

Agriculture Based Automatic Pesticides Spraying Robot For Crops

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ABSTRACT

One of the significant occupation in a creating nation like India is horticulture. It is very imperative to improve the effectiveness and profitability of agribusiness by supplanting workers with clever machines like robots utilizing most recent innovations. We attempted to execute like new methodology to supplant people in different horticulture activity like identification of quality of bugs, showering of pesticides, splashing of composts, and so on there by giving security includes structuring a model which utilize basic financially savvy hardware like raspberry pi, camera, dc engines and terminal gear which is a guide to the ranchers in different harvest field exercises.

Keywords— Raspberry pi, Arduino , Raspberry pi Camera, DC Motor, L293 IC

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I. INTRODUCTION

Presentation Agriculture is significant in Indian economy. It gives occupations to over 60% of the populace , In India cotton development is done for an enormous scope. Maharashtra is a conventional maker of cotton with creation of 29.78% of complete cotton creation in India. Over 80% of creation of cotton is delivered by Khandesh, Vidarbha and Marathwada. Plant infections recognition and the executives is a difficult assignment. For the most part illnesses are seen on leaves or stems of the plant. Right now present a way to deal with recognize the grapes leaves ailments utilizing picture preparing procedures . From reference , Control System Design of Spraying Robot Wang Fujuan College of Electrical and Information Engineering XuChang University XuChnag, China Wangfujian2008@163.com we analyzed that, around 80-90% of the maladies found on grapes leaves. Here we are recognizing four maladies on grape leaves . So our investigation of premium is as it were on grape leaves not on whole plant.

The terms pesticides alludes to assortment of mixes like bug sprays, fungicides, herbicides what's more, others. The ranchers experiences different antagonistic impacts of showering pesticides like barrenness, sterility, long haul cerebrum harm, respiratory confusion ;like asthma, bronchitis and so on. This paper gives an answer for the

wellbeing issue that emerge because of the splashing of pesticides. The illnesses found on grape leaves are recognized in following advances. the maladies leaf is obtained utilizing a camera. Different preprocessing techniques like RGB to Dim, thresholding , limit recognition , editing , division , include extraction examination are performed. ANN is utilized as a classifier for testing the information picture with the picture previously put away in database.

II. LITERATURE SURVEY

A lot of research has been done in digital image processing to improve the quality and quantity in agriculture production all over the world.

1.IEEE paper- Agriculture robotic vehicles based pesticides sprayer with efficiency optimization Authors: Aishwarya. B.V, Archana G UG Scholar

The developed system involves designing a prototype which uses simple cost effective equipments like microprocessors, wireless camera, various motors and terminal equipments which is an aid to the farmers in various crop field activities. This system involves usage of PIC Micro controller to control the movement of robot with the help of joystick (transmitter) and a receiver. The vehicle tracks the path taken by the robot.

2. IJECE journal Paper- Solar Powered Semi-Automatic Pesticide Sprayer for use in Vineyards ,Authors: Ahalya , Muktha , Veena , Vidyashree , Rehna

This paper presents a semi-automatic pesticide sprayer system which operates using solar power. The semiautomatic sprayer is a three wheeled vehicle which sprays pesticide in any given vineyard with almost nil human assistance. The vehicle is powered using an onboard solar powered battery which brings down the running cost. The control of the vehicle is achieved using an inbuilt microcontroller unit which is programmed to respond to the zigbee wireless device .Microcontroller used in this paper is AT89S52.

3.IJERMS Paper- Degarmo , Materials and Processes in Manufacturing (9th ed.) ,Authors: , E. Paul; Black, J T.; Kohser, Ronald A.

This paper deals with the exposition of how robotics can be applied to various phase of agriculture. One of the most important occupations in developing country like India is agriculture. It is very important the efficiency and productivity of agriculture by replacing labours with intelligent machine like robots using latest technologies. The paper proposes a new strategy to replace humans in various agricultural operations like detection of presence of pests, spraying of pesticides, spraying of fertilizers etc thereby providing safety to the farmers and precision agriculture.

III. PROBLEM STATEMENT

To plan programmed splashing robot to actualize the showering strategy for harvests to decrease the human endeavors and to keep away from constant splashing caused by motorized non particular in which human drives a tractor

IV. OBJECTIVES

1. To structure programmed showering robot for crops.
2. To catch a picture utilizing camera and to identify tainted yield territory.
3. To shower the pesticides on the contaminated territory of yield.

