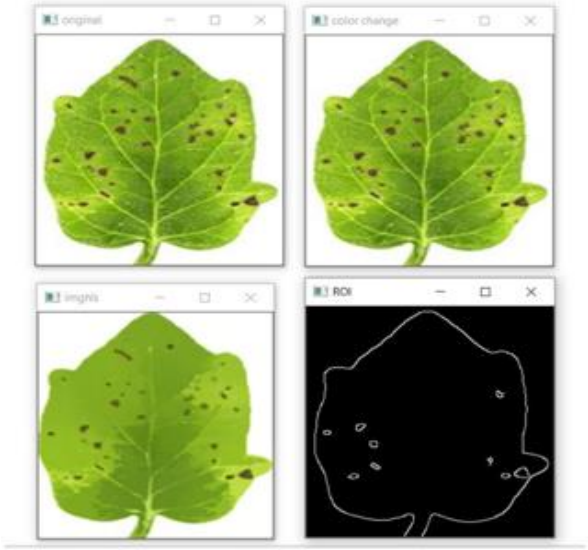


Fig.The message gets transmitted to the authorized person



Fig, Plant disease is detected by using image processing

The outcome acquired from the model is to upgrade water use for horticulture and to distinguish the kind of illness in the plant. The recognizable proof of plant infection is the reason for the anticipation of plant illness successfully and definitely in the mind boggling climate. With the quick improvement of keen cultivating, the distinguishing proof of plant sickness gets digitized and information driven, empowering progressed choice help, shrewd examinations, and arranging.

IV. CONCLUSION

The proposed framework will revolutionize the traditional agriculture system used by the majority of the farmers. This will allow the younger generation to do farming without previous experience and with ease. The system, if implemented in maximum fields, will generate vast amounts of data that can be used for data mining and further research in this field. This system requires minimum human interaction at present, which can be further reduced, and can even completely be eliminated by further improving the framework.

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