

SMART SOLAR AGRICULTURAL GRASS CUTTING ROBOT

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ABSTRACT

Smart solar agricultural grass cutting robot is a robotic vehicle powered by solar energy that also avoids obstacles. Solar panel is used to provide the source to the battery charging. It is an automated system for the purpose of grass cutting on small plants in lawns and gardens. The system control is done by the microcontroller. Wheels and cutting operations are done using dc motors. The whole supply is provided through the battery while electric motor rotates which in turn rotates a blade which does the mowing of a grass. It is also capable of fully automated grass cutting without the need of any human interaction. The system uses 6V batteries to power the vehicle movement motors as well as the grass cutter motor. We also use a solar panel to charge the battery so that there is no need of charging it externally. The

grass cutter and vehicle motors are interfaced to an 8051 family micro controller that controls the working of all the motors. It is also interfaced to an ultrasonic sensor for object detection. The microcontroller moves the vehicle motors in forward direction in case no obstacle is detected. On obstacle detection the ultrasonic sensor monitors it and the microcontroller thus stops the grass cutter motor to avoid any damage to the object/human/animal whatever it is. Microcontroller then turns the robotic as long as it gets clear of the object and then moves the grass cutter in forward direction again.

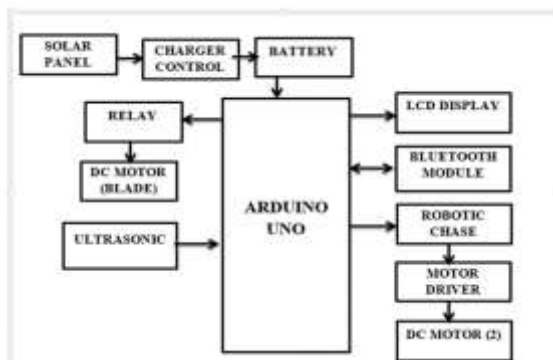
EXISTING SYSTEM

1. Humans has no facility to cut the grass with affordable price.
2. Even the most difficult part is the required energy for the system to work.

PROPOSED SYSTEM

1. In this system we can monitor control safety status of the robot by sensing the obstacles.
2. The system which implement the prevention of drive.

BLOCK DIAGRAM



ARDUINO UNO

Arduino UNO is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller, simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

SOLAR CHARGING CONTROL TO ARDUINO

Connect the Charge Controller to the Battery. Its function is to pull down the voltage of the solar panel to near that of the battery to ensure that the battery is properly charged.

ROBOTIC CHASE

1. ARDUINO MEGA (ATmega2560) microcontroller which acts as the brain of the system because the entire system program instruction is stored in it.

2. The robotic chase consists of a motor driver and two motors for the movement of the robot.

3. Grass cutter part consists of a DC motor with a blade used for the cutting section.

4. All the operations of the system are controlled by the BLUETOOTH module and monitored using the LCD display.

BLUETOOTH CONTROL TO DC MOTOR

In this module, we use an interfaced Bluetooth sensor to connect the mobile and control the DC motor with the Arduino UNO microcontroller. The LCD updates the information to the display.

I2C LCD module and LCD

I2C_LCD is an easy-to-use display module. It can make displaying easier. Using it can reduce the difficulty of

make, so that makers can focus on the core of the work. We developed the Arduino library for I2C_LCD, user just need a few lines of the code can achieve complex graphics and text display features

RELAY CONTROL TO BLADE

In this module use interfaced the Grass cutter part consist of dc motor with blade use for the cutting section to control the relay with Arduino uno microcontroller and ultrasonic sensor used to detect the object then automatically blade also stopped.

POWER SUPPLY

There are many different kinds of power supplies for a variety of uses. These include **variable power supplies**, **AC to DC** wall adapters, and batteries. Ultimately, the power supply that you want to choose is one that will fit with your project's requirements.

MOTOR DRIVE

Basically, the **motor driver** acts as an interface between the **motor** and the control circuit. **Motor drivers** allow

you to control a much larger load from a small signal.

SOFTWARE COMPONENTS

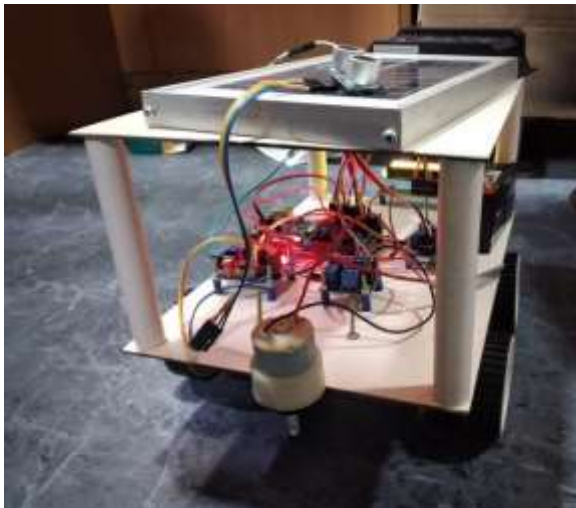
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HARDWARE COMPONENTS

- Arduino uno
- solar panel
- 12 volt battery
- LCD display
- Bluetooth module
- Relay
- Motor driver
- DC motor(3)
- Ultrasonic
- Blade



OUTPUT



CONCLUSION

No grass lawn will be unkept and no human will not have the stress that predicts a tedious task. The conflict between a wire of grass and a robot of strength will end in only one

way. Provides a more efficient method for plant identification.

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