

# Roboculture –Web Based Multipurpose Agricultural Robot

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**Abstract**— Roboculture is a design, development, and fabrication of the robot which can cut the weeds, and sprayer to spray water and pesticides, act as a scarecrow, monitor the rain, humidity and send to the cloud. These whole systems of the robot work with battery and solar power. Most people in world have agriculture as primary occupation. The vehicle is controlled by wifi technology using the web. Now a days robots are widely used in agriculture. The robots are appearing on farms in various cloaks. We can expect the robots performing agricultural operations autonomously and help in reducing efforts.

**Keywords:** Solar panel, Battery, DC motor

## I. INTRODUCTION

Agriculture is most important industries, which provides food, feed, and fuel necessary for our survival. Over the past 40 years, there has been a gradual fall in the contribution of agriculture. This could be attributed to the present generation’s lack of interest in farming as there are other easier ways of survival over agriculture. Hailing from a country like India, it has always quoted for the famous saying- “Agriculture is the backbone of India”, and yet agriculturists, rather the farmers, happen to be the people who work the hardest. It results in a rapid decline in the number of people opting for this job. Some of the major problems in the Indian agricultural are rising maintainability, availability of labour, lack of water resources, crop monitoring. To overcome these problems, the automation technologies are used and some operated machines are available which are costly.

## II. PROBLEM STATEMENT

To develop and design a web application based robots to minimize efforts required for farming activities and monitoring it from anywhere at any time.

## III. NEED OF WORK

- 1) To automate the agricultural field to reduce farmer efforts.
- 2) To reduce manual labour and labour cost.
- 3) To increase production and save time.
- 4) To use solar energy.

## IV. OBJECTIVE

According to the problems, we come to know about actual field requirements, the specification or characteristics of our project. The roboculture should satisfy the following objectives:

- 1) There is need for automation in the agricultural field to reduce farmer efforts.
- 2) To perform spraying, scarecrow, cutting weeds at a single time increases production.
- 3) For battery charging, solar panel is used.

## V. SYSTEM DESIGN

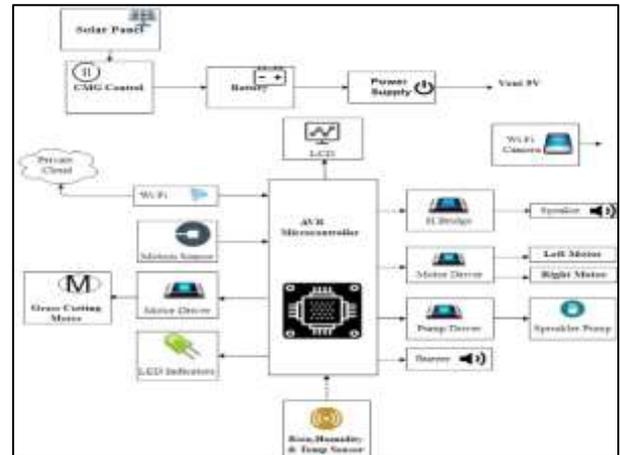


Fig. 1: Architecture diagram of system

### A. Rain and Temperature-Humidity Sensor:

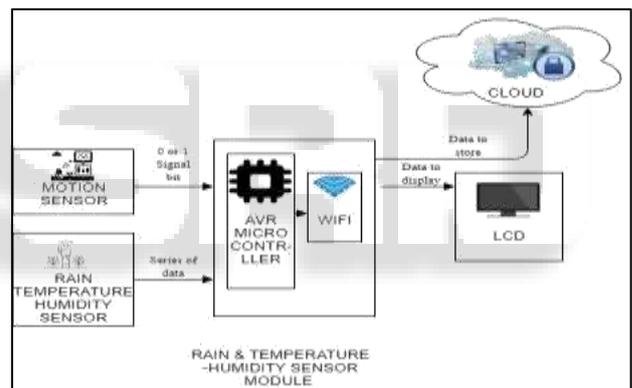


Fig. 2. Rain and Temperature-Humidity Sensor

In this module, different types of sensors are used for some purposes. The appropriate sensors are used for detecting rain, humidity and temperature. Due to the use of these sensors, the farmer can gain the prerequisites regarding rain, humidity, and temperature.

