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Solar Grass Cutter Using Embedded System

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ABSTRACT
Yard cutting is a burdensome errand which is done on normal bases. Till date even with the progression in innovation in a few fields we are as yet utilizing the customary yard cutters, which burn fuel and require human intercession for trimming the grass. we propose a grass cutter which runs on a battery and is charged by sun powered energy (an inexhaustible and clean wellspring of energy). This yard cutter is a lot simpler to utilize and it works independently. Utilizing sensor based we distinguish grass and the cutting edges turn on when the grass is recognized, along these lines saving the charge in the batteries. The proposed trimmer would successfully stay away from any obstructions in the yard and would cover the whole region of the grass independently. A 12-volt battery is integrated into a computerized machine to control the engines utilized for vehicle development as well as engines utilized for turning the grass managing sharp edges. The D.C engines are utilized in this computerized machine. The accumulator is charged through a charging circuit. Especially in this examination work, we have zeroed in on the mechanized machine is utilized for managing the grass.

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I. INTRODUCTION

Fully automatic solar cutting grass powered by solar power and is able to operate only with clean power from the sun is a big difference from commercial projects having a robot in need of a charging station is connected to the main system. The fully automated solar cutting grass is double checked first by the ultrasonic avoiding obstacles without the need for any human exsistence other than the module. The engines will cut grass and the vehicle interfaced with a microcontroller ATmega328 that controls the operation of all the engines. This project used the H-bridge MOSFET circuit for the motor controller to control speed with the help of Pulse Width Modulation (PWM). This system consists of three DC motors, solar panels for charging purposes. A DC motor is placed upright and a blade connected to the motor to cut grass far right. Technological developments are mostly designed to reduce manual labor, operating time and manpower. This program is designed to reduce the labor force required to cut grass in residential, companies, fields etc engine powered lawn mowers push and lawn riding mowers generate noise due to the loud engine, and local air pollution due to combustion in the engine and cutting grass, cannot be easily achieved by the elderly, the young, or disabled. Also, an engine powered engine requires periodic maintenance, such as changing the engine oil. Even though electric mowers are environmentally friendly, and they can be a hassle. Together with lawn motor powered engines, electric lawn mowers are also dangerous and cannot be easily used by everyone. Also, if the electric lawn mower is wired, clipped could prove problematic and menacing. This project shows a conversion technique of solar energy into electrical energy using solar panel charging the 12V battery. For checking the battery level it consists battery level indicator. The indicator uses the LM3914 IC for battery voltage level. This level is adjusted according to the battery voltage. This level indicates the solar intensity level. Fully automatic solar grass cutter works on two modes first by using ultrasonic sensor. To switch the mode of operation DPDT relay and DPDT switch are used. controlled system have been controlled by using Android mobile phone instead of any other method like buttons, gesture etc. Here, touch panel has been provided in android mobile to control the car movement direction (forward, backward, left, and right). So here android mobile is used as transmitting device and module placed in it. Android phone will transmit command using its in-built so that it can move in the required direction like forward, reverse, to and fro. For another mode we will use the ultrasonic sensor. If the grass cutter observes any obstacle in front of it, it automatically shift into another direction. For interfacing the and ultrasonic sensor, Atmega8 microcontroller is used. Also a speed control for motor such as cutter and wheel motor PWM technique has been. Pulse width modulation signal is provided to gate terminal of MOSFET. Drive motor is a high power motor so for this motor, H-bridge MOSFET circuit is used. H-bridge circuit consists of P

type and N type MOSFET that has a high current flow capability. The solar grass cutter has a panel arrangement in such a way that it can receive solar radiation with high power easily from the sun. The solar panel converts solar energy into electrical energy. This electrical energy is stored in electric storage batteries by using a solar charger. The main function of the solar charger is to increase the current from the panel while storage batteries are charging. The motor is connected to storage batteries through connecting wires. Between these mechanical circuit breaker controller is provided. It starts and stops the functioning of the motor. From this motor, power transmits to the mechanism and this makes the blade to spin on the shaft this makes to cut the grass. The designed solar powered grass cutter works with the help of direct current (d.c motor), a rechargeable battery, solar panel, a stainless steel blade and control switch. Rotation is attained by the electrical motor which supply the required torque needed to drive the stainless steel blade which is coupled to the shaft and to the gears to the motor. Gears are to increase the rpm(Revolutions per minute) and to reduce the power consumption. The solar powered grass cutter is operated by the switch on the board which closes the circuit and allows the flow of current to the motor which in turn operate the blade used for mowing. The battery recharges through the solar charging controller, with the help of different types of grasses performance evaluation of the developed machine can be calculated.

