

Multi Functioning Agricultural Robot

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Abstract : Agricultural field is one of the important sources of food for human beings; hence it should be well managed and well secured. The former face many difficulties regarding forming, as the forming is man power oriented. Experiences and observations have shown that the agricultural farm is affected drastically due to industrialization. The main purpose of this paper is to design automated system for agriculture field, which would monitor and manage the agriculture field in absence of human being. This paper is concentrated on the agricultural system that can be used to monitor the agricultural field. This paper is mainly concentrated on the development of robot, based on microcontroller AT89S52. Microcontroller AT89S52 is internally programmed; once the received data matches with internally programmed data then robot starts working. The robot is a mechanical device which is operated with the help of remote control or based on internal programmed data. For the remote operation wireless RF transmitter and receiver is used. The transmitter section is located at remote control with the user and receiver section is located at the robot side. The main objective of wireless RF transmitter is to generate the electromagnetic radio waves. This transmitted signal is received by the receiver and send to the microcontroller AT89S52 once both data match the robot starts working. The frequency range is 315/433MHZ. The programme is written in C language.

IndexTerms - Agriculture, Robot, Microcontroller, RF transmitter.

I. INTRODUCTION

The main purpose of this paper is to design automated system for agriculture field, which would monitor and manage the agriculture field in the absence of human being. This concept is mainly concentrated on the agricultural system that can be used to monitor the agricultural field. Agricultural field is one of the important sources of food for human beings; hence it should be well managed and well secured. Robot is a mechanical device that some time resembles a human and is capable of performing a variety of complex human tasks on command or by being programmed in advance. Robotics is one of the fastest growing engineering fields of today. Millions of dollars have been spent in the developments of robots as it is used in all sorts of field. The use of robot is more common today than ever before and it is no longer exclusively use by the heavy production industries. The idea of applying robotics technology in agricultural field is very new. The main area of application of robots in agriculture is at the harvesting stage. Fruit picking robot and sheep sharing robot are designed to replace human labour. This paper is mainly concentrated on the development of robot based on microcontroller AT89S52. Microcontroller AT89S52 is internally programmed; once the received data and internally programmed data match the robot starts working. The main objective of wireless RF transmitter is to generate the electromagnetic radio waves. This transmitted signal is received by the receiver and send to the microcontroller AT89S52 once both data match the robot starts working.

II. THE PROBLEMS IN THE AGRICULTURAL FIELD

The various problems associated with the agricultural field are as fallows.

1. Labour problem.
2. Time wastage.
3. Money problem.
4. No efficient facilities are available for better work.

1. Labour problem: -Growth in the industrial field providing the various jobs and facilities everyone is attracted towards industrial jobs neither doing the work in the agricultural field for whole day and hence the farmer will not get the workers which creates the labour problem.
2. Time wastage: -If we use the machines neither keeping more number of workers then defiantly wastage of time will be reduced and we can save certain money also. To overcome this problem we must develop such equipment which will reduces the human work as well as time wastage but results in the more productivity within minimum time.
3. Slow agricultural growth is a concern for policymakers as lots of Indian people depends on rural employment for living.
4. Current agricultural practices are neither economically suitable and Indians yields for many agricultural commodities are low.
5. Poorly maintained irrigation systems and almost universal lack of good extension services are the factors responsible. Farmer's access to markets is hampered by poor roads, rudimentary market in fracture and excessive regeneration.

The low productivity of agriculture in the India is due to the fallowing factors.

1. Illiteracy general socio-economic backwardness, slow progress in implementing land reforms and inadequate, inefficient finance and marketing services for form produce.
2. In consistence government policy, agricultural subsidies, and taxes after changed without notice for short term political ends.
3. Adoption of modern agricultural methods and use of technology is inadequate, hampered by ignorance of such practices high costs and impracticability in the case of small land holdings.
4. The average size of land holdings is very small and is subject to fragmentation due to land ceiling acts and in some cases family disputes such small holdings are often overmanned resulting is disguised unemployment and low productivity of labour.

III. INTRODUCTION TO THE AGRICULTURAL ROBOT

The main aim of this concept is to design and develop an automated wireless robot which should eliminate the man power and time wastages associated with the present man power in agriculture field. Observation has shown that lot of man power is used for

the agricultural work which contributes a heavy expenditure for the farmers. The various works performed by the robot are as follows:-

1. Robotic seed bower & medicinal sprayer.
2. Robotic water sprinkler and ploughing. .
3. Robotic grass cutter & vegetable transporter.
4. Robotic mud crusher.
5. Robotic forward and reverse movement
6. Robotic left turn and right turn.
7. Short circuit detection in robots.
8. Fire detection in agricultural fields.

IV. BLOCK DIAGRAM AND WORKING PRINCIPLE

The keypad contains tactile switches in order to provide the input signal. This input signal is feed into the microcontroller AT89S52, it will generate a information signal of specified bit pattern which is feed into the RF transmitter. In case of RF transmitter the process of modulation takes place. The information signal generated by the microcontroller and the carrier wave is mixed or modulated and the resultant wave what we get is called wireless or radio wave. Transmitting Aerial will send this information into the space.

Wireless RF receiver receives the signal transmitted by the transmitter. This signal is feed into the microcontroller AT89S52, it's a internally programmed if the received data will match with the programmed data the robot will start working since it contains two motors according to the given data the robot stars movements forward, backward, left, right and more.