### B. Watering and pesticide module:

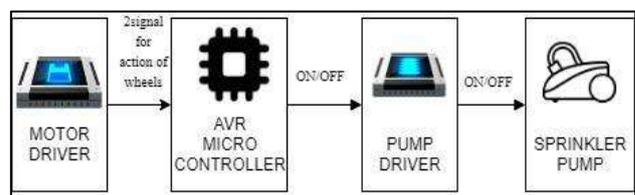


Fig 3. Watering and pesticide module

The main purpose of this web app is to control the watering. The user can water the grass and also spray pesticides. Sprinklers will be used for water supply purposes. A water container is used for water storage as well as pesticide storage. The water flows to the sprayer through a pipe. The power for the pump is regulated by a toggle switch. The same

process is applied for spraying pesticides. As the same container is used for both the purpose, it is cost efficient.

C. LCD Module:

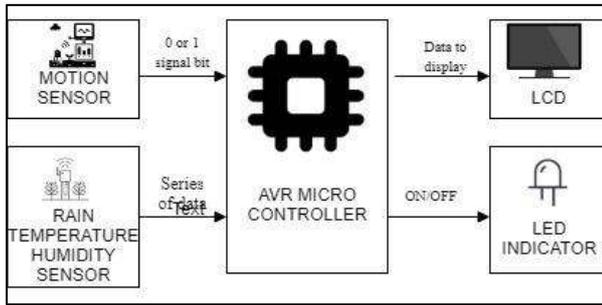


Fig. 4: LCD Module

In this module, the full system can be connected to the device (PC) through the Wi-Fi. So that the farmer can control the system from anywhere. This plays a vital role. It also gives information which can be received from the sensor. It displays on LCD which can be noticed by the farmer.

D. Cutting Module:

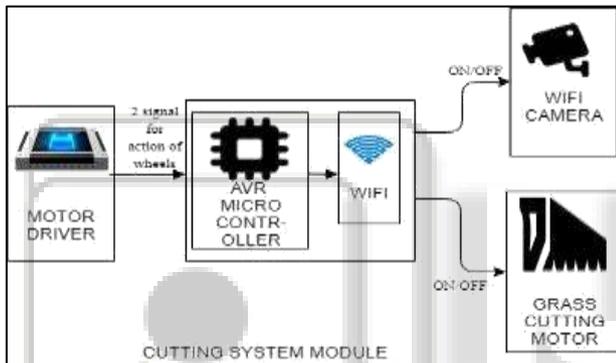


Fig. 3: Cutting Module

In this Module, a grass cutter is utilizing one or more revolving blades to cut a grass surface to an even height. The wheels are instinctively connected to the blades so that when the blades spin or the machine may have a battery-powered or plug-in DC motor. A camera will we use which will provide the visuals of unwanted grass. This system can also be controlled through the web page created using ASP.NET.

E. E-Scarecrow System:

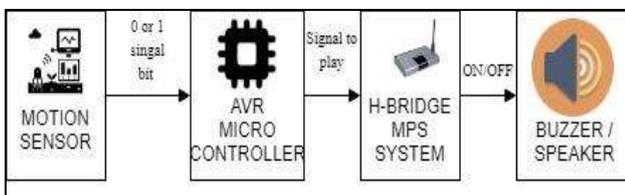


Fig. 3: E-Scarecrow System

Scarecrow is a decoy or mannequin this plays vital role in threatening the birds. The stationary scarecrows are common but this one can be in motion as well as have speakers which contains noisy recordings which will keep the birds away from crops, thus helping the farmers in protecting the crops.

VI. ADVANTAGES

It is made of durable material affordable for the small- scale peasant farmers.

- 1) Lesser maintenance cost.
- 2) Decreased requirement of labour.
- 3) Does require External Source of Energy such as solar energy
- 4) Reduce the workload on the farmer and as it is easier to operate.
- 5) The farmer need not spray in the hot sun, he can operate the device from the specific distance.

VII. CONCLUSION

This system introduces wireless technology in the field of agriculture. Provides a ductile user interface to farmer to control the machine adequately. It reduces manual labor requirement. It can work in any sort of climatic condition as well as can work nonstop unlike humans. The time required to carry out the five functionalities cut down much in comparison with manual. It is a single time investment which reduces the farming cost. This Roboculture acts as a gateway to automated smart farming.

VIII. FUTURE SCOPE

Proceeding further, the system will be developed for working in agriculture farming. The system will use solar energy for battery charging. This battery will be connected to the robot for giving motion to it. This system will be fully controlled by the Web application which will perform various activities.

REFERENCES

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