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Auto Farm Monitoring System by Using IOT

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Abstract — Agriculture is the basic occupation in our country. But now due to migration of people from rural to urban and do to the lack of knowledge regarding technology there is hindrance in farming. So to overcome this problem we go for auto farm monitoring system by using IOT. Technological importance has been a great support for making decisions in farming. The development of agriculture has been on under development for the past few years due to lack of Agriculture knowledge, environmental changes and technological knowledge. Here, the main focus is on the improvement of rural and agricultural development through advanced information and communication processes. This project includes various features like humidity & temperature sensing and proper irrigation. It makes use of modem for internet. Various sensor nodes are deployed at different locations in the farm for noting the temperature and humidity. These parameters are controlled through any remote device like android application and the operations are performed by interfacing sensors, Wi-Fi, camera with raspberry pi board. This concept is created as a product and given to the farmer for their welfare.

Keywords: IOT, wifi, raspberry pi, sensors

I. INTRODUCTION

As the whole world is approaching towards the technology there is also need to trend up the agriculture. Many researches are done in the field of agriculture. Most projects signify the use of various sensors such as the temperature and humidity sensor network collect data from different sensors deployed at various nodes and send it to the system. The collected data provide the information and analysis about the various environmental factors. But only monitoring the farm and environmental factors is not the sufficient to increase the yield of crops. Hence automation must be implemented in agriculture to overcome these problems. So, in order to provide solution to all such problems, it is necessary to develop an integrated system which will take care of all factors affecting the productivity. Hence this paper deals about developing auto farm monitoring system by using IOT and given to the farmers. Auto farm monitoring system by using IOT is nothing but E-agriculture. It is the mobile application that will help the farmers to perform the smart farming with the help of IOT techniques and leading to achieve success and increase in their standard of living. Agriculture is considered as the basis of life for the human because it is the main source of food grains and other raw materials. Growth in agricultural sector is necessary for the development of economic condition of the country. Unfortunately, many farmers still use the traditional methods of farming which results in low yielding of crops and fruits. Hence there is need to implement modern science and technology in the agriculture sector for increasing the yield.

II. LITERATURE SERVEY

The existing system has feature to monitor the farm and provide the status. This system is based on SMS technology.[1] SMS technology is used to provide the status of the farm. It uses GSM modem but the system has one disadvantage. As it is based on SMS technology, network issue has occurred there.[2] So system cannot continuously monitors the farm and delay has been occurred in order to provide exact status and farmer faces lots of problem in analyzing the result as well as in monitoring the farm.[3] In order to overcome this problem we focuses on developing devices and tools to manage, display and alert the users using the advantages of a wireless network system.[4] It aims at making agriculture automatic and smart by using IOT technologies. This idea proposes a methodology for smart farming by linking a smart sensing system and smart irrigator system to the system through wireless communication technology.[5] It proposes a efficient wireless sensor network technique to acquire the humidity and temperature from various location of farm to take the decision whether the irrigation is enabled or not.[6]It proposes an idea about how automated irrigation system was developed to optimize water use for agricultural. In this paper, greenhouse is a building in which plants are grown in closed environment.[7] It is used to maintain the optimal conditions of the environment, greenhouse management and data analysis.[8]

III. FARM MONITORING SYSTEM

In farm monitoring system raspberry pi is connected to database and sensors. Raspberry pi collects data from temperature and humidity sensor and update it into the database. To perform data manipulation system retrieves the data from database. There are two modes auto mode and manual mode. In auto mode the received data is verified with the threshold values. If the data is equals to the threshold value the motor switched ON and farmer get the motor status i.e. motor ON an alert must be sent to the user. Automatically the power is switched OFF after sensing. The values are generated in the android application and the farmer gets the detailed description of the values. In manual mode, the user has to switch ON and OFF the by pressing the button in the android application developed.

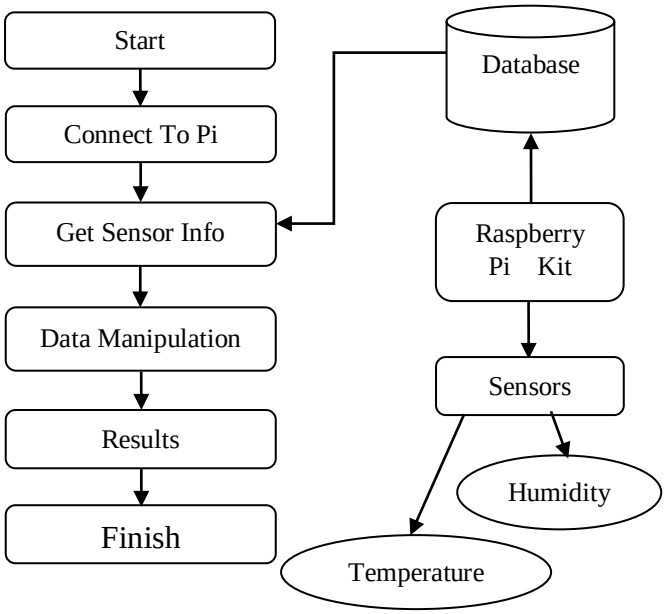

Figure 1 Flow Chart

IV. RESULTS

The hardware is interfaced with all the sensors in the raspberry pi board. The hardware components include the motor, relay, ADC converter and all the sensors interfaced. The raspberry pi board is inserted with a SD card which is used to store recorded values.

