

Solar Powered Mobile Operated Multifunction Agriculture Robot

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Abstract- Many advances in technology have made the agriculture business a much less labor intensive industry to be a part of. If we think back even only 50 years, farmers were just beginning to incorporate technologies into their farming techniques.

It has been said that individuals that are involved in the farming industry are some of the least susceptible to change. They are very set in the ways of those came before them.

When we take a look at the farming industry now, we can see that this is rapidly changing. Farmers are looking for new ways to implement technology to cut costs and reduce labor hours.

One of the ways that farmers are beginning to explore new technologies in farming come from the autonomous robot.

The battery powered Mobile operated robot is something that is very new to the agriculture industry, but is quickly gaining popularity from agriculture research companies around the United States.

These tractors are described by Farm Industry News as a tractor that drives its solve with a computer in control. Although still in the research phase of development, autonomous robot are rapidly becoming more of a reality than an idea. When the Robot is moving on a surface, it is controlled by a Bluetooth technology based Mobile remote.

This can be moved forward and reverse direction using geared motors. Also this robot can take sharp turnings towards left and right directions. Soil Ploughing operation is done by geared mechanism arrangement. Seed sowing operation is done by Dc geared motor mechanism. And watering operation is done by high dc pump motor. Water sprinkler and pesticide sprayer added advantages in it. This project uses controller board to control all the operation.

Keywords- Solar panel, Battery, Arduino Uno, Ploughing Seeding

I. INTRODUCTION

The autonomous farming robot is something that is very new to the agriculture industry, but is quickly gaining popularity from agriculture research. This autonomous mechanical function robot rapidly becoming more of a reality than an idea.

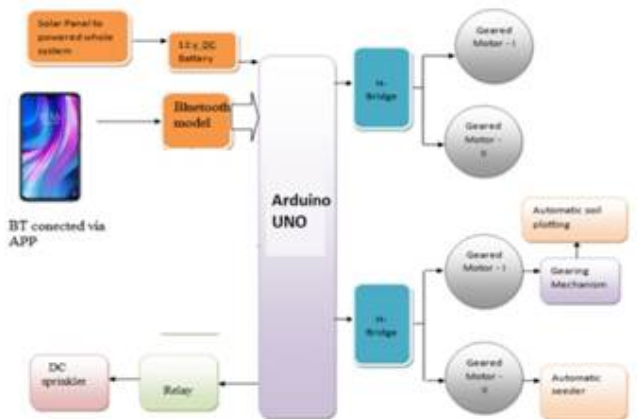
When the robot is moving on a surface, it is controlled by a Bluetooth technology. This can be moved forward and reverse direction using geared motors. The robot can move towards left and right directions using these geared motors. This project uses Arduino Uno and comprises of performing Soil ploughing , seeding , watering, pesticide spraying with Bluetooth decoder commands. Whole system is powered through battery source.

Bluetooth is used which converts the desired frequency in to analog signals which is received by Bluetooth Decoder and given to Arduino Uno. The microcontroller is used for controlling the robot according to the frequency received by the Bluetooth receiver. To control the devices from remote place we are using a Bluetooth technique. Connect a mobile at the receiver end (Controller side which is fabricated on robot). If we give a command from another mobile automatically it gets received by the Bluetooth decoder unit placed on receiver end.

II. OBJECTIVE

- Design and development of smart multifunctional agricultural robot which can be able to perform multitask in agriculture field..
- Control of this agribot will be wireless through Bluetooth Mobile technology.
- Design and analyze a real time system for this robot to give a solution and propose a model which can be used.
- Analyze the design of plough tool and develop by using solar panel.
- To propose a low cost but effective real time agriculture robot system.
- To demonstrate the working model of this agribot.

III. BLOCK DIAGRAM



IV. ADVANTAGES

- It works faster than human efforts which definitely save the time.
- The system observes different environmental conditions and take actions accordingly which humans can't do accurately.
- Sophisticated security.
- Monitors all hazards and threats.
- Used Solar energy in very better way of farming.
- The developed system used for spraying the fertilizer, pesticides, fungicides and insecticides.
- It does not create air pollutant & noise

V. DISADVANTAGES

- Need DC power supply all time and quickly discharged.
- Need of skilled workers to drive and for maintenance.

VI. APPLICATION

- Security purpose
- Remote monitoring,
- Transportation and logistics
- Consumer products including electronic toys, home security, gate and garage door openers, Intercom, fire and safety systems, and irrigation
- Medical products like patient call and monitoring, handicap assistance device, surgery
- Communication system, remote patient data logging and ECG monitor.

VII. CONCLUSION

This project presents the Implementation of farmer friendly solar powered mobile powered operated agricultural ploughing, seed sowing, watering and pesticides sprinkler arrangement using wireless Bluetooth module has been designed and implemented with Arduino Uno in mechanical system domain.

The robot for agricultural purpose an robot is a concept for the near the performance and cost of the product once optimized, will prove to be work through in the agricultural operations. We are sure that once this concept is presented in a manner suitable to Indian market, it will differently help in bringing down the 15% molality rate found in the Indian formers associated with the agricultural spraying operation.

VIII. FUTURE SCOPE

- There could be continuous supply of liquid pesticide/fertilizer generated for sprinkler. The Solar panel unit could be enhanced in order to generate more prolonged electric supply. Moreover, the electricity could be stored; to be used at night or in no sun condition.
- A more with greater efficiency could be used.
- More equipment like soil testing tasks could be added to this project.

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