e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
Volume:03/Issue:06/June-2021 Impact Factor- 5.354 www.irjmets.com

SMART FARMING USING IOT

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ABSTRACT

The Project Smart Farming (Scarecrow) is an IOT based devices project using the Mobile App which would turn the way of agriculture production by not only enhancing it but making it Efficient, User friendly and Safe. The aim/ Objective of this report is to proposed Scarecrow Project in the Agriculture Field which will enable to save the crops from the birds, also getting Live Data(Temperature, Soil Moisture) for efficient environment monitoring which will enable them to increase their overall yield and quality of products and also handle the Agriculture Equipment (Motor, Sprinklers, Sound Making buzzers) through Mobile App by One Click. The Project is also integrated with NodeMCU Technology mixed with different Sensors and Node MCU module producing live data on users Mobile Screen. The product would give High Accuracy over 93% in data Feeds.

Keywords: NodeMCU, Buzzer, Pump, Firebase Cloud, Android Studio.

I. INTRODUCTION

The Agricultural Farming is done by using human eyes, where farms are protected by Scarecrow (Dummy Person) which is made of grass, pot as a inspectors. However, the accuracy of human inspection is unstable due to fatigue, and it is more challenging for human eyes to detect Birds Attacks on the crops. To Avoid persons usually uses the anonymous or a rope to protect crops. Therefore, automated inspection becomes a popular way for substituting human inspection, as machines are good at repeating a same task without fatigue. Until now, most automated Crop inspector machines are realized by using visual inspection systems.

II. LITERATURE SURVEY

Sr. no.	Name of the paper	Author	Year of publication	Technology used	Limitations
1	Automation in Agriculture and IoT	Vaishali Puranik, Ankit Ranjan, Anamika Kumari	2019	Arduino Circuit, 2X16 Liquid Crystal Display, GSM Module	Cost is high
2	An IoT Instrumented Smart Agricultural Monitoring and Irrigation System	Anil Kumar Saini, Susmita Banerjee, Himanshu Nigam	2020	ThingSpeak, NodeMCU, Sensor, E-mail	Increased channel maintenance
3	Smart Agriculture Based on IoT and Cloud Computing	Sriveni Namani, Bilal Gonen	2020	Sky Drone FPV2, Cloud Computing	It requires strong network
4	Providing Smart Agricultural Solutions to	M.K.Gayatri , J.Jayasakthi ,	2015	Sensor module, Processor module, Communication	There could be wrong analysis of weather

	Farmers for better yielding using IoT	Dr.G.S.Anandha Mala		module	conditions
5	Managing Crop for Indian Farming Using IOT	S. Geetha, P. Deepalakshmi, Shilpa Pande	2019	Sensors, Arduino Microcontroller, Data Transmission	Complex for uneducated person
6	Smart Farm Monitoring Using Raspberry Pi and Arduino	Siwakorn Jindarat, Pongpisitt Wuttidittachotti	2015	Embedded System, Raspberry Pi, Arduino, Android, Smart Phone	Expensive

III. METHODOLOGY

1. Block Diagram:

Block diagram consist of basically three important sensors i.e. Temperature Sensor, Soil Moisture, Humidity Sensor. A temperature sensor is an electronic gadget that gauges the temperature of its current circumstance and converts the info information into electronic information to record, screen, or sign temperature changes. The Soil Moisture Sensor utilizes capacitance to gauge dielectric permittivity of the encompassing medium. In soil, dielectric permittivity is an element of the water content. The sensor makes a voltage relative to the dielectric permittivity, and along these lines the water substance of the dirt. A humidity sensor psyches, cycles and reports both humidity and air temperature. The proportion of humidity noticeable all around to the most elevated measure of humidity at a specific air temperature is called relative humidity. Relative humidity builds up a fundamental angle when searching for alleviation.

