AUTOMATIC AGRICULTURAL SYSTEM FOR DETECTION OF OBJECT MODELING AND SOIL HUMIDITY

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***Abstract*--**Agriculture was the past, is the present, is the future, that is the power of agriculture .Our country is has a 60% people have a place with agriculture foundation. India is a rural country .in India we as a whole are depends up on agriculture to meet our prerequisite of nourishment. Agriculture is the most imperative occupation for the vast majority of the Indian families. It assumes a fundamental job in the development of farming country. In India, agriculture contributes about 16% of all out GDP and 10% of absolute fares. To exploit these advancements, we ought not think about the ramifications of growing new innovations but rather should take a gander at the more extensive issues for complete development of a framework. Programmed horticultural framework for recognition of article displaying and soil moistness was actualized in this project for sheltered and secure water system framework. The project water system control utilizing AT89S2 is intended to handle the issues of horticultural part in regards to water system framework with accessible water assets and ranchers utilizes electric fence to ensure their field. The motivation behind electric fence is to slaughter the beings(human creatures, creatures and birds).PIR sensors are utilized to identify the movement of the object(human creatures, creatures and winged creatures) , it caution the general population to avoid the fence lines and spare their lives. In these project we are utilizing Dry/Wet sensor, Pir sensor, precious stone oscillator, transfer driver, Submersible engine, AT89S2 Microcontroller and LCD.This project utilizes managed 5V, 500mA Power supply.7805 three terminal voltage controller is utilized for voltage regulation. Extension type full wave rectifier is utilized to correct the air conditioner contribution of optional of 230/12V advance down transformer.

1.INTRODUCTION

Agriculture is the most essential development of basic nourishment crop. Agriculture speaks to as assembling, regulation, and consolation and division rustic items. Agriculture assumes an essential job in the whole existence of a given country. Agriculture is the standout amongst the most vital angles throughout our life .it is just, field, which keeps up human life to get by in the Earth. Without nourishment nobody can capable live we as a whole get that through this project. Agriculture assumes an essential job in keeping the economy running of each country by adding to the gross residential creation. Be that as it may, there are a few issues identified with conventional strategies for agriculture, for example, over the top wastage of waterduring water system of field, reliance of nonrenewable power source, time, cash, human asset and so on.

The present the ranchers experiencing the absence of downpours and shortage of water that is the reason to full fill these requirements we build up this project. The principle target of this project is to give a programmed water system framework along these lines sparing rancher's life, Animals life, time, cash and power of rancher. This project is utilized for protected and secure water system framework. In this logical world we can ready to mechanize every single procedure so as to lessen the manual remaining task at hand and furthermore the time utilization. It will be progressively valuable on the off chance that we present robotization in this farming field. Here we will lessen the manual work because of water system through implanted frameworks. Water system is the way to a fruitful patio nursery. Long gone are the times of manual watering or depending on a companion to water when you are on work or away on business. The project introduced here waters your plants consistently when you are out for employment. The circuit involves sensor parts assembled utilizing operation amp LM324. Operation amp is arranged here as a comparator. Two firm copper wires are embedded in the dirt to detect the climate the dirt is wet or dry .The comparator screens the sensor and when sensor sense the dry condition then the project will switch on the engine and it will turn off the engine when sensor is wet. The comparator does the above activity it gets the signs from the sensors. In this project we utilize smaller scale controller for controlling the entire procedure.

2.RELATED WORK

India is chiefly an agrarian country. Agriculture is the most critical occupation for the a large portion of the Indian families. It assumes indispensable job in the development of horticultural country. In India, agriculture contributes about 16% of all out GDP and 10% of absolute fares. Water is primary asset for Agriculture. Water system is one technique to supply water yet now and again there will be parcel of water wastage. Thus, in such manner to spare water and time we have proposed project titled programmed water system framework utilizing IoT. In this proposed framework we are utilizing different sensors like temperature, mugginess, soil dampness sensors which detects the different engine. These detected parameters and engine status will be shown on client android application.

Water system framework in India has given a high need in financial development. Numerous new ideas are being created to enable horticultural computerization to prosper and convey its maximum capacity. Execution of Hi-tech Agricultural Solar Fence Security with soil Humidity Based Automatic water system framework and voice alert on PIR live Human Detection is been actualized in this project for sheltered and secure agriculture water system. The project water system control utilizing AT89S52 is intended to handle the issues of rural division in regards to water system framework with accessible water assets. Delayed times of dry climatic conditions because of vacillation in yearly precipitation, may apparently decrease the yield of the development. The costs in setting up a significant number of these yields and their relative narrow mindedness to dry spell make a powerful water system framework a need for profitable endeavors.

