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Automated Field Monitoring Using IOT in Agriculture

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ABSTRACT

Agriculture is that the main profession in India, due to the migration of the farmers from rural to urban areas the agriculture rate has been reduced a lots and production also decreased to an oversized Amount. Now-adays due to advancement of humans from villages to metro cities.so we are able to solve this problem by using the IOT. By this we can test the planet fertility, water ground level, humidity and temperature of the place and plants that we grow the soil are managed accordingly.as we get the sustainable conditions for the plant growth. Per the conditions now and again we may get additionally reduced loose spots in the field. It should cause an issue of not having consistency in the least spots within the regions. Hence Automation must be saving power and money for the farmer. This application uses a microcontroller to manage the devices. The sensors also inherit play for the higher results to display. These sensors are combined with established web technology within the kind of wireless sensor networks to remotely control and monitor data from sensors. These sensors and records is taken into account for the farmer's better production of the yields

Keywords-IOT, Sensors, Microcontroller, Motors

I. INTRODUCTION

The purpose of this paper is to make a webpage based automation system for irrigation to cut back the manual monitoring of the sector and obtain the knowledge within the variety of IoT. Agriculture could be a basic source of livelihood People in India. It plays a significant role within the economy of the country. But nowadays due to migration of individuals from rural to urban there is hindrance in agriculture. There aren't any factors that decrease productivity to a good extent. Hence Automation must be There are no factors that decrease productivity to a great extent. Hence Automation must be saving time, money and power for farmers. In this paper, the event of the automated irrigation system supporting microcontrollers at experimental scale within rural areas is presented. The aim of the implementation was to demonstrate the automated irrigation may be won't to reduce water use. A microcontroller for data acquisition, and transceiver; the sensor measurements are transmitted to a microcontroller. This gateway permits the automated activation of irrigation when the brink value of soil moisture is reached. Continuous sensing and monitoring of crops by convergence of sensors with Internet of things (IOT) and making farmers aware about crops growth, harvest periodically and successively making high productivity of crops and also ensuring correct delivery of products to finish consumers at right place and right time.

II. RELATED WORKS

Previously, there was no availability of monitoring the sector environment. Temperature, Humidity, Water, Lighting levels, Soil level won't be detected. At that point these will be checked by radios or other sources. It's difficult to decide which crop should be planned. Accuracy is low. Temperature and humidity won't be detected employing a single sensor. At that point there's no availability of monitoring all these on mobile or other applications. There's no automation in existing days.

III. PROPOSED SYSTEM

Sublime sensors inside the field quarters are dampness sensor and PIR sensor. The info collected from the bones sensors are related to the microcontroller through ESP32. On meridian of products scrap, the small prints obtained are checked with the aim of control felicitations. On the occasion that the information beats the sting, the ringer is ready to ON and the Drove begins to band. This notice is released as a communication to the farmer and conventionally the hugeness is made to be OFF inside the wake offering. The arrestment points are made inside the webpage online net point runner and the farmer gets the bottom needed figure of the highlights. In companion mode, the client gets to uncover ON and banal the microcontroller with the companion of strategy for pressing the catch within the Android programming made. That is done with the assistance of a module. Changed mode, not reached out after the microcontroller is started, accordingly an alarm should be dispatched to the supporter. This is often finished by exercising, having a bearing on the client through the module. The page gives the farmer the mainly needed instructions needed on the most lines. Usually in guide mode the farmer can use the on button directly rather than the microcontroller using the android programming made. This is done mainly using the GSM module. During this mode of using the device the microcontroller is employed to fish off being on if the other one isn't controlled properly. If the notification is

not given even after the microcontroller is started an alarm should be to the supporter. If any of the conditions like temperature, shows the sting regard and also the water degree sensor automatically shows the provision of water in the resource.