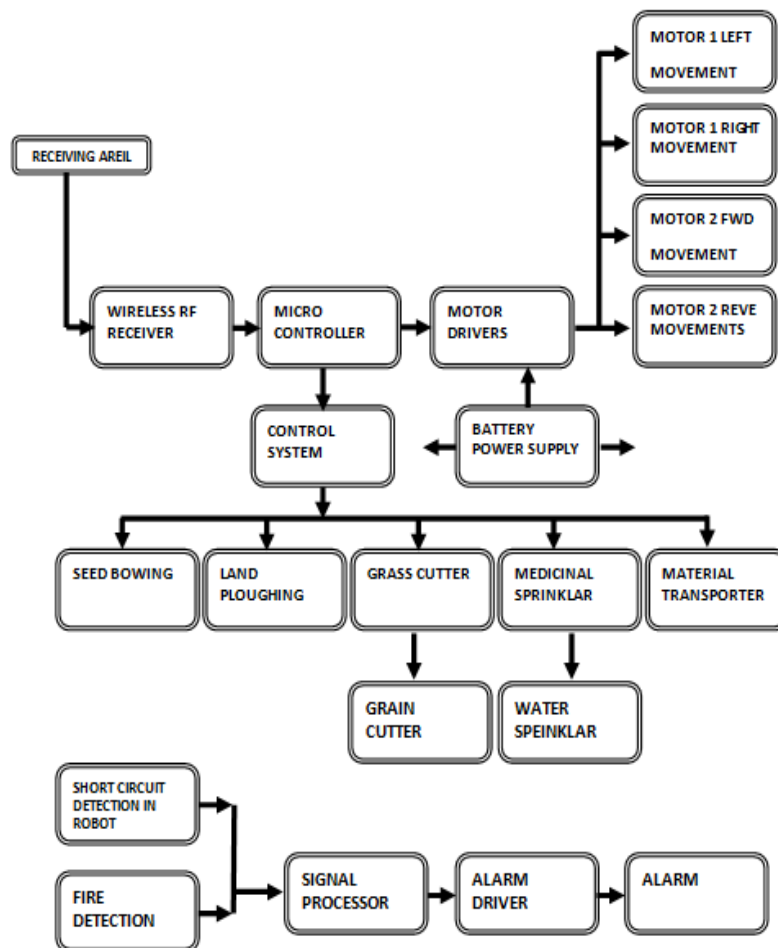


Figure 1 block diagram of Agricultural robot

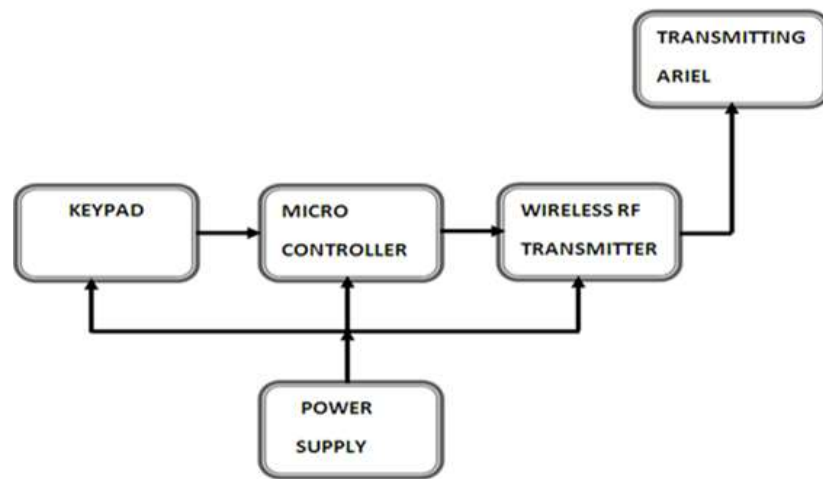


Figure 2 Block diagram of transmitter associated with user

V. APPLICATIONS

This robot is used in agricultural field for multipurpose applications such as robotic tree cutter, robotic mud crusher, robotic water sprinkler etc.

VI. ADVANTAGES AND DISADVANTAGES

Advantages

- Reduces the losses incorporated with labour oriented farming.
- Improves the efficiency of the farm.
- The agriculture farm is secured from Burglars, Birds interference etc.
- Reduces water losses as it employs automatic watering for plants.
- This unit can take care of the plants in absence of the gardener or any concerned people.
- Fire accidents can be detected as it employs for monitoring system.
- A self Governing and Monitoring system.
- Reliable, light weight, system.
- Provides an innovative method of fencing for farmers.
- A multifunction robot.
- Works on wireless technology which works with all the obstruction.

Disadvantages

- Care and maintenance should be taken.
- High Initial cost.

VII. CONCLUSION

The progress in science & technology is a never ending process. New things and new technology are being invented. As the technology grows day by day, we can imagine about the future in which thing we may occupy every place. With the development of agricultural robot reduces the labour problem, time wastage and helps to increase the productivity within less time. This robot performs all the functions which can be done by the human being such as water sprinkler, grass cutter, seed bowing and many other functions. This robot manage agricultural field in the absence of farmer. So it reduces the labour problem.

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