The agriculture is a standout amongst the most central asset of nourishment generation and likewise assumes an imperative job in keeping the economy running of each country by adding to the Gross Domestic Production. In any case, there are a few issues identified with conventional techniques for agriculture, for example, extreme wastage of water amid water system of field, reliance on nonrenewable power source, time, cash, human asset and so on. Since each action now a days getting to be brilliant it needs to keenly create agriculture division for development of country. This paper goes for building up the Smart Irrigation System Using IoT Technology with a goal of computerizing the all out water system framework which gives satisfactory water required by yield by checking the dampness of soil and atmosphere condition so as to keep the wastage of water asset. It will likewise have numerous favorable circumstances for ranchers. The water system at remote area from home will turn out to be simple and progressively agreeable. What's more, it won't just shield the rancher from burning warmth and extreme cold yet in addition spare their time for forward and backward voyage to the field.

A plant-watering framework might be valuable when water shortage exists. It is exceptionally helpful in rustic territories in the desert or in locales where there is less precipitation. It is a mechanized sensor-based framework that estimates soil dampness to compute the volume of water to be taken for watering utilizing a convenient siphoning unit. For development to be effective, a few parameters that influence the sythesis of the dirt are to be considered. This framework is a robotized scaled down framework for savvy water system, which can be isolated into two sections: (1) a sensor hub that conveys into the field and (2) a recipient gadget that gets the information sent by the sensor hub. The recipient is put in the control room close to the water system field. At that point, the information from the recipient are communicated by means of cloud-facilitating locales. Furthermore, in light of these information, the sensor controls the siphon unit to give an ideal estimation of water to be given to the dirt. At long last, when the water level surpasses the limit level, the microcontroller unit naturally stops the siphon.

Agrarian pests, for example, birds and rodents, may make critical harm crops and diminish cultivators' capacity to give horticultural products to the market. At the point when this happens, the more extensive economy may endure because of diminished creation and less items for handling and deal. In the event that the rural part assumes a noteworthy job in the economy, the multiplier impacts of this kind of harm might be antagonistic since the rural area normally gives contributions to practically all different divisions of the economy (e.g., fabricating, retail exchange, and convenience and nourishment administration). It is an investigation on the procedures embraced for Managing Birds and Rodent Pests (MBRP).

3.PROBLEM STATEMENT

Problem1:

Object ModelingsystemIn agriculture field, farmers use electric fences which can protect farm houses, fields etc. From animals and birds. Unknowingly when human beings enters into the the field they may die because of the current which flows through these lines. As this electric fence is dangerous to all beings and causes death which leads to the nature’s destruction. We designed the electric fence. Under this project which doesn’t kill the living beings but will provide panic sensation for animals and voice alert message.Whereas birds approach the field to a certain level, sensors which are used to detect it and produces the sound.

Problem2

Soil humidity system water is the main resource for agriculture. Irrigation is one method to supply water but in some cases there will be lot water wastages. I is difficult to farmers to check whether the motor is turned ON/OFF. Farmers used to spend at day and night at field to check the soil humidity. The design system can prevent the wasting water when irrigation fields by measuring soil humidity and we are going to reduce the manual workload.so, in this regard to save water and time we design this project.

4.IMPLEMENTATION:

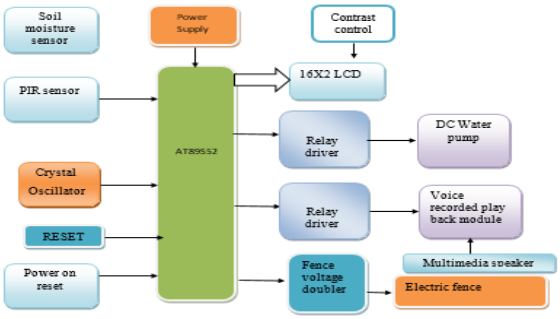
OBJECT DETECTION SYSTEM

A PIR Sensor is arranged near the fence to warn the people to stay away from the fence .since an electric fence is arranged, living being when they touch that, there will experienced a shock, so to avoid that voice alert will be given when someone approaches near fence. Voice alert for human beings and mild electric shock for animals. It does not cause any physical damage to both on human being and animals. . Whereas birds approach the field to a certain level, sensors which are used to detect it and produces the sound and it is for safe and secure irrigation.

SOIL HUMIDITY SYSTEM

Irrigation is one method to supply water but in some cases there will be lot water wastages. I is difficult to farmers to check whether the motor is turned ON/OFF. Farmers used to spend at day and night at field to check the soil humidity.

The project presented here water your plants regularly when you are out of vocation. The circuit comprises sensors parts builts using op-amp ICLM324 op-amp is configured here as a comparator .Two stiff copper wires are inserted in the soil to sense the whether the soil is wet/dry. The comparator monitors the sensors and when sensor sense the dry condition then the project will switch on the motor and it will switch off the when the sensor sense the wet condition.The transistor is used to drive the relay during the soil wet condition .5v double pole- double through relay is used to control the water pump.