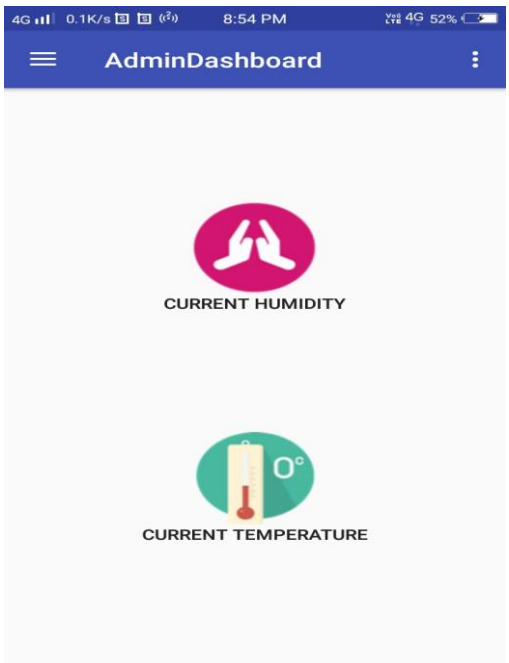

Figure 2 Admin dashboard

Admin dashboard consists of functions such as current humidity and current temperature. The output shown above denotes the current temperature current humidity. It also shows previous values of temperature and humidity according to date and time.

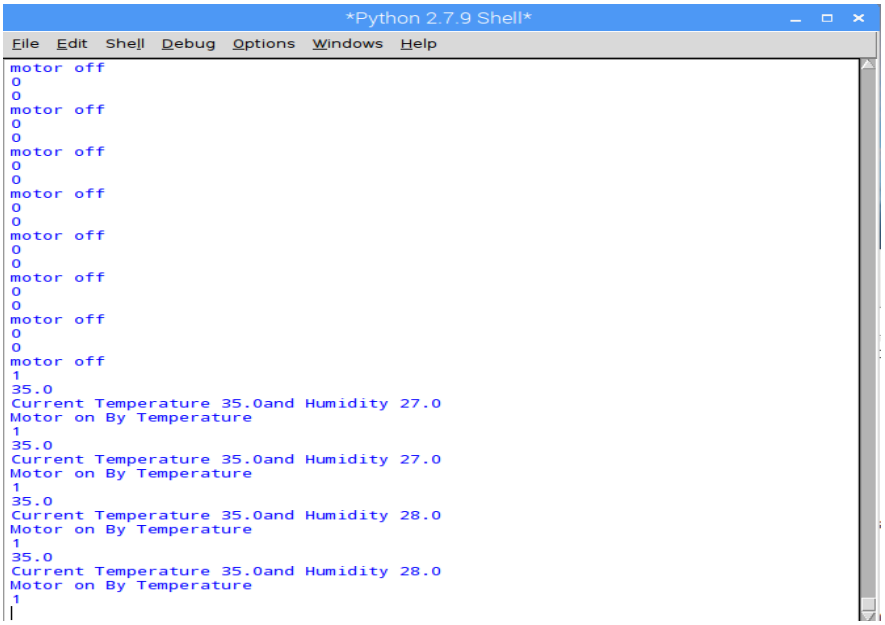

Figure 3 Motor on/off

This is the raspberry pi code which has written for collecing data from temperature and humidity sensor and update it into the database. There are two modes auto mode and manual mode. In auto mode if raspberry pi gives output as 1 then GPIO pin on microcontroller sets as high and motor gets ON otherwise OFF. The values are generated in the android application and the farmer gets the detailed description of the values. In manual mode, the user has to switch ON and OFF the by pressing the button in the android application developed.

V. CONCLUSION

In the severe global competition environment, our country agriculture highlights the low level of industrialization, low management level, low level of information. In order to solve the above problem, the application of new technology is a feasible method. In this paper, the applications of the Internet of things technology to the agricultural, in order to improve the efficiency agricultural products, promote the development of agriculture in our country. Implementation of such a system in the field can definitely help to improve the yield of the crops and production.

VI. FUTURE SCOPE

In future this system can be enhanced by developing this system for large acres of land by increasing the number of sensors and raspberry pi. One of the other way that can implemented is to placed camera to monitor the farm. The sensors, camera and raspberry pi are successfully interfaced and wireless communication is achieved between various nodes. All observations and results prove that this project is a complete solution to field activities and irrigation problems.

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