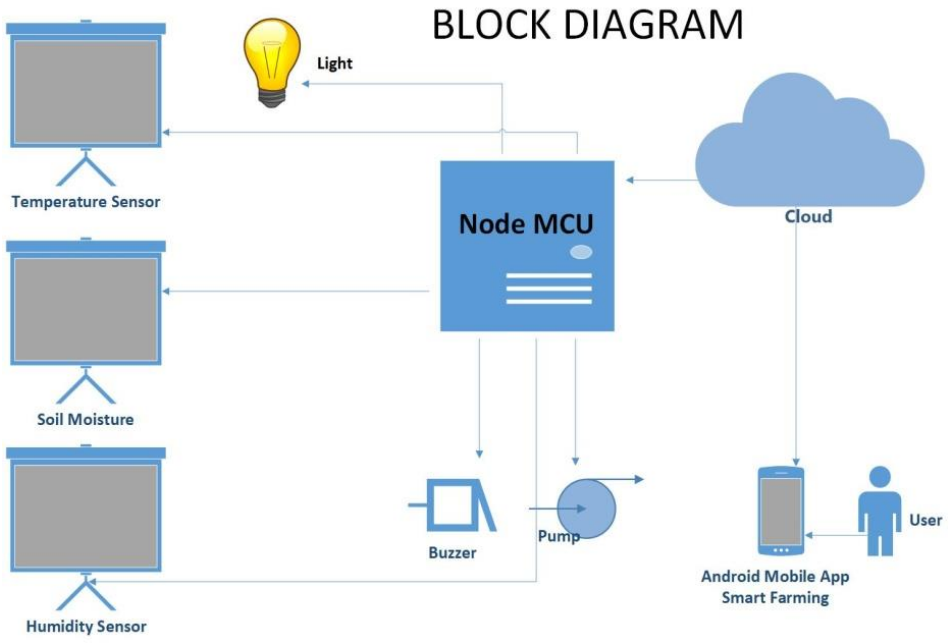

Figure 1: Block Diagram

2. System Architecture:

In system architecture, Scarecrow is an main model. The aim of this project is to provide security as well as maintenance to the Agriculture Field which will enable to save the crops from the birds and Animals with help of the scarecrow and a swirling rope controlled by a motor to prevent crops from getting damaged.

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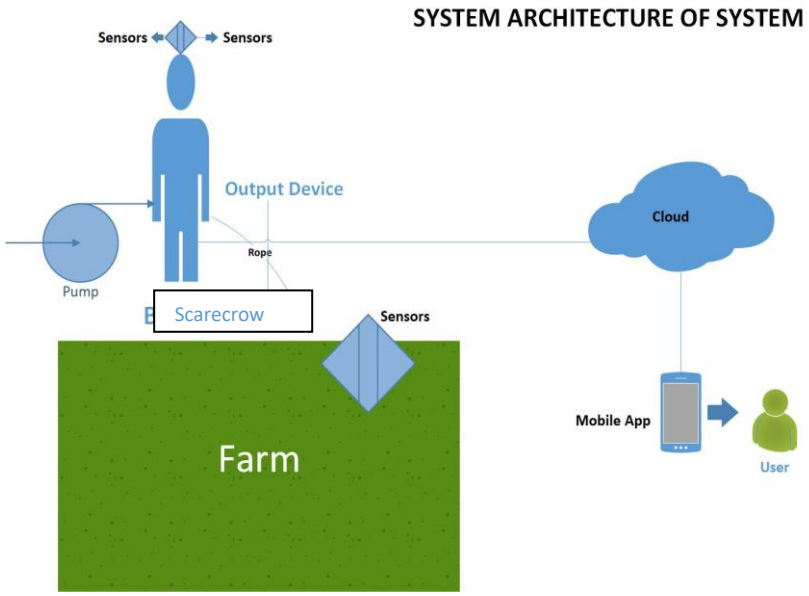

Figure 2: System Architecture

IV. DATA FLOW DIAGRAM (DFD)

Process modeling is usually used in controlled analysis and design methods. It is called a data flow diagram (DFD). This process explodes to a lower level DFD that divides the system into smaller parts and balances information flow between, both the parent and the child diagrams. Multiple diagram levels may be needed to put across a complex system .This element will present the process modeling.