5.HARDWARE COMPONENTS

SENSORS

Sensor is the device which converts any physical quantity to its equivalent electrical signal. There are different types of sensor are available there are: Temperature sensor, Light sensor, Voltage sensor, Smoke Sensor, Gas sensor, Fire sensor, Magnetic Sensors, etc.

A sensor is a device which receives and responds to a signal or stimulus. Here, the term "stimulus" means a property or a quantity that needs to be converted into electrical form. Hence, sensor can be defined as a device which receives a signal and converts it into electrical form which can be further used for electronic devices. A sensor differs from a transducer in the way that a transducer converts one form of energy into other form whereas a sensor converts the received signal into electrical form only.

6.PASSIVE INFRARED (PIR)

The most frequent use of the PIR sensor is as an 'area' sensor. Whether it is to detect 'someone moving in the front yard', or 'someone moving in the bathroom', or 'someone moving through a doorway', or even 'someone opened the beer cooler', it is all technically the same sensor and logic.

There is a simple electronic device which is sensitive to 'heat', or rather the infrared light that is emitted by warm or hot objects (like humans). In its simplest form, it looks like an old metal transistor with a black plastic 'window' on the top.

The 'logic' of the PIR sensor is that it must detect 'significant change' of the normal level of heat within the 'field' of its view. The circuits that control it must be able to determine what 'normal' is, and then close a switch when the normal field changes, as when a human walks in front of it.

It must also be able to 'tolerate' slow changes within the field, and remember that as the new 'normal'. This is so that gradual changes like the sunlight changes throughout the day, don't cause a false alarm. This is a standard behaviour of 'PIR' type sensors. (There's a lot more electronics there than just the black window...)

Why does the sensor wear ‘lenses’?

You'll notice in all three pictures of PIR type sensors on this page, that they all have some sort of plastic 'lens' that covers the circuit board and the PIR sensor device.

This is a 'Fresnel' lens. It 'pinches' light that passes thru it. If you hold it to your eye, you can see that there are apparent distinct 'bars' of light as you move it across a scene. Some of these bars may be vertical, and some may be horizontally oriented.

The lenses that are made for most PIR sensors tend to 'pinch' the light such that it is horizontally sensitive.

This means that the Lens/PIR will be more sensitive to motion of a warm body, horizontally 'across the field of view'.

Please note that this means that these sensors are most insensitive to warm bodies moving from a 'distance' and directly towards one of these common devices...!

What does a motion sensor say?

• All motion sensors send an "ON" message when they first see motion.

• Most will also send an "OFF" message when motion has not been seen for a set period of time. • Some will continue to send "ON" messages periodically as long as motion continues.

• Others may only announce the first event and say nothing again until the area has been quiet for a set period of time.

7.SOIL MOISTURE SENSOR

Soil moisture sensor uses capacitance to measure the water content of soil (by measuring the dielectric permittivity of the soil, which is a function of the water content).Soil moisture sensor is used to measure the volumetric content of the soil.Soil moisture sensor has two probes through which current passes in soil.Water make the soil more prone to electric conductivity resulting less resistance in soil where on the other hand dry soil has poor electrical conductivity thus more resistance in soil.

Specifications

Range: 0 to 45% volumetric water content in soil (capable of 0 to 100% VWC with alternate calibration)

Accuracy: ±4% typical

Typical Resolution: 0.1%

Power: 3mA @ 5VDC

Operating temperature: –40°C to +60°C

Dimensions: 8.9 cm × 1.8 cm × 0.7 cm (active sensor length 5 cm)

Lcd

The Liquid Crystal Display (LCD) is a low power device (microwatts). Now a days in most applications LCDs are using rather using of LED displays because of its specifications like low power consumption, ability to display numbers and special characters which are difficult to display with other displaying circuits and easy to program. An LCD requires an external or internal light source.

Temperature range of LCD is 0ºC to 60ºC and lifetime is an area of concern, because LCDs can chemically degrade these are manufactured with liquid crystal material (normally organic for LCDs) that will flow like a liquid but whose molecular structure has some properties normally associated with solids. .

LCDs are classified as

Dynamic-scattering LCDs and

Field-effect LCDs

Field-effect LCDs are normally used in such applications where source of energy is a prime factor (e.g., watches, portable instrumentation etc.).They absorb considerably less power than the light-scattering type. However, the cost for field-effect units is typically higher, and their height is limited to 2 inches. On the other hand, light-scattering units are available up to 8 inches in height. Field-effect LCD is used in the project for displaying the appropriate information.

Relays

A relay is an electrically operated switch. These are remote control electrical switches that are controlled by another switch, such as a horn switch or a computer as in a power train control module, devices in industries, home based applications. Relays allow a small current pin, 4-pin, 5-pin, and 6-pin, single switch or dual switches. Relays are used throughout the automobile. Relays which come in assorted sizes, ratings, and applications, are used as remote control switches. A typical vehicle can have 20 relays or more.