V .PROPOSED WORK

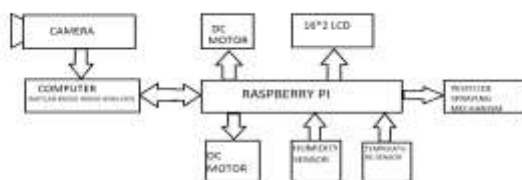


Fig.1. Proposed system

Database for preparing and testing. Database comprise of picture of ordinary and ailing leaves.

Picture obtaining and preprocessing: The absolute initial step is to secure the pictures of grape leaves by a camera. Different picture preprocessing tasks like RGB to dim, thresholding , limit identification, trimming is accomplished for additional preparing and examination..

RGB to HSV: First RGB picture of leaves are changed over into Hue, Saturation, esteem shading portrayal Shading model is the well known model since it depends on human observation. Tint is a shading credit that alludes to the prevailing color as perceived by an observer. Saturation refers to the relative purity or the amount of white light added to the hue and intensity refers to the amplitude of light.

Division: After the HSV estimations of the leaf is removed, the picture is then fragmented into number of squares of equivalent size. Right now approach square size of 10*10 is taken. So the squares which are having more data are utilized for additional examination.

Highlight extraction: In the proposed approach, shading is the ideal include. Right now, values are changed over to Hue, Saturation and Value for additional investigation.

Grouping: Here order of information picture is finished by contrasting and different pictures in database. Right now ANN is utilized as a classifier. ANN as a called neural system (NN) is a numerical model or computational model that is roused by the structure as well as practical parts of organic. A neural system consists of an interconnected group of artificial neurons and it processes information using a connectionist approach to computation.

VI. SPECIFICATIONS

1. DC MOTOR



Parameter	Value	Unit
Input Voltage	12	V
Speed	26	Rpm
Torque	588	mNm
Weight	160	G
Power	1.1	W
Diameter	37	mm
Length	27	mm

2. CAMERA



- Still goals 1.3MP
- Weight 3gm
- Optical Size 1/4 inches
- Vedio mode 720 p60

3. L293D IC



- SUPPLY VOLTAGE RANGE 4,5V TO 36V
- 600-mA Output Current capability per driver
- Separate input logic supply
- Thermal shutdown
- Internal ESD protection

4. RASPBERRY PI



- SoC: Broadcom BCM2837
- CPU: 4*ARM Cortex-A53, 1.2GHz

- RAM:1GB LPDR2(900)
- Systems administration: 10/100 Ethernet, 2.4GHz 802.11n remote
- Bluetooth : Bluetooth 4.1 Classic, Bluetooth low vitality
- Storage: microSD
- GPIO: 40-pin header, populated
- Ports: HDMI, 3.5mm simple sound video jack, 4*USB 2.0, Ethernet, Camera sequential interface, Display

5. ARDUINO



sequential interface ARDUINO

- Operating Voltage: 5v
- Input voltage:7-12v
- Input voltage: 6-20v
- Digital I/O pins:14
- Analog Input Pins: 6

VII.RESULT AND DISCUSSION

The employable outcomes got with mechanical specific splashing of infections manifestations were quantitatively evaluated through

- a) The affectability of particular treatment, for example the capacity of covering genuine targets
- b) The capacity of maintaining a strategic distance from overabundance of pointless showering.
- c) The pesticides decrease of specific treatment, which communicates the decrease of utilized pesticides in examination of an ordinary uniform showering conveyance worked at same application rate. As one explicit and illustrative outcome, blue diagram in figure shows a malady spots as identified by framework and relating splashing worked by robot. These outcome are contrasted and the "great truth" in the red graph which appears in the ailment manifestations marked by a plant pathologist by a visual investigation led before mechanical pass, and the registered negligible spot showering important to treat all the ailment foci. The got decrease in pesticides use contrasted with regular homogenous showering of covering was 84%. For this particular situation, a potential showering decrease of 6% could have been accomplished by activating the base number of showering spots important to treat illness manifestations really distinguished by the plant pathologist.



VIII. CONCLUSION

We have inspected that how effectively the grape leaf malady identification is conceivable with different picture handling methods. Perceiving the malady and splashing pesticides is the fundamental reason for purposed work. In future work van be stretched out to identify increasingly number of malady in grape plants. Additionally over utilization of pesticides can be maintained a strategic distance from with legitimate control. Medical problems identified with ranchers can be diminished via programmed showering of pesticides. The outcome acquired above shows that and rust are the most happening malady in grape plant. The productivity of the purposed work is about 84%. This is a very straightforward, exact what's more, hearty technique to recognize grape ailments. This model can assist with improving the profitability of grape in India.

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