II. RELATEDWORK

SAGAR V. PALVE, KUNAL PANCHAL. "SOLAR POWERED AUTOMATED GRASS CUTTER MACHINE" INTERNATIONAL RESEARCH JOURNAL, YEAR.2018.

This task portrays the sun oriented fueled computerized grass shaper machine which makes the grass shaper machine going through sun based energy . The proposed framework configuration dispense with the human endeavors in grass cutting field like yard. The sun oriented grass cutting machine is a mechanical vehicle controlled by sunlight based energy that additionally dodges impediments and is fit for mechanized and manual grass cutting. The framework utilizes 12 volt battery to drive the vehicle development engine as well as the grass shaper engine. A sun powered charger is utilized to charge the battery with the goal that there is no need of charging it remotely. The development of machine is completely constrained via programmed mode and manual mode. 'regulator 'play store application runs this machine development and course through an android application. The principal focus of this machine is to decrease human endeavors. At the point when a grass shaper is being moved by human exertion and utilizing of petroleum derivatives is getting obsolete strategy in nowadays, while individuals are becoming mindful about the sun based energy. Cutting grass won't be quickly achieved by senior, more youthful. Grass shaper moving with motor makes clamor contamination because of uproarious motor and nearby air contamination because of the burning in the motor likewise an engine power motor requires an intermittent upkeep, for example, changing the motor oil, despite the fact that electric sunlight based grass shaper are cordial to climate In this creator made sense of that sun oriented plate which is set over the grass shaper produces sun based energy and utilize this energy for working the grass shaper. Likewise, utilizing driver circuit for controlling rate of engine according to the necessity.

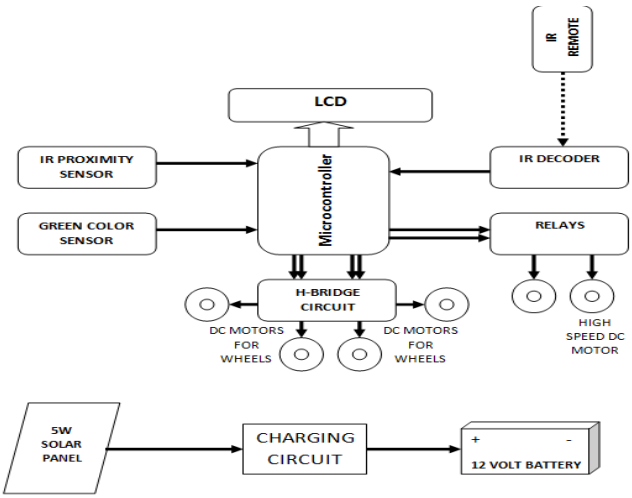
KARTIK R. KHODKE, HIMANSHU KUKREJA, "REVIEW OF GRASS CUTTER MACHINE" INTERNATIONAL JOURNAL, YEAR.2018.

This sums up and surveys mechanical advancement for making productive and financially savvy grass shaper. Our point is to concentrate on the different advancements in the grass shaper machines and their exhibition. Flow innovation regularly utilized for cutting the grass by the physically dealt with gadget From the review we observed that different sorts of grass shaper accessible in market which are controlled through sunlight based, electric and gas powered motor. Grass cutters are accessible in market having a breaking point to cut grass at some level. We are attempting to make the new creative idea for the most part utilized in agrarian field. We will create the grass cutting machine for the utilization of rural field, to cut the yields in the field as well as to cut the grass. Before and even up to this point, cutting of grasses in the schools, sports tracks, fields, ventures, inns, public focus, and so forth was finished with a cutlass. This strategy for manual cutting is tedious on the grounds that human exertion is required for the cutting. Likewise mistake in cutting level was noticed utilizing the manual cutting strategy. This work manages the cutting of verdant (bushes, obstinate, grass, blossoms, leaves of trees) and furthermore with the plan of the machine, its effectiveness, inflexibility, method of activity and the choice of materials. The plan gives a more noteworthy level of adaptable portability and compact.

