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Advanced Spraying System Using Android Application

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Abstract –

This paper puts forward the solution to old spraying system. Now days there are so many technologies are developed in agriculture, so for reducing manpower and prevent health problems of farmer we design this system. The system shown in this paper uses Bluetooth for android application.HC05 is special Bluetooth used for this system which having100m range.

***Key Words*:Microcontroller (89S52), Bluetooth, Android, Relay, DC motors.**

1. INTRODUCTION

This project work described here is quite useful in the agriculture fields. The project aims on the design development and fabrication of the demonstration unit of the project "Advanced Spraying System Using Android Application". More than 42% of the total population in the world has chosen agriculture as their primary occupation .In recent year , the development of autonomous vehicle in agriculture has experienced increased interest .This development has led many researchers to start developing more rational and adaptable vehicle. In the field of agricultural autonomous vehicles a concept is being developed to investigate if multiple small autonomous machines would be more efficient than traditional large tractors and human force.

These vehicles should be capable of working 24 hours a day all year round, in most weatherconditions and have the intelligence embedded within them to be have sensibly in a semi-natural environment over periods of time, unattended, while carrying out a useful task. .More ever, such a system may have less environmental impact if it can reduce over application of chemicals and high usage of energy, such as diesel and fertilizer by control that is better matched to stochastic requirement. There are a number of field operations that can be executed by autonomous vehicles giving more benefits than conventional machines.

1.1 Microcontroller for control the system:

Our system is vehicle type system , hence we need to control the system using microcontroller. We use AT89S52 microcontroller to control our system. This microcontroller having four port. We use port number three for the Bluetooth connection. The transmitter of microcontroller is connected to the receiver of Bluetooth and receiver of Bluetooth is connected to transmitter of microcontroller. Following figure shows pin diagram of Microcontroller AT89S52.

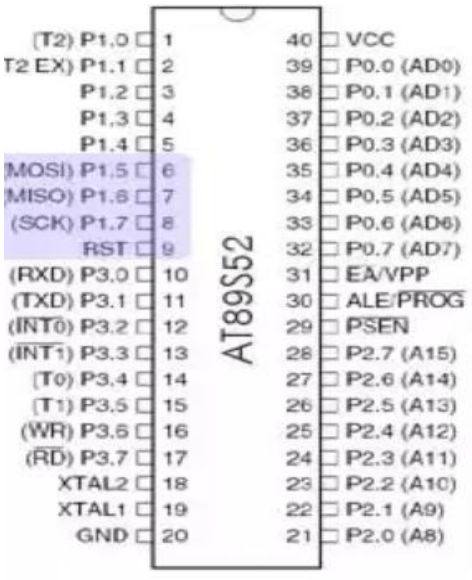

Figure1: Pinout of Microcontroller

Bluetooth for wireless communication:

Our system is wireless android based so for communication we used Bluetooth HC05.It is wireless technology exchanging data over short distances using short wavelength .It has 100m range. We have to connect this Bluetooth transmitter to the receiver of microcontroller and receiver of Bluetooth is connected to transmitter of microcontroller .following fig shows the HC05 Bluetooth.

Figure2 : Bluetooth HC05

DC Motor:

In our design we use DC motor. There are four DC motors are used in this system. Each motor is connected to battery each having 12v supply. DC motor is used for the direct current. A DC motor is any of a class of electrical machines that convert direct current electrical power into mechanical power.

Figure 3: DC motor

1.2 System Concept:

Our project is "Advanced Spraying system using Android". In that project we can spray liquid chemical and also powder. This spraying system has multiple uses. We can use this spraying system as a multiple carrier vehicle. In that we use three wheels. The first wheel is used to support and control the system and another two wheels are used only for the transportation.

For spraying chemical we use four motor with four batteries. Each battery having capacity 12v.There is four nozzles and we can adjust the nozzles according to height of crop.

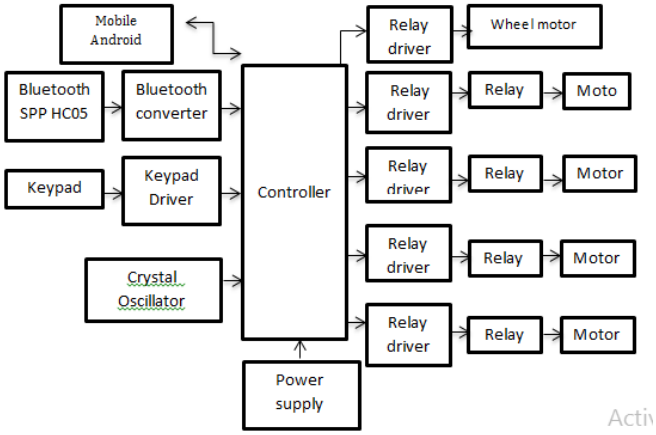

Figure 4 : Block Diagram

For a spraying powder we used separate drum. We are use one pump for a pressure to spray a powder.

Our whole system is based on android application. The movement of system is depends upon the android. We can start and stop the system using the android. Bluetooth range for this system is very important. Hence we are use a special Bluetooth SSP HC05 which having100m range.

2. Desired Output

In our system we used Android application. We get all output signals through android. Every message related to system send to android. The Bluetooth plays important role in this spraying system.

In android we developed one application for Bluetooth name as 'Bluetooth Robo'. Firstly we paired with Bluetooth HC05 then we can operate the system. We can move the system with respect to area where we want to spray chemical like direction left, right. If any problem in system we can immediately stop the system using this application.

The Bluetooth HC05 is connected to the port 3 of the controller AT89S52. The transmitter of Bluetooth is

connected to the receiver of controller and receiver of Bluetooth is connected to the transmitter of controller.

3. CONCLUSIONS:

By using this robotics sprayer, we have to reduce man power. This sprayer is remote control based so hazardous chemical is not affected on human. This sprayer increase the speed of work. It is multipurpose sprayer. This project work described here is quite useful in the agriculture fields.

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