

Automatic Farmer Friendly Pesticide Spraying Robot with Camera Surveillance System

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Abstract - Compared to spraying pesticides manually when the environment is more closed, and has a high temperature, humidity and so on for operating the spray work in the greenhouse in which we use Bluetooth communication to interface controller and android. Controller can be interfaced to the Bluetooth module through UART protocol. According to commands received from android the robot motion can be controlled. The consistent output of a robotic system along with quality and repeatability are unmatched. Although the productivity of the prototype is not quite efficient, the robot still meets the requirements of pesticide spraying in the greenhouse without human operators.

Key Words: PIC Controller, Android Smartphone, Bluetooth Module, DC Motor, Wireless Camera Unit

1. INTRODUCTION

Day by day, the Electronics and Electrical industry develops the different systems as per requirement of people. So as an Engineer, we always think about the need of people and try to complete that requirement. So as per requirement of society we design this system, which is a combination of different subsystems and using this subsystem we can produce this important and intelligent device. This project which can help the people in different problematic condition between Agricultural farming and pesticide spraying. Agricultural is one of our most important industry for providing food, feed and fuel necessary for our survival. Certainly, robots are playing an important role in the field of agriculture for farming process autonomously. Normally, farming process include planting, irrigation, fertilization, monitoring and harvesting of a crop of any kind.

2. RELATED WORK\ LITERATURE REVIEW

This project describes the pesticide spraying with robot vehicle. In previous paper the pesticide spraying robot is done with the help of microcontroller. In some system camera was not used so spraying mechanism cannot be closely observed. The previous systems are only based on the solar energy, so many problems are created. In this project we used PIC controller, Bluetooth module, android app, IR sensor and camera using these farmer can easily control the robot and pesticide spraying on the crops by viewing on the computer/Camera/digital video recorder.

3. POPOSED METHODOLOGY

Existing system:

In earlier days spraying is done by using hand pump by a farmer manually. Direct exposure to the pesticide liquid work environment, great harm to human body.

Proposed solution:

The proposed solution of our system is robotic model provides facility to control the movement of agriculture vehicle in different direction and spraying pesticide on crops. Our system reduces the health problems which is caused by traditional technique.

3.1 BLCOK DIAGRAM

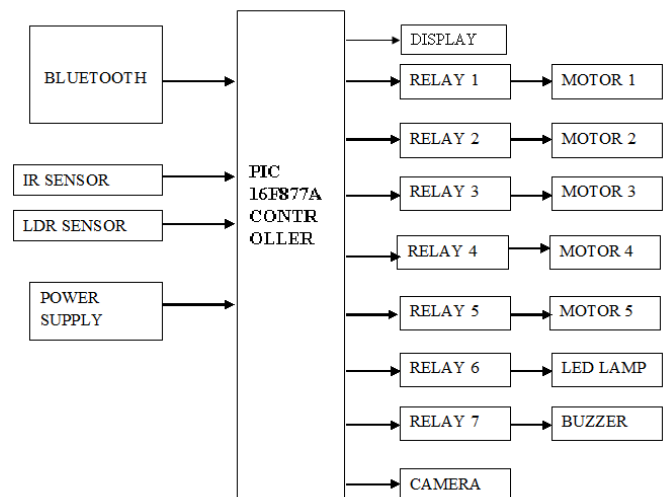


Fig 1: -Block diagram

A Bluetooth module operated robot. Now here is a simple to control our robot using Bluetooth module and PIC16F877A microcontroller device. The controlling devices of the whole system are a microcontroller. Bluetooth module, DC motors are interfaced to the microcontroller. The data receive by the Bluetooth module receiver fed as input to the controller. The controller acts accordingly on the DC motor of the robot. The robot in the project can be made to move in all the four directions using the android phone. When object is detected robot will be going to stop this is done by using IR sensor. When tank is empty buzzer will be activated. When dark

light is present led lamp will be on. In achieving the task, the controller is loaded with program written using Embedded C Language.

