IOT BASED SMART IRRIGATION WITH PLANT DISEASE DETECTION

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Abstract: Agriculture is an historical occupation. It plays an essential position in our day after day existence. meals are primary want of all people. To distribute meals among big populace desires right quantity of production. In India large wide variety of populace lives in rural regions in which livelihood of humans relies upon totally on agriculture. as a result, Indian economic system basically relies upon on agriculture. hence increasing satisfactory production has emerged as important daily. monitoring of vegetation/vegetation and their management from early stage is utmost crucial. It consists of various obligations like preparation of soil, seeding, including manure and fertilizer, irrigation, disease detection, spraying pesticides, harvesting and garage [1]. among these complete tasks spraying proper quantity of pesticides must be taken proper care. insecticides are used to draw, seduce and damage pests consequently referred to as crop protection product. insecticides are prepared by using dangerous chemicals or occasionally via organic techniques to kill pests, weeds or infections on flora. huge percentage of farmers in India sprays insecticides on cash plants, veggies or fruit plant life. In most cases it has been determined that overdose of pesticides is more than 40% [2]. as a result, it reasons damage to plant/plants in addition to to people. Farmers manually exams diseases and spray pesticides as a result. insecticides if sprayed in massive quantity lead to loss in vitamins which in the long run targets to lower in quality food manufacturing. because of this, manufacturing gets laid low with approach of both excellent and quantity. also if they're now not washed properly causes dangerous sicknesses to people like continual sicknesses. one of the maximum not unusual practices of spraying pesticide is via the usage of sprayer. In conventional agriculture frequently mechanical sprayer or hydraulic sprayers are used. Farmers basically spray manually every now and then in excess amount or in less amount. in addition, in most of the instances farmers do now not use protective clothing. as a result, harmful insecticides input in frame either by being inhaled or via pores and skin or eyes. publicity to pesticides accordingly reasons inflammation of nostril to maximum fatal illnesses. subsequently to avoid all above things and to boom yield with the aid of satisfactory and amount it's miles necessary to locate ailment in proper amount and spray insecticides nicely.

Index Terms*: *Arduino Uno, DHT11 Sensor, Soil Moisture sensor, ultrasonic sensor, ESP8266(IOT MODULE) etc.

I. INTRODUCTION

IoT has many programs in agriculture, smart cities, clever domestic, healthcare, commercial enterprise sectors, visitors monitoring, shipping and logistics and so on. this is a developing mega trend as a way to affect the whole thing from corporations to our everyday personal lives. here we are mainly that specialize in agriculture as it plays a critical function in improvement of our us of a'sn economy. Agriculture is a new development in conventional agriculture. In precision agriculture, manufacturing environment is monitored, and the monitored facts is used to derive the maximum suitable surroundings control selection which employs manage and adjustment solutions to reap higher product yield. on this project agriculture parameter tracking is processed by way of importing the information to the net using IoT (matters communicate). Interconnection of variety of gadgets through net describes the net of factors (IoT). every item is attached with every different via specific identifier so that records may be transferred without human to human interplay. It lets in setting up solutions for better control of natural sources. Our machine which embedded with sensors and the implementation, the mission might be used to take precautions towards any diseases to the crop and provide a cure if any sickness happens.

