

Smart Irrigation System

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Abstract

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Article History Article Received: 14 March 2019 Revised: 27 May 2019 Accepted: 16 October 2019 Publication: 02 January 2020 An automated irrigation system for efficient water management and intruder detection system has been proposed. Soil Parameters like soil moisture, pH, Humidity are measured and the Pressure sensor and the sensed values are displayed in LCD. The intruder detection system is done with the help of PIR sensor where the birds are repelled from entering into the field. The GSM module has been used to establish a communication link between the farmer and the field. The current field status will be intimated to the farmer through SMS and also updated in the webpage. The farmer can access the server about the field condition anytime, anywhere thereby reducing the man power and time.

Keywords: Irrigation, Automation, GSM, pic microcontroller, soil sensor, voice processor

I. INTRODUCTION

On the planet, the economy of various countries is penniless upon agribusiness. In spite of monetary progression cultivation is the establishment of the economy. Cultivating is the mainstay of economy. It adds to the complete national yield. Agriculture meets sustenance essentials of the all inclusive community and produces a couple of rough materials for undertakings. In any case, since of animal block in green landscapes, there will be enormous loss of yields. Yield will be completely getting squashed. There will be generous proportion of loss of farmer. To keep up a vital separation from these financial disasters it is imperative to shield provincial field or estates from animal. To overcome this issue, in our proposed work we will structure a system to keep the entry of animals into the residence. Our rule purpose behind endeavor is to make prohibitive fencing to the farm, to keep up a vital separation from setbacks in light of animals. These prohibitive fencing shield the reap from hurting that by suggestion increase yield of the

collect. The make structure won't dangerous and harming to animal similarly as people. Topic of undertaking is to structure a smart security framework for homestead insurance by utilizing Embedded framework.

In Existing technique electric wall used to shield the yields from the wild creatures. Because of high power creatures are harmed generally and it isn't just influences wild creatures it additionally hazardous to the pet creatures and even individuals. The electric wall is utilized for keeping the yields yet in existing strategy camera was utilized for distinguishing the creatures which is financially surprising expense. The sign is accessible in the framework however it send the message just to the woodland officer not to the leaving individuals in the farmland.

II. PROPOSED WORK

This system presents a method to automate the process of keeping off the wild animals from farmlands and also provide surveillance with differentiating among the authorized and



unauthorized person.We use Passive Infrared Sensors (PIR) to detect any motion of human body, once the employed PIR sensors detect motion the owner of the farmland gets notified about the intrusion. This information along with the stored onto cloud from where the person in charge can access it once he receives the message. If found to be an animal, the system then checks for the number of PIR sensors that have gone HIGH, if fewer number of sensors are high it denotes a smaller animal and all or more than half the sensors that turn high denoted it is a bigger animal and hence necessary action is employed to keep them away from destroying the crops. In order to automate the animal ward off system discussed, we take a decision based on the number of sensors that have gone high. The basic working principle is, if fewer numbers of sensors are able to detect the motion then it denotes an animal smaller in height such as a wild boar, deer etc., and we immediately turn on the rotten egg spray unit, which helps to keep away the pigs. Similarly if more than half or all of the employed PIR sensors have gone high it is naturally because of a huge animal such as the elephant which is another major threat to such farmlands, we initiate the electronic firecrackers to turn ON, the loud noise which in turn helps to ward off the bigger animals.



Fig: 1 BLOCK DIAGRAM

1. Microcontroller:

The plan utilizes PIC16F877A microcontroller. PIC16F877A is a gathering of changed Harvard Architecture microcontroller made by Microchip Technology. This is amazing microcontroller with nanosecond guidance execution and effectively programmable with just 35 single word guidelines. The whole robotization of the framework is finished by this microcontroller. It has an inbuilt Analog to Digital converter. On account of this we don't require any ADC to be associated remotely.



Fig :2Microcontroller

2. Temperature sensor (LM35):

The LM35 plan are exactness fused circuit temperature sensors, whose yield voltage is straightly comparing to Celsius temperature.



Fig 3:Temperature sensor

3. Soil moisture sensor:

The dirt dampness sensor is utilized to gauge the volumetric water substance of soil. It is utilized



to screen soil dampness substance to control water system in nursery. A dampness sensor is utilized to detect the dimension of dampness content present in water system field. it has a dimension discovery module in which we can set a reference esteem.



Fig 4:Soil moisture sensor

4. GSM modem

It is a particular kind of modem which acknowledge a SIM card and works over a membership to a versatile administrator, much the same as a cell phone.



Fig 5: GSM modem

5. Humidity Sensor

The structure utilizes HMTC1A2 Humidity sensor module. It involves HSS1101 Humidity sensor and LM35 Temperature sensor. It has the qualities of steady, high exactness, fast reaction and great traverse. In the plan dampness sensor is utilized to check the stickiness noticeable all around the yields. The expansion in moistness is a direct result of vanishing of water from the leaves which brings about shrinking of the leaves. So the expansion in moistness is checked and the sprinklers are enacted to accomplish the dampness on the harvests. The explanation behind the utilization of temperature sensor independently is on the grounds that this model can't decide the temperatures past 50°C.



Fig 6: Humidity Sensor



Fig 7: Circuit Diagram

II. SIMULATION RESULTS



Fig 8 : Model View



Fig 9: Internal Connection





Fig 10: Output IV.CONCLUSION

The issue of yield vandalization by wild creatures has turned into a noteworthy social issue in the present time. It requires earnest consideration and a viable arrangement. Therefore this venture conveys an extraordinary social pertinence as it intends to address this issue. Hence we have designed a smart embedded farmland protection and surveillance based system which is low cost, and also consumes less energy. The main aim is to prevent the loss of crops and to protect the area from intruders and wild animals which pose a major threat to the agricultural areas. Such a system will be helpful to the ranchers in securing their plantations and fields and spare them from critical money related misfortunes and furthermore spares them from inefficient endeavors that they suffer for the insurance of their fields. This framework will likewise help them in accomplishing better harvest yields hence prompting their monetary well being. Water assets can be used effectively dependent on different parameters so as to make the horticultural area increasingly beneficial to accomplish the necessities of the intrigue. In customized water framework system the perfect element of the parameters changes in different seasons and at different events. Water is allowed to the field of yields depending on the particular season. So the water framework happens more in summer season, less in stormy season and moderate in winter season. Distinctive parameters, for instance, plant improvement at different stages and atmosphere condition can moreover be considered to choose the water need for the yield. This will improve cultivation provoking financial headway of our nation. The water framework system can moreover be interfaced with sun fueled imperativeness creation module. This can annihilate the issue of nonappearance of intensity in remote zones. Thusly the water framework structure can be climbed to another measurement to execute the issues of sustenance effectiveness and to fulfill the need.

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