ROHINI P. ONKARE, PRADNYADEVI JAGANNATH PAWAR,. "SOLAR POWERED AUTONOMOUS GRASS CUTTINGROBOT" INTERNATIONAL JOURNAL, YEAR, 2018.

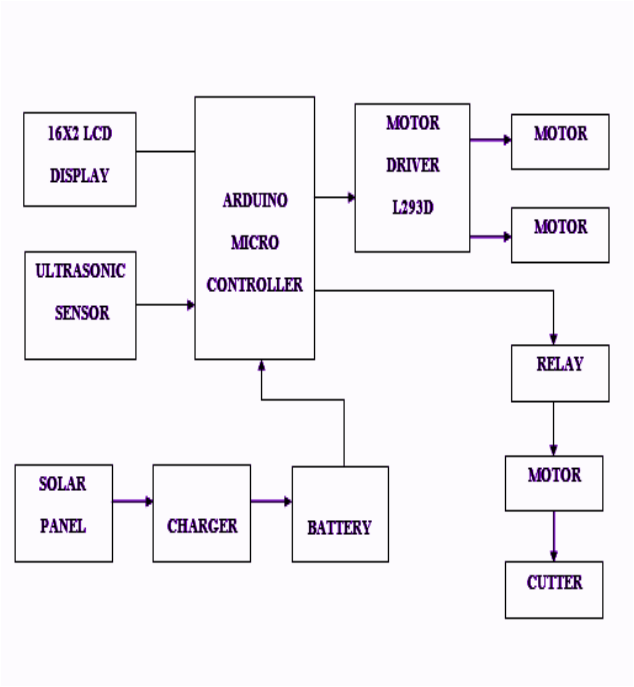
Sunlight based Powered Autonomous grass shaper is fundamentally utilized for cutting grass of the yard or ground which will primarily work on sun oriented power energy for that we are utilizing sun powered charger. This framework will likewise work on a battery that will likewise be charged through sun oriented

energy instead of utilizing any outer power. In this IR sensors are additionally used to distinguish any article/human/or creature while slicing the grass so to keep away from them. The principal objective of this Solar Powered Autonomous grass shaper is that the client can indicate the region that will be cut and furthermore the level of grass according to there prerequisite by utilizing the IR remote. Presently a day's contamination is a significant issue for entire world. Contamination is artificial and should be visible in own homes. Incase gas, controlled yard mover's because of the outflow of the gases it is liable for contamination. Likewise, the expense of the fuel is expanding. Subsequently it isn't proficient. In this way, the sun based fueled independent grass cutters are presented. Sunlight based fueled yard trimmer can be portrayed as the use of sun oriented energy to control an electric engine which thus turns an edge which does the moving of a grass. Sun oriented energy is the environmentally friendly power. Engine power push lawnmowers make commotion contamination because of the sound of motor, And neighborhood air contamination because of the burning in the motor. Additionally, an engine controlled motor requires intermittent upkeep, for example, changing the motor oil despite the fact that electric lawnmowers are harmless to the ecosystem, they also can be an in accommodation.



BIDGAR PRAVIN DILIP1, NIKHIL BAPU PAGAR2, VICKEY S. "DESIGN AND IMPLEMENTATION OF AUTOMATICSOLAR GRASS CUTTER"INTERNATIONAL JOURNAL, YEAR,2017.

physically took care of gadget is ordinarily utilized for cutting the grass over the field which makes contamination and loss of energy. Programmed sun oriented grass shaper will lessen the work expected for cutting grass in the yards. Additionally, solar power will be utilized to give the main impetus to the shaper and different sensors will be utilized to distinguish and stay away from the superfluous items in the field during activity. It comprises of a microcontroller Arduino ATmega328p, IRsensors, LCD Display for better reaction and understanding to the client. This paper will project the activity and working standard of the Automatic Grass shaper Nowadays, contamination is the significant issue known to man. In the event that Gas controlled yard trimmers because of the outflow of gases it is liable for contamination. Additionally the expense of fuel is expanding henceforth it isn't proficient. Customarily, lawnmowers are many times inconvenient bits of apparatus that includes a great deal of solidarity and energy to utilize.