II.BLOCK DIAGRAM

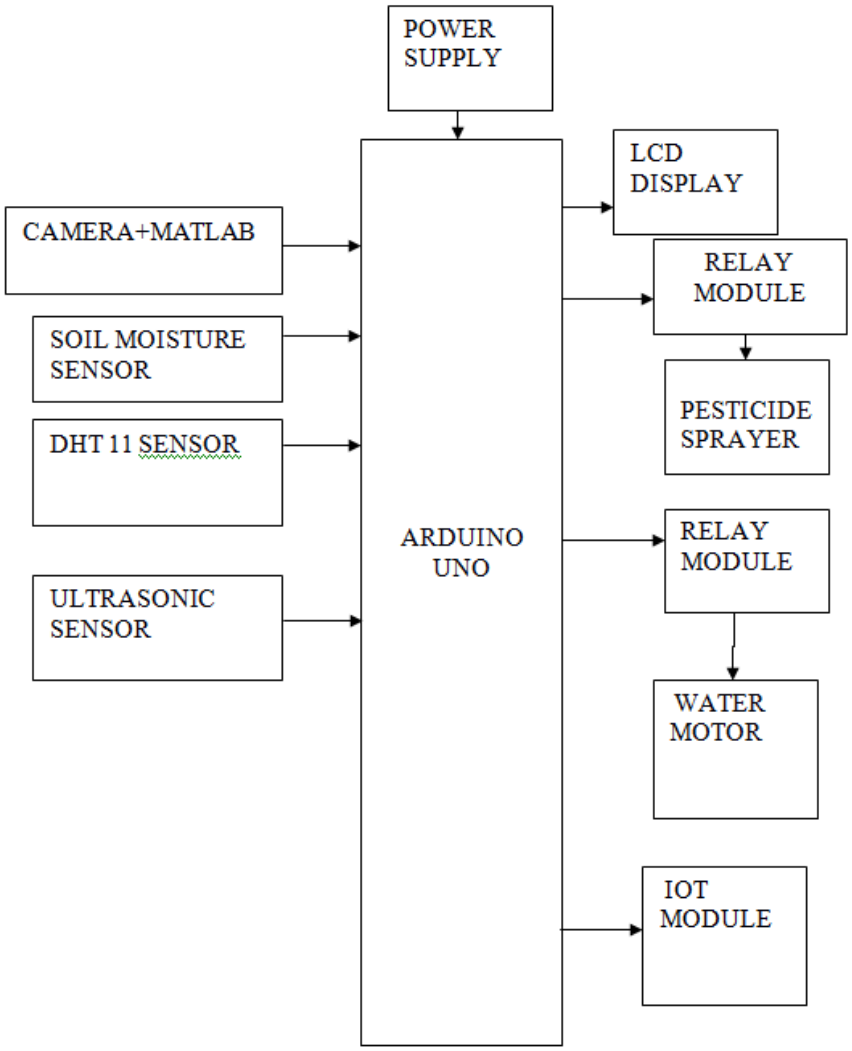

Fig.1 Block Diagram

III. ALGORITHM

STEP 1: - Start.

STEP 2: - power up hardware.

STEP 3: - Here we are using different types of sensor like soil moisture sensor, ultrasonic sensor, DHT 11 sensor, IOT MODULE.

STEP 4: - take input from matlab. Camera capture the image of plant

STEP 5: - if disease detected then pesticide sprayer will ON.

STEP 6: - Ultrasonic sensor is used to monitored the insects on plant using sound waves.

STEP 7: - soil moisture sensor used to detect moisture level of soil.

If

(soil sensor detect soil dry)

Then signal =0

Else

Signal = 1

STEP 8: - if any sensor exceeds the level then only data will update on web server.

STEP 9: - all sensors measured value will be displayed on thingspeak

STEP 10: - if soil is dry then water motor will ON automatically. If leaf disease is detected, then show result.

STEP 11: - STOP.

IV. PROPOSED SYSTEM

Temperature Rise Fault Can Be Detected Using LM35 Same Can Be Sent to The Microcontroller. Thus Can Be Determined using the Microcontroller and it will update over IOT. Also here we are using ultrasonic sensor for detecting the insects on plant. If detects then pesticide sprayer will ON automatically. Soil moisture sensor check moisture level of soil if soil is dry then water motor will get ON automatically.

IOT MODULE: - it is used to update data through wifi module in which we can represent graphically in thingspeak online web server.

Display: - All information will be displayed on Matlab. Regarding disease.

Camera: - camera capture the image of leaf image processing will have done after that if disease is detected then result will show automatically.