3.2 FLOW CHART

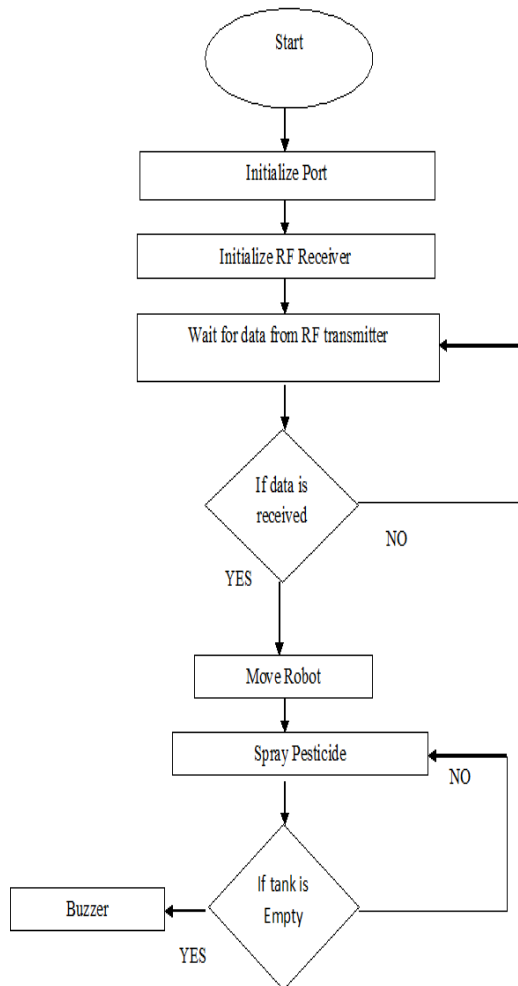


Fig 2: -Flow chart

4. SIGNIFICANCE AND SCOPE

- Requirement of growing population modernization of agriculture has become a necessity.
- In agriculture, spraying of pesticide is an important task to protect crop from insects for obtaining high yield.
- We can improve this project by using Wi-Fi technology for increase the range of communication.
- We can automatically adjust the up down movement of sprinkler pipe.
- Scope of this type of robots are very bright because it is very useful in agriculture and reduce the workload. It will reduce the time consumed in spraying the pesticide liquid and works very

effectively. It will help the farmers to do work in any season and conditions. It will reduce the danger for the farmers from different breathing and physical problems.

5. RESULT:

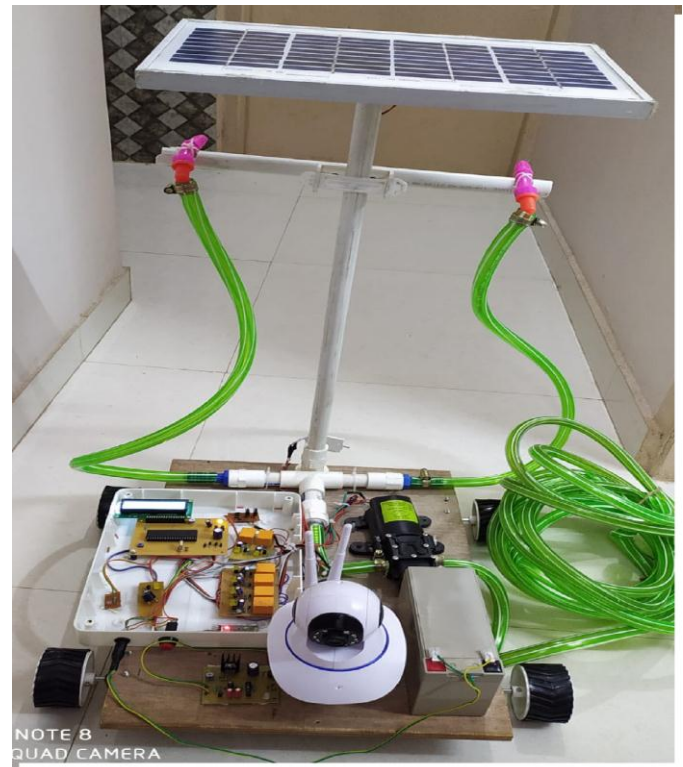


Fig 3: Project module

We use Bluetooth module to control the direction of robot. If we press forward, reverse, left, right buttons then robot will move in forward, reverse, left, right direction respectively. If we will press the spray buttons then sprinkler will spray the pesticide. All situations are captured by the camera.

6. CONCLUSIONS

The robot can basically complete the work of automatic controlled and meet spraying requirements in the greenhouse. The robot also met the economic and time constraints that it was subject to. The robot was able to drive up and back along the tracks in the greenhouse. The Induction Proximity Sensors detected the rails electively the spraying device de- signed by another thesis student was able to selectively spray designated groups of plants in the greenhouse whilst moving along the rails. The coverage of the spray coated the plants in adequate and consistent dosage.

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