1. Level 0 DFD:

The level-0 (DFD) diagram shows the main serviceable areas of the system under investigation. As with the context diagram, any system under investigation should be presented by only a single level-0 (DFD) diagram. Below figures helps visualize the DFD diagram .There are three dissimilar processes, which offer a realistic way to begin the analysis. These are sensing the live data of temperature and humidity, setting processes through application and applying all at the end i.e to control the buzzer, motor, pump, rope through application and sensor data.

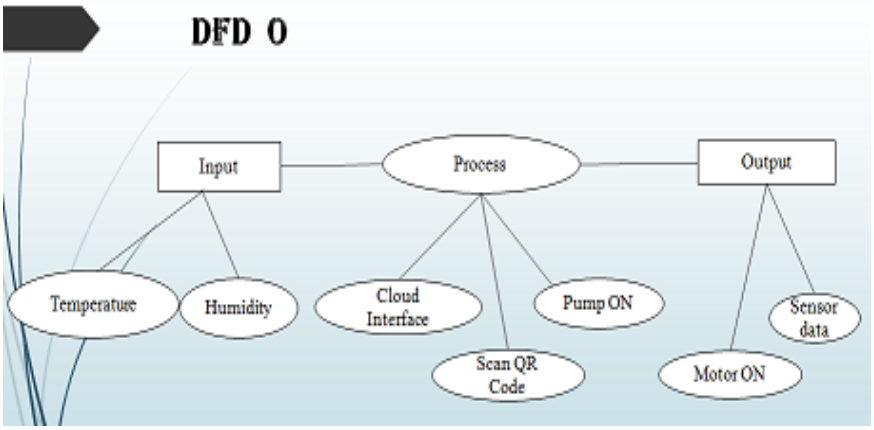

Figure 3: Level 0 DFD

2. Level 1 DFD:

Level-1 (DFD) diagram shows another important functional areas of the system under investigation. As with the level 1 (DFD).There is no formula that can be useful in deciding what is, and what is not. Level-1 (DFD) process describes only the main serviceable areas of the system, and the temptation of including lower level processes must be avoided on this diagram. Here the overall processing of the system is shown. What is done and how it is done has been clearly described in the level-1 DFD. Only the main sub processes are described here.

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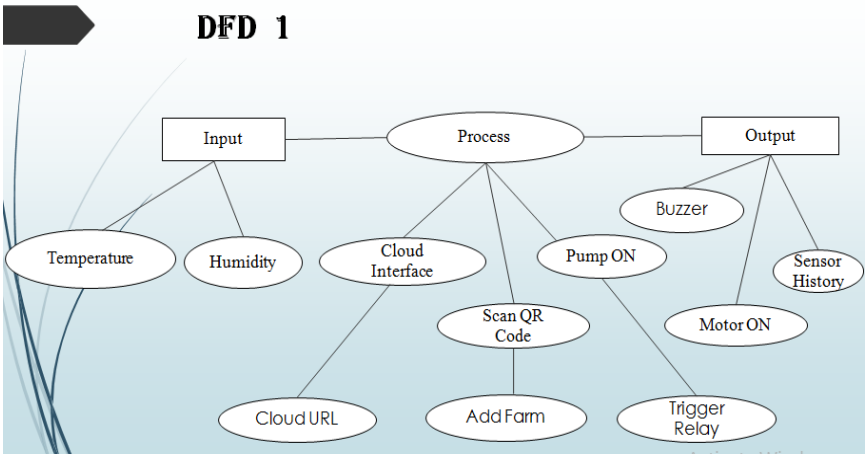

Figure 4: Level 1 DFD

V. CONCLUSION

The project offers reliability, high efficiency and avoids time wasting with provision of easy control. Users will get to add their farm land information which will get stored on cloud as well as use the android application where they can daily check the temperature, soil moisture and know if the crops are in need of water. Also users can view information, notifications anywhere and anytime. The application will also help control the rope and buzzer in order to provide security to the farm. The motor and water pump both can be controlled by the user through the application in order to maintain the growth of their farm This project ultimately provides high security and a system that reduces the work and resources necessary in the traditional processes. Thus, on the basis of analysis of this system, we have come to a conclusion that the proposed system will not only help the automation in farming but will also help to digitize the process and in turn help to deploy proper mapping and maintenance of farmlands benefitting farmers/owners.

VI. REFERENCES

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