

Solar Power Grass Cutting Robot

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Abstract- *One of the major problems associated with grass lawn is to maintain proper height of grass. Traditional methods available are based on manual grass cutting or manually operated lawn mowers, both requires skilled labor. The problem becomes very cumbersome, when area to be covered is very large. Many researchers have come up with the solution of automatic lawnmower. However, major issues with such machines are length of perimeter guide wire, high price tag & maintenance cost. If battery operated, then longevity of the battery. In this paper, an intelligent solar powered grass cutting robot with obstacle avoidance is presented. The system is consisting of ARM 7 controller to which color and ultrasonic sensors are interfaced. The system was tested on different conditions and it is observed that, it can be used efficiently on flat lawn surface.*

Indexed Terms- *color sensor, ultrasonic sensor, humidity sensor*

I. INTRODUCTION

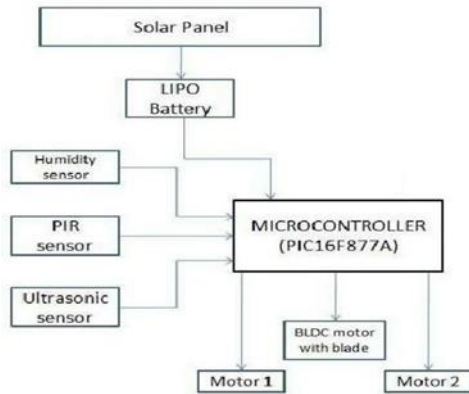
Nowadays there are lots of development work has been pending but here are still some labor powers which requires lots of income distribution for a small work. So, this is required that some work should have some other alternative so that the labor power wastage can be avoided. So, in our project we are trying to make a daily purpose robot which is able to cut the grasses in lawn. The project work will be done according to the proper application-based fabrication. The system will have some automation work for guidance and other obstacle detection. The system will have a power source that is battery and a solar panel will be attached on the top of the robot. reserves the right to do the final formatting of your paper. Earlier solutions include use of microcontroller-based systems to which various sensors are interfaced

1. These are manually controlled and are having slow response time. Some lawn mowers were implemented by using of Internal Combustion Engine
2. The major drawback of this technology is high running cost, noise and air pollution.

II. WORKING

These a two-motor driver is provided. It starts and stops the working of the motor. Intelligent information appliance is the main direction of development in the appliance control at irrigation fields. We designed a broad and commendable range of Solar Grass Cutter along with solar panel. As the energy conversation is very important in the current scenario and should be done to a maximum extent where ever it is possible. Still, these mowers grass cutting machineries all need the same things to work right -- a motor, a rotating blade, a means of getting around and a way to get rid of the grass clippings. The controlling device of. The main function of the solar charger is to increase the current from the panels while batteries are charging, it also disconnects the solar panels from the batteries when they are fully charged and also connects to the panels when the charging in batteries is low. The motor is connected to the batteries through connecting wires Between the whole system is provided using switch ON the DC motor interfaced with grass cutting blades. The entire model consists of two sections one controlling section and another designing section of the model. The controlling section consists of Rechargeable battery, relays switches and Solar panel. The system depending on the charging circuit the motor can be controlled using relay switch. The solar power stores the energy to a battery and then runs the motor through the relay switch.

• CIRCUIT DIAGRAM



III. OPERATING PROCEDURE

Coming to the working of solar powered grass cutter, it has panels mounted in a particular arrangement at an angle of 45 degrees in such a way that it can receive solar radiation with high intensity easily from the sun. These solar panels convert solar energy into electrical energy as studied earlier. Now this electrical energy is stored in batteries by using a solar charger's

IV. OBSERVATION

The system has been tested under different conditions viz. lawn on flat surface, uneven lawn surface and patchy lawn. Condition 1: - When the system is kept on flat surface with grass, color sensor transmits no value corresponding to green color and the system remains in stationary state.

Condition 2: - When the system is tested on flat surface and uneven lawn surface, color sensor transmits value corresponding to green color to the ARM controller. If value is matched, grass cutter starts cutting the grass. For both cases, system operates normally. However, in case of uneven grass surface, when the system is descending from top, obstacle detection stage fails to detect object present very close to it.

V. ADVANTAGE

The grass cutter is based on the solar system so we cannot use any fuel for the operation. Thus, the cost is automatically effective. The grass

cutter machine is controlled by Bluetooth using a mobile app, so it can operate easily.

VI. APPLICATION

It is used to maintain and upkeep lawns in gardens, schools, college's etc. We have made some changes in the existing machine to make its application easier at reduced cost. Our main aim in pollution control is attained through this.

CONCLUSION

In the world today, all machines are designed with the aim of reducing or eliminating greenhouse gas emissions which is the major cause of climate change. This solar powered grass cutter will meet the challenge of environmental production and low cost of operation since there is no cost for fuelling. A solar powered lawn mower has been developed for the use of residences and establishments that have lawns where tractor driven mowers could not be used. The machine's capacity is adequate for its purpose. The machine has proved to be a possible replacement for the gasoline powered grass cutter. In the presented paper provides the fabricated information about the "Fabrication of Solar grass Cutting Machine" which was designed such that the solar plate generates solar energy and utilizing this energy for running the grass cutter motor. Integrating features of all the hardware components used have been developed in it. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. Secondly, using highly advanced IC's with the help of growing technology, the project has been successfully implemented. Thus, the project has been successfully designed and tested.

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