8.VOICE RECOGNITIONMODULE

Parameters

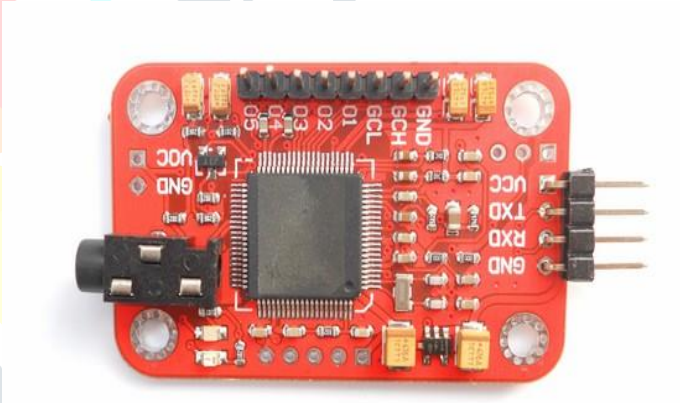
Voltage: 4.5-5.5V

Current: <40mA

Digital Interface: 5V TTL level UART interface

Analog Interface: 3.5mm mono-channel microphone connector + microphone pin interface

Size: 30mm x 47.5mm



This module can store 15 pieces of voice instruction. Those 15 pieces are divided into 3 groups, with 5 in one group. First we should record the voice instructions group by group. After that, we should import one group by serial command before it could recognize the 5 voice instructions within that group. If we need to implement instructions in other groups, we should import the group first. This module is speaker independent. If your friend speaks the voice instruction instead of you, it may not identify the instruction.

Switches

A switch is an electrical component that can break an electrical circuit, interrupting the current or diverting it from one conductor to another. The most familiar form of switch is a manually operated electromechanical device with one or more sets of electrical contacts. Each set of contacts can be in one of two states: either 'closed' meaning the contacts are touching and electricity can flow between them, or 'open', meaning the contacts are separated and non-conducting.

Submersible Motor

A submersible motor is an electric motor which can operate while being submerged in water. This sealed motor is typically found in use on pumps. Both sump pumps and water wells use a submersible motor to power the pumping mechanism used in the system. Due to the submersion in water, it is critical that all electrical

Connections be made water-tight toprevent damage to the motor as well as to anyone working on the unit.

The typical water well relies on a submersible motor to pump the water out of the well. The motor is attached to a pump and lowered down through the well casing. Many well contractors attach a small cable to the pump unit to lower it down, while many simply lower the pump unit down by the electrical cord. In case, the pump and the submersible motor rest at the bottom of the casing suspended in the water. A hose fitted to the nipple on the pump sends the water up and out of the well when the submersible motor turns on.

This design is critical with an electric pump due to the advantage of pushing rather than pulling liquid. A pump is able to push a much greater amount of liquid than it is able to pull, thereby requiring the submersible motor to place the pump at the source of the liquid. Used in this manner, a pump is able to work effectively with a much smaller motor. These results in less electrical power used a cooler running pump motor as well as a pump that is able to move a great quantity of liquid in a short time.

The typical submersible motor is contained within a rubber sock which maintains the pump's dryness. The sock is removed when servicing the pump or motor and replaced once the service is complete. This allows the pump to operate for a greater length of time without becoming damaged by the water. Many submersible motors offer years of uninterrupted use.

Crystal oscillator

An electronic circuit that is used to generate an electrical signal of precise frequency by utilizing the vibrating crystal's mechanical resonance made of piezoelectric material. There are different types of piezoelectric resonators, but typically, quartz crystal is used in these types of oscillators. Hence, these oscillator electronic circuits are named as crystal oscillators.

9.RESULT ANALYSIS

Test for the programmed water system framework:

Two firm copper wires are embedded in the dirt to detect the whether the dirt is wet/dry. The comparator screens the sensors and when sensor sense the dry condition the then the project will switch on the engine and it will off the engine when sensor detects the wet condition. The transistor is utilized to drive the hand-off amid the dirt wet condition.

Test for the electric fence: As this electric fence is perilous to all creatures and causes demise which prompts the nature's decimation. We planned the electric fence. Under this project which doesn't execute the living creatures however will give alarm sensation to creatures and voice ready message. While birds approach the field to a specific dimension, sensors which are utilized to identify it and produces the sound.

10.CONCLUSION

This project presents a high sensitive sensor based automotive device control. The tracking controller based on the closed loop algorithm is designed and implemented with 8051 microcontroller in embedded system domain. The proposed system can control devices automatically. Thus, the power can be saved.

Experimental work has been carried outcarefully. The proposed method is verified to be highly beneficial for all the electrical appliances.

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