Farmer’s Friend System using IOT

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Abstract - The population of the country is growing exponentially day by day. Therefore it is very necessary for the system to manage the economy of the country and also to provide its citizens healthy food. The backbone of the food industry depends on the products supplied by the farmers of the country. It is therefore very essential to help the farmers so that they can produce hefty amount of food grains for the country. The production should be rapid but not by any means of false methods. This can be done with their past experiences for the production of the grains. This model completely focuses on the data analysis which notifies the farmers to take appropriate and necessary steps and make proper use of the resources for meeting the goals in the least minimum time. Moreover, this is the cheapest form of method that the farmers can use to meet the needs

Keywords - AI; BP Series; Controller; IFTTT; IOT; Moisture Sensor; ThingSpeak

INTRODUCTION

The development of a country depends upon the population and its contribution to the country’s economy. The country’s food industry solely depends upon the production of agricultural farm land which is maintained by the farmers of our country. In India, agriculture in villages plays a vital role in developing the country. Thus, our main aim is to help the farmers so that they can improve the yield of the agricultural land. And will make them to understand the suitable crop for the farm land so that the particular land will give them the maximum yield.

Apart from all these parameters, this system will also provide the platform for the farmers to view and refer the various prices of the crops that are being sold in the country. This will help the farmers to sell the crops in their required price range and the consumers in return can also get the benefit from the crops being sold in the proper rate.

CIRCUIT DIAGRAM

The electronic sensors are the prime components in this proposed system. The cloud services are used to fetch the values from the sensors and trigger mail to the users. Below is the block diagram for this proposed model for the better understanding of the model

![Block diagram for this proposed model](image)

The components and the softwares used for building this proposed system are described in the following sections.
A. NodeMCU1.0 (ESP-12E Module)

NodeMCU popularly known as the Wi-Fi module which is used in various fields of IOT and this device application is on a large scale.

The Wi-fi module is fitted with the chipset, whose model no. is ESP8266. There are basically 30 pins in the board to be used in any functions according to the user. The specifications of the pins are described below:

<table>
<thead>
<tr>
<th>Microcontroller</th>
<th>ESP8266</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>80MHz</td>
</tr>
<tr>
<td>Flash</td>
<td>4MB</td>
</tr>
<tr>
<td>RAM</td>
<td>80KB</td>
</tr>
<tr>
<td>Vendor</td>
<td>NodeMCU</td>
</tr>
</tbody>
</table>

B. IFTTT

This is the carrier by which messaging and mail can be done to notify the farmers so that they can easily apply the solutions and increase the productivity. All the steps applied are directly informed to the farmers.
The above shown Table I is the collected data sets for the proposed model. It visualizes rather highlights the main four crops that are being grown in India. The average of each crop is also being depicted in the above collected data set. Likewise, all the crops have their respective averages.

Table II describes the data set for the collected data set. Here, the mean, std, and the min, etc. values are also being given for easy study. A brief conclusion about the production rates about various crops can be taken out from the above data. Basically, this is the average of all the crops and their rates in particular parameters. This data set is now treated as an unstructured data, thus we have clustered all the data and produced separate centroids and collected the index of each crops.

Table III Plot of the clustered data from the collected data sets

```python
array([[ 121.92105263,  129.25 ,  125.1 ,  116.42894737,
        140.40789474,  103.02368421,  102.28684211,  102.24210526,
        98.37105263,  103.77631579,  129.44736842,  127.31642105,
        124.56052632,  129.94735842,  137.14210526],
       [ 1427.7 ,  1571.5 ,  1463. ,  1430.3 ,  1790.6 ,  121.3 ,  125.9 ,  126.5 ,
        122. ,  136.6 ,  1176.6 ,  1247.7 ,  1156.8 ,  1172.1 ,  1318.8 ],
       [ 261.10625 ,  222.6 ,  238.0375 ,  231.35 ,  277.11875 ,  146.575 ,  156.2125 ,  163.59375 ,
        165.06875 ,  182.3 ,  145.125 ,  148.2375 ,  145.69375 ,  146.275 ,  158.075 ]])
```
All the centroid data are produced from the described data sets and this will help to produce the indexes and then respective plotted clusters are produced, bad–segments are also produced and that will help to analyse properly, so that the area with the lowest crop production is found out and proper steps can be taken to increase the productivity of the particular area.

This is the final output of the dataset collected. Decisions are taken to increase the productivity of the crop of the respective area, so that the farmers are benefitted from this model.

**PROPOSED MODEL**

Below is the hardware model of the proposed model.
CONCLUSION

The farmer’s friend model is the basic model will help the farmer to collect the proper soil quality report and based upon that the farm land is set to grow certain particular crops and thus increasing the yield of the farm land and so the farmers benefit in the form of profit shares.

SCOPE FOR THE FUTURE

A better version of it can be made that to make the model simple and understandable to the farmers, i.e, the mobile-friendly version as well as the web-application so that they can apply this method themselves without seeking the help of the expert, i.e, making them self-independent in the process.

REFERENCES

[3] India Brand Equity Foundation, IBF, Business Opportunities in India. (www.ibef.org)