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Data Embedded Systems Interpretation and Analysis of agriculture using IOT combined with

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***Abstract*- Whenever a farmer thinks of planting a new kind of crop in his farm land, he would not be able to predict the growth of the crop .if the crop decays it would result in loss for the farmer. Our paper focuses on precision agriculture, in which we would be growing a small amount of a particular crop in a favourable environment and its parameters would be uploaded to the cloud, and it would be analysed and interpreted and the based on the output got the favourable environment would be set up even in the open space . By this way the risk for losing the crops and money can be saved.**

I. INTRODUCTION

In agriculture it is productive whenever the farmer cultivates many types of crops suitable to that specific environment and soil condition. Here we focus on developing a system which is a combination of both IOT and embedded system which monitors the growth of the plants and makes the farmer aware of the needed environment also provides required environment for the crops and plants to get more yield. We also maintain a database which is used to keep record of the parameters that are measured and we upload it to the cloud through WI-FI shield. Instead of planting a new crop and resulting in loss, the farmer can first test the crop yield in different environmental cindition in a closed environment and also in different soil.Based on the yieldobtained the further action is taken whether to use the crop or not.

II. MOISTURE SENSOR

Here we are measuring the water content in the soil because the plants need water to grow and give yield.The water content is measured and uploaded to cloud.In the cloud a data base is maintained, which is used to for data interpretaion and analysis.A condition is also implemented, when ever the moisture level goes below certain threshold value then the motor is turned on to satisfy the required level. The values are given in an analog port where further process occurs.

III. NODEMCU

NodeMCU is an eLua based firmware for the ESP8266 WiFi SOC from Espressif. The firmware is based on the Espressif NON-OS SDK and uses a file system based on spiffs. The code repository consists of 98.1% C-code that glues the thin Lua veneer to the SDK. The NodeMCU firmware is a companion project to the popular NodeMCU dev kits, ready-made open source development boards with ESP8266-12E chips.

IV. TWO CHANNEL RELLAY CIRCUIT

The two channel relay circuit is used to act as switch where a ac source is connected, when a ON or high value is received rom the controller then the switch will be turned ON and the device will be further connected and it will run here we are using blower and motor because of that we are using two channel relay circuit.

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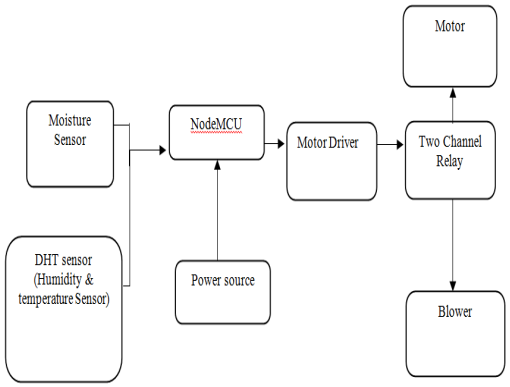

V. DRIVER CIRCUIT

The Driver circuit is used because the HIGH signal received from the controller is 3V and it is converted into 5V, because the two channels relay needs minimum 5V charge in it to give out a closed switch, here a 9V supply is given to the driver circuit.

VI. PROCESS

If a farmer thinks of cultivating a new crop then the specific crop is tested under a closed environment. It would having three parameters noted humidity in the air ,temperature of the surrounding and moisture level in the soil.

Here we are using four types of soil black soil, red soil, alluvial soil and mountain soil, nothing but check in which soil the crop yields high and also to check whether soil of the famer is well suited for the plant to grow. Then from seeding stage to the final yield the parameters like humidity, temperature and moisture content is noted and uploaded to cloud . If the moisture content in the soil goes below certain threshold value then the motor is switched ON automatically and if the humidity value goes above certain threshold value then blower is turned ON automatically the humidity value is set as that of the farm land because it would it cultivated finally at his place. The time period for which the motor was on will also be updated to the cloud because when the time period of the motor is noted then the same would also be done in the field, because the farmers supply the water to the farm land for certain time as informed to them and some of it would also be wasted, so based upon the power of the motor and land to which the motor is going to supply water is noted and also a calculation is done about how long the motor has to run to make it ready to cultivation. Based upon the values obtained from the in cloud the data is analysed and interpreted accordingly and the finally result is obtained based on which plant gives the best yield to the different environment. Here we are also supplying different amount of water to the farmland because each soil has different water absorbing capacity based on each moisture sensor values the motor would be supplying water to the plant and the parameters value would be uploaded to the cloud through wifi

VII. CONCLUSION

The sensors are successfully interfaced with the NodeMCU board and data's are uploaded through wifi shield which is present in the NodeMCU. All observations and experimental tests proves that project is successful is finding out which is best environment for cultivation a crop in specific place. In the base paper only the environmental setup is controlled through IOT but here we are analysing the data along with controlling the environment and interpreting the data in a useful manner

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