SOLAR GRASS CUTTER WITH OBSTACLE AVOIDANCE WITH SPRAY

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ABSTRACT

Agriculture is demographically the broadest profitable sector and plays a significant part in the overall frugality of India. For the growth of Indian frugality, robotization is necessary. The main purpose of robotization in husbandry is to ameliorate the overall productivity and product. The system control is done by the Arduino UNO R3. robotization is achieved by using detectors and Arduino UNO R3. Wheels and cutting operations are done using dc motors. DC battery is employed for powering and buttress mode operation of the system. The whole force is handed through the battery and to charge the battery bowl circuit is used to give the charging for the battery. Also the alternate operation is that the spreading of fungicide then we used the water pump with spreading snoot. The solar field mower is a completely automated lawn cutting robotic vehicle powered by solar energy that also avoids obstacles and Is able of completely automated lawn slice without the need of any mortal intervention. The system uses 12v batteries to power The vehicle movement motors as well as the lawn knife motor. We use a solar panel to charge the battery. The lawn knife and Vehicle motors are connived to an Arduino Nano that controls the working of all the motors. It's also used to affiliate an ultrasonic detector for object discovery. The SoC moves the bot in the forward direction in case no handicap is detected. On handicap discovery; the ultrasonic detector monitors it and the SoC therefore stops the lawn knife motor to avoid any damage to the object/ human/ beast whatever it is. In order to descry the boundaries the bot uses Light dependent resistors(LDR) on a right angle to detector start event. The discovery of the ray on the other side triggers the bot to stop and turn a right angle clockwise and and move to coming row. The bot takes another right angle turn clockwise and moves forward till the coming ray hedge is detected. The discovery of both the spotlights contemporaneously triggers the stop event. The L293D9bi-motor regulator/ motorist is used

1 INTRODUCTION

The field transport is an aid in the mundane task of lawn slice and tending to meadows. Due to the revolution of green movement in the present script the diligence with major lot areas are changing the chance of verdure in the premises and increased verdure causes increased trouble and plutocrat to tendto.In similar cases the field transport proves to be an god transferred. Due to increased vacuity of system on chips, the field transport can be automated veritably fluently and also the reduced size and cost of Dc motors causes the system to be independent of fossil energies to be suitable to tap into renewable powers. The presence of Ultrasonic detectors and light dependent resistors in a lower and cheaper packaging beget the bot to be more apprehensive of its surroundings. Due to the presence of ardiuno uno the system causes and increase in the module that can be added. Traditional design of field carriers had tooled powered machines which needed regular conservation similar as machine oil painting and greasing. They also created a lot of noise pollution and air pollution. In the cold and harsh terrain the reactionary energy powered motors tend to indurate eand not run. These problems are answered by using electric motors.

1.2 PROBLEM STATEMENT

Grass cutting devices are employed in many areas, yet manually operated conventional grass cutters are unable to use in some applications were human supervision is not possible. Traditional grass trimmers are powered by fossil fuels resulting in variable cost, labour requirement, difficulty in carry over places. Also, collection of mow waste requires labour or models contain vacuum setup require heavy design and regular maintenance. Altogether the conventional grass cutter has many flaws which will overcome by this proposed system, thereby reducing cost and making use of renewable solar energy as a power source. Also drags trimmed waste at edges of the yard that makes easy to collect the waste. Ultimately beautifying the yard.

1.3 OBJECTIVE

The main point of the design is to operate the robot on solar energy. Hence exclude dangerous gas and reduce the force. Project uses Arduino controlling colorful operation of lawn knife. Also, the lawn knife has ultrasonic detector for handicap discovery.

2 LITRATURE SURVEY

proposed a wireless lawn knife that uses solar panels for rooting photovoltaic energy. Hence batteries do n't have to be externally charged or replaced. The battery is continuously charged at constant voltage indeed when the lawn knife is working. It's a remote- controlled device. It makes use of two DC motors and hence both forward and backward stir of lawn knife is contemporaneously possible. Ashish Kumar etal.(2) discusses an experimental study of Solar Power Grass Cutter Robot. In this paper, the author explained how the solar plate placed above the lawn knife generates solar energy and uses the attained energy for the functioning of the lawn knife. For precluding the battery from overcharging and over discharging, a voltage controller or a charge regulator is placed into the system which must be placed in a series. It specifies extensions to a simple model under the paper's discussion similar as using a motorist circuit for controlling the speed of the motor as per the demand. Other extensions can be the operation of TV defenses for status and energy generation monitoring purposes, provision of power banks to charge the machine incontinently when there's a failure of solar energy similar as during stormy seasons. Pratik Patel, Ashwini Bhosale etal.(3) in their paper outlinesnon-solar energy grounded automated lawn knife. robotization is achieved through the use of different detectors. The point that stands out in their model is the use of an TV Screen and keypad system to allow druggies to give input regarding the area to be cut in terms of X and Y axis. This allows for customizing the slice patterns, for case cutting the field area in shapes of letters or words.T. Karthick, S etal.(4) in his paper fabricated lawn cutting machine with rotary blades by using solar energy. The photovoltaic energy- grounded system uses direct or rotary blades that slide linearly to cut the lawn. The position at which the lawn must be cut can be acclimated by considering ground concurrence. The fabricated machine is more oriented towards furnishing a low cost and terrain-friendly result that can be used indeed by unskilled drivers. It doesn't put forward robotization and sets up a manually operated system exploration work