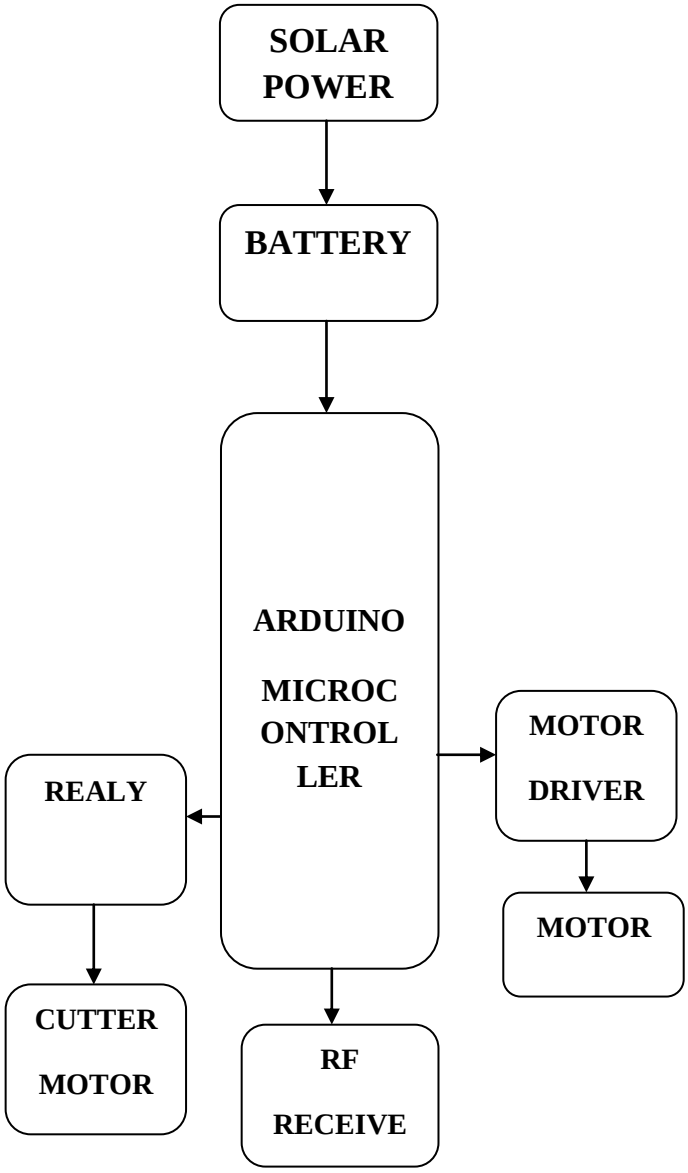
1MS. YADAVRUTUJA A., 2MS. CHAVANNAYANA V., 3MS. PATIL MONIKA B., 4MR. V. A. MANE, "AUTOMATED SOLAR GRASS CUTTER "INTERNATIONAL JOURNAL, YEAR,2017.

Nowadays we are dealing with the issues like contaminations, power cut issue and so on. To conquer these issues, we have contemplated the gadget, which can be filling its roles without causing any of these issues. So we have considered doing the task on cutting grass, this uses the sustainable wellspring of energy for its activity like sun powered energy. This venture targets fostering a compact sunlight based worked grass cutting gadget, as there is power deficiency. So we have chosen to make a sun based energy worked gadget. Sunlight based charger is associated with the battery. Then, at that point, by interfacing inverter to battery DC current is switched over completely to AC current. This will run the AC engine. This engine is associated with cutting edge shaft by the assistance of belt drive. This will pivot the sharp edge in rapid, cut the grass. This gadget will help in working of eco-accommodating framework. Current innovation normally utilized for cutting the grass is by the physically taken care of gadget. In this paper utilized novel innovation. So in this paper we are attempting to make an everyday reason robot which can cut the grasses in Lawn. The framework will have some robotization work for direction and other obstruction recognition and the power source that is battery and a sunlight based charger will be appended on the highest point of the robot due to this diminishes the power issue.

EXISTING SYSTEM

In the current technique a physically worked rotating yard trimmer to clean the grass. Rotating cutter has a bunch of three wheels, one front haggle back tires. The shaft between the two back tires is associated with the compound stuff train framework. The wheels are pivoted in forward movement and slant gear framework convert the forward movement to the upward movement. The incline gear framework is associated with the sharp edge and the sharp edge is a low lift edge utilized for low speed. This grass trimmer is utilized to limit the expense and power prerequisite for homegrown reason. Since weighty machine can't be acquainted in that frame of mind due with the restricted space of yard.