Fig: An IoT system that will show the temperature, humidity, lightening levels, water levels etc;

IV. HARDWARE COMPONENTS

IV.I ESP32

ESP32 is an microcontroller with inbuilt Wi-Fi and Bluetooth. ESP32 microcontroller is low cost and low power. This is a power amplifier, low noise amplifiers, power management module and filters, antena. The entire circuit board used 2.4GHz dual-mode Wi-Fi and Bluetooth which is scalable and reliable to many applications.

This microcontroller consists of Built-in CP21XX USB -to- UART Bridge, Wi-Fi: 802.11b/g/n/e/i and Bluetooth, 2x8-bit DACs, GPIO with 36 pins is an available version, and 9xtouch sensors. It has three I/O modes with Digital, Analog and Internal Sensors.

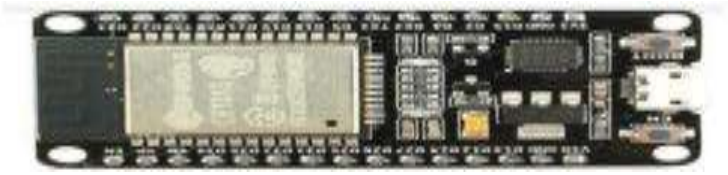

Fig: ESP32 Board

A. Convolutional Autoencoder Unsupervised pre-education is a famous approach, recognised to be useful in instances wherein training statistics is scarce. Fig. 1. Pattern images for automobile damage types. Rows from pinnacle to backside indicates harm kinds Bumper dent, Door dent, Glass shatter, Head-lamp damaged, Tail-lamp damaged, Scratch, smash and No damage

The number one goal of an unmonitored getting to know technique is to extract beneficial features from the unlabelled dataset by way of mastering the input facts distribution. They locate and do away with input redundancies, and typically best hold vital components of the information which generally tend to assist the category venture. A fully related auto-encoders, in particular in case of photographs, results in massive range of trainable parameters. Convolutional Autoencoders (CAE) provide a higher alternative due to much less number of parameters because of sparse connections and weight sharing. CAEs are skilled in a layer sensible manner where unsupervised layers may be stacked on top of every other to construct the hierarchy. Each layer is skilled independently of others in which output of a previous layer acts as an enter for the subsequent layer. Eventually, the entire set of layers are stacked and excellent-tuned by using back-propagation the usage of the pass entropy objective function. Unsupervised initialization has a tendency to keep away from local minima and boom the networks overall performance stability. For training a CAE, we used unlabelled pix from Stan

IV.II DHT11 SENSOR

DHT11 is an Digital Humidity Temperature sensor. It is a low cost sensor. It measures the surrounding location and detects the temperature and humidity by using a capacitive humidity sensor and a thermistor. It has a digital signal on the data pin and no need for analog input pins.

Fig: DHT11 Sensor

IV.III WATER LEVEL SENSOR

Water level sensor is used for detecting the water levels in the field and flow of water levels in open channels.

Fig: Water level sensor

IV.IV LDR SENSOR

LDR is an acronym for Light Dependent Resistor. The LDR sensor is used to detect lightning levels based on the light intensity around the sensor. when light intensity increases then their resistance decreases and vice-versa.

Fig: LDR SENSOR

IV.V L293 DRIVER

L293 Driver is a 16-Pin Motor Driver IC and it has two drive motors. These drivers can run two DC motors at a time. It receives the signals from the microprocessor and transmits the signals to motors.

Fig: L293 SENSOR

IV.VI LCD DISPLAY

LCD is an acronym for Liquid Crystal Display. It has the ability to display graphics numbers and graphics.LCD is combined with integrated circuit(I2C). This circuit is connected with a microcontroller and power supply to display the data and outputs. The LCD display has two rows and each row can print upto 16 characters. It can work in 8-bit and 4-bit mode.

Fig: LCD DISPLAY

V. CONCLUSION

Continuous sensing and monitoring of crops by convergence of sensors with Internet of things (IOT) and making farmers aware of crops growth, season periodically and successively making high productivity of crops and also ensuring correct delivery of products to finish consumers at right place and right time.

Finally, by using this the sphere will be maintained and take several techniques and should see healthy and wealthy crops by IOT.

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