V. SYSTEM ARCHITECTURE OVERVIEW

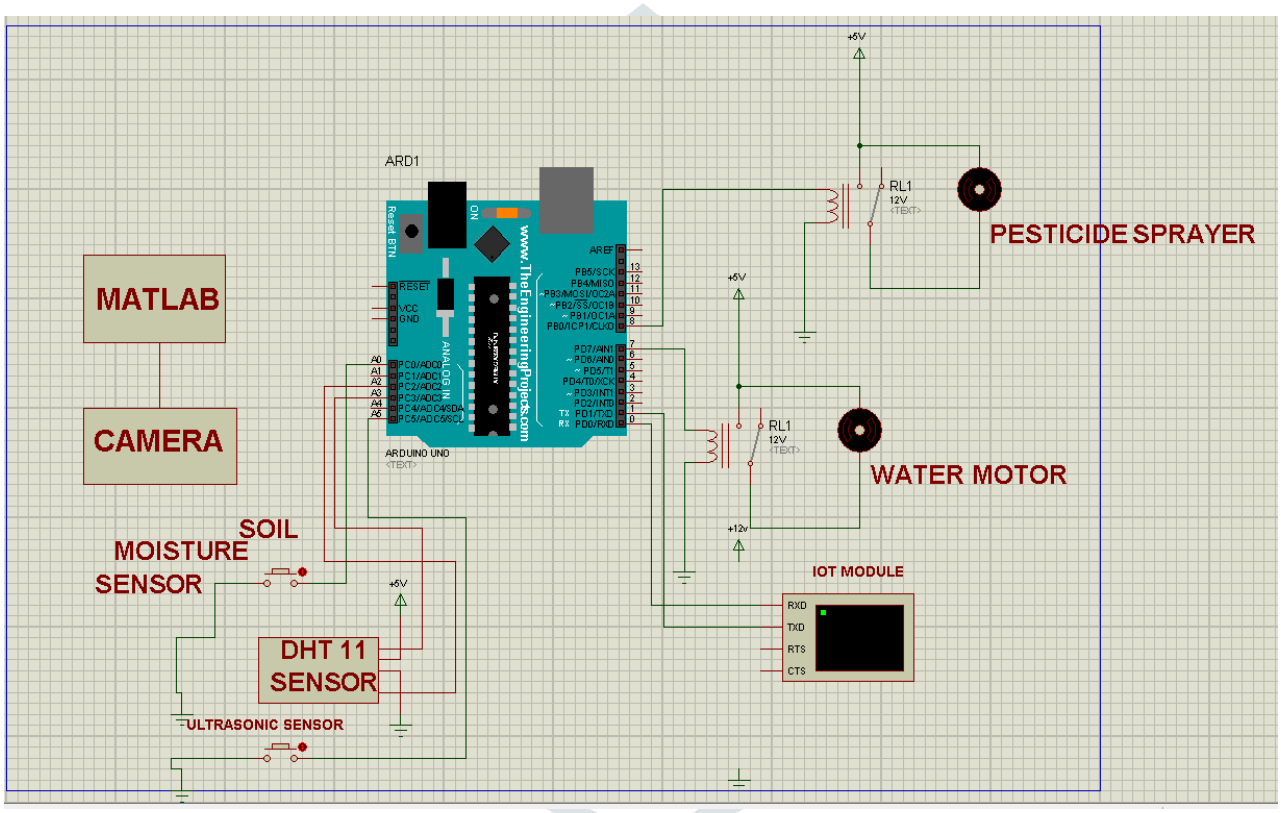

Fig.2 Circuit Diagram

VI. USE CASE DIAGRAM

Fig. 3: Use Case diagram

VII. CONCLUSION

This system would be eliminating the requirement of human power and thus providing efficiency and accuracy. In this work, the experiments performed are important and well known classification algorithm KNN is applied to the dataset. The accuracy is obtained by evaluating the datasets. Each algorithm has been run over the training dataset and their performance in terms of accuracy is evaluated along with the prediction done in the testing dataset. The entire analysis process creates a data flow.

FUTURE SCOPE

In future we can interface TDS sensor to find the water quality also like salt level in water. Also check any metal particles. Check water dirty or clean. It is useful for farmers when he provides water to plants and monitored all data on lab view.

ACKNOWLEDGMENT

Authors want to acknowledge Principal, Head of department and guide of their project for all the support and help rendered. To express profound feeling of appreciation to their regarded guardians for giving the motivation required to the finishing of paper.

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