3 WORKING

The design proposed aims to construct a lawn knife which operates on solar energy, to give an energy effective result. The robotic machine is anticipated to avoid obstacles and work without the physical intervention of the mortal stoner. A solar panel is used to power a battery which can also be powered via an electrical outlet, just in case of extremities. Arduino is used for computational and sense processing. The lawn knife and vehicle motors are connived to an Arduino board for tentative operation of all the motors i.e. motors for driving the device as well as the motor for rotating blades. An ultrasonic detector is used for handicap discovery.. DC motor which results in trimming lawn, placed at front. A collecting guard is designed behind the system to collect the trimmed lawn left at the bottom to the edge of the field using a DC motor that operates once the system rotates. Eventually, the entire conduct of the factors are controlled consequently using a r Arduino. Power and other information about the working system can be displayed to the stoner via the web interface to give the stoner a better understanding of the system and its power operation escarpment is used to rotate the blades

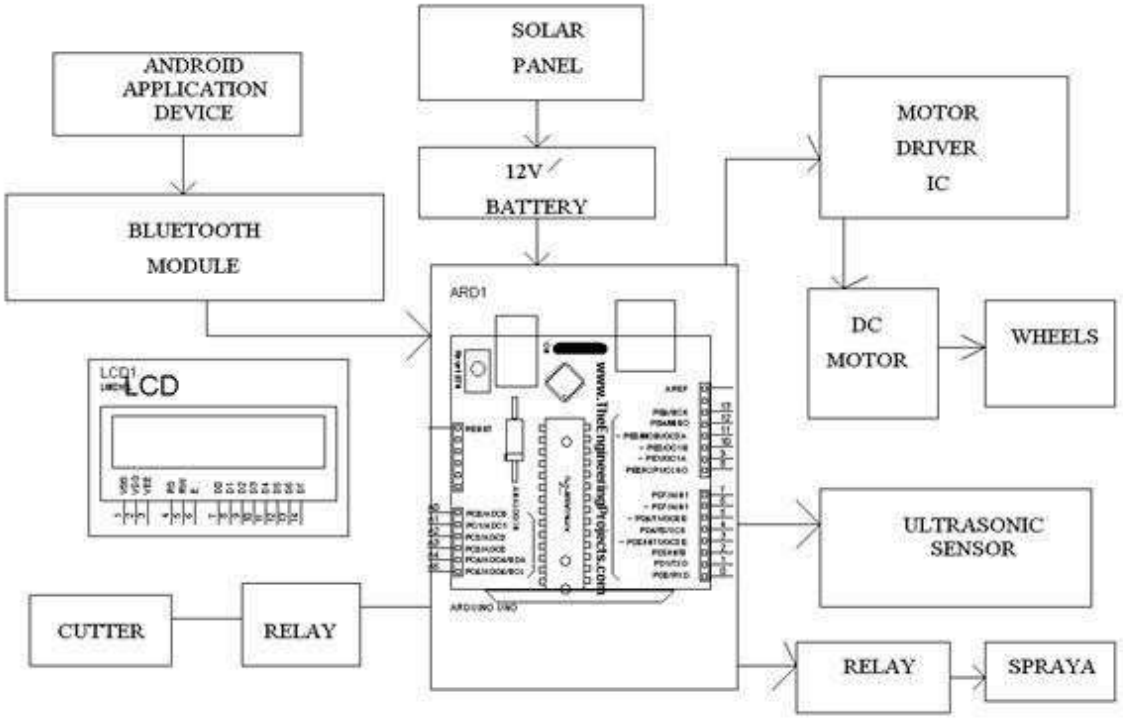

Fig -2 BLOCK DIAGRAM

4 CONCLUSIONS

The capacity of the battery was 2000 mAh and discharging current was1.2 amps and the affair of the solar panel was 12 v and 5 watts. The discharging time was calculated by dividing the battery capacity by the discharging current. The discharging time was 2 hours roughly. Using the formula E = VIT, we calculated the charging the time which was roughly 4 and a halfhour.The former bot systems were studied and a suitable design was made. The schematic for the same was made on which prototyping will take place. The factors have been chosen grounded on design demand and grounded on a many other parameters. Grounded on data collected from exploration papers, we made a many changes to make our design more. A timeline was made with the knowledge of the review dates and work has progressed according to it. In the alternate review we've made a prototype model of the tackle and software system with a demonstration with ultrasonic and infrared detector. The prototype is on a essence distance lattice and the discovery was done using ultrasonic detector and the affair was attained. The green revolution has caused a burst in the field area and the demand for abot.Since grassing slice is a mundane task taking a lot of time; it's believed that mortal time shouldn't be wasted on similar tasks or a least reduced to the bare minimum. The cost effectiveness and the ease handed makes the bot to be a necessity rather of aluxury.By our design determinately we conclude that the Solar Grass Cutter Robot with manacle Avoidance plays veritably crucial part in these days because to reduce pollution due to gas and petrol machines, it reduces the jeopardy for theusers.In the current state the bot is able of completing its ideal with 100success.

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