PROPOSED SYSTEM

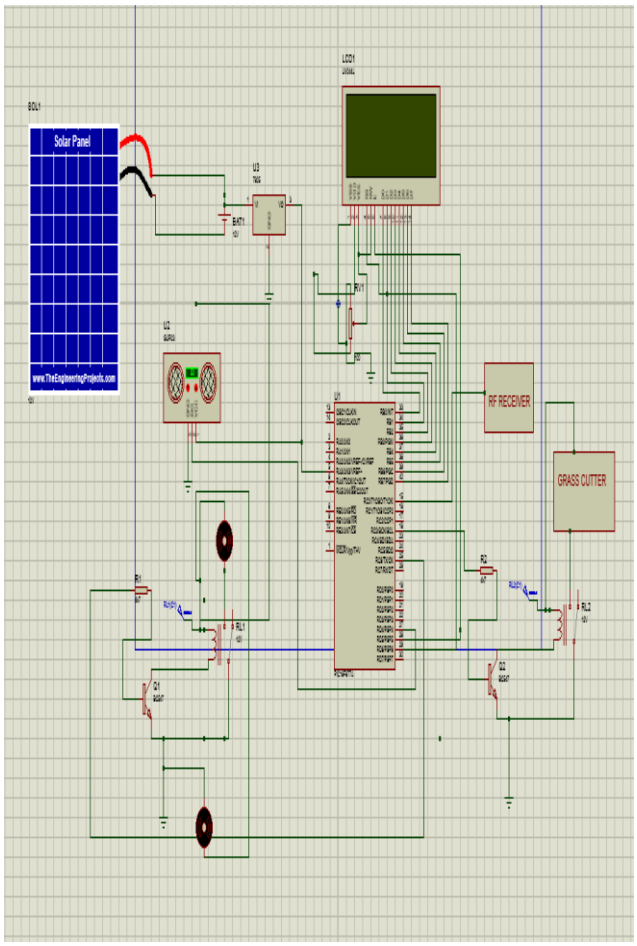


BLOCK DIAGRAM

The work targets manufacturing a grass cutting machine framework which makes the grass shaper engine going through sun oriented energy. The "Sun oriented Powered Grass Cutting Machine" is a mechanical vehicle controlled by sun based energy that additionally keeps away from hindrances and is fit for computerized grass cutting. Sunlight powered charger is associated with the battery and engine is associated with grass shaper sharp edge, this will pivot the sharp edge in specific speed and cut the grass. This gadget will help in working of eco-accommodating framework. Current innovation ordinarily utilized for cutting the grass is by the physically dealt with gadget. The proposed strategy is utilizing connected to a ultrasonic sensor for obstruction discovery. The microcontroller moves the vehicle engines in forward course in the event that no hindrance is identified.

CIRCUIT DIAGRAM EXPLANATION

The power supply circuit comprises of step down transformer which is 230v advance down to 12v.In this circuit 4diodes are utilized to shape span rectifier which conveys throbbing dc voltage and then took care of to capacitor channel the result voltage from rectifier is taken care of to channel. The sifted DC voltage is given to controller to deliver 12v steady DC voltage. LCD Liquid gem show is interacting to microcontroller and seen the checking reason. This 5V DC is utilized to supply capacity to the regulator and the LCD.A voltage controller is an electrical controller intended to naturally keep a steady voltage level. In this task 12V are required.



III. CONCLUSION

Advanced mechanics is extremely huge field which accompanies various blends of innovation this will assists with diminishing the human exertion and gives greatest proficient result for the work; these days part of energy is squandered for trimming grass in various region of the world and furthermore requires bunches of human exertion for the work. The primary point of this task is to make a sun oriented fueled independent grass slicing robot which will serves to cuts the yard in various plan with lesser human exertion. Benefits of this framework are utilized parts are of minimal expense so and in mass creation and adding of not many more sensors doesn't has any effect. By utilizing this framework, we can save the nonrenewable wellsprings of energy, for example, petroleum, fuel and so forth. We can likewise diminish different types of contaminations like air contamination and clamor contamination. Power is saved as we use sun based energy that is inexhaustible wellspring of energy and is available in overflow.

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