

# Literature Survey for Automatic Grass Cutter Using Solar Tracking System

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## ABSTRACT

*In this paper, we are analyzing number of literature survey for making final year project titled “automatic solar grass cutter using solar tracking system”. This literature survey helps us for making this project. This paper describes the different features and technologies present in Automated Solar Grass Cutter by over-viewing multiple research done over time. In today’s world, Automation is a very important part of invention. An automatic solar grass cutter is a machine that uses cutting blade or thread to cut grass at an even length. The automatic solar grass cutter is self-driven but an operator is required for monitoring and controlling it. We also use a solar panel to charge the battery. If the weather is cloudy and there is no source of sunlight for the working of solar panel to charge the battery, then we also have an option for charging the battery externally with the help of a centre-tapped transformer. The controlling is done with help of a mounted camera and android app develop by us which can be controlled using a mobile with wifi.*

**Keywords:** Solar Tracking, ATMEGA8 Microcontroller, BLDC Motor, Vacuum Cleaner

## INTRODUCTION

In this paper, we are making a solar tracking based grass cutter because pollution is the major issue in the universe. In case of Gas powered lawn mowers due to emission of gases it is responsible for pollution. From time immemorial, the sun has been the major source of energy for life on earth. We can use the

solar energy for giving power to the new high tech robotic grass cutters.

Thus, this project will be focusing on an automated lawn mower which is self-driven but the operator would be required for monitoring with a mounted camera that is controllable via an android phone. This project is an extension of 2015-16 project and we are further enhancing it by adding some features so that it can be launched in the market. The features that will be modified are better wheels to provide mobility, sharper blades, battery that can provide higher capacity, also an android based application for monitoring and controlling of grass cutter. The system uses batteries to power the vehicle movement motors as well as the grass cutter motor. The grass cutter and vehicle motors are interfaced to a controller family that controls the working of all the motors. The controller moves the vehicle motors in all direction.

## I. LITERATURE SURVEY

### [1] Automated Solar Grass Cutter (February 2017)

*Ms. Rutuja A. Yadav, Ms. Nayana V. Chavan, Ms. Monika B. Patil, Prof. V.A. Mane*

In this paper they are trying to make a daily purpose robot which is able to cut the grasses in lawn. The system will have some automation work for guidance and other obstacle detection and the power source that is battery and a solar panel will be attached on the top of the robot because of this reduces the power problem. Automated solar grass cutter are increasingly sophisticated, are self-docking and some contain rain sensors if necessary, nearly

eliminating human interaction. It works much the same as the Robomow with a boundary wire implanted at the border of your lawn. The system is switched to automatic mode in which the robot's infrared sensors make a comparison between, cut and uncut grass. The mower continues this process until it completes the job. The system uses 12v batteries to power the vehicle movement motors as well as the grass cutter motor. They 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 microcontroller 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 the forward direction in case no obstacle is detected. If in case obstacle is detected by the sensor then the microcontroller stops the grass cutter motor so as to avoid any damage to the object/human/animal coming.

## **[2] Design and Implementation of Automatic Solar Grass Cutter (April 2017)**

*Bidgar Pravin Dilip, Nikhil Babu Pagar, Vickey S. Ugale, Sandip Wani, Prof. Sharmila M.*

This paper describe manually handled device is commonly used for cutting the grass over the field which creates pollution and loss of energy. Automatic solar grass cutter which will reduce the effort required for cutting grass in the lawns. Also solar power will be used to provide the driving force for the cutter and various sensors will be used to detect and avoid the unnecessary objects in the field during operation. It consist of microcontroller arduino ATmega328p, IR sensors, LCD display for better response and understanding to the user. This paper will analyze the operation and working principle of the Automatic Grass Cutter. The other objective is that the automatic lawn cutter has to differentiate between grass and concrete while monitoring its surroundings continuously. They wanted an ultrasonic sensor to sense it the lawn cutter was heading into an object. Safety is the main concern while designing the lawn cutter. As it has blades they wanted there lawn

Cutter not to be in operating mode if it was being held in the air by the user. The design contains a microcontroller, multiple sensors and a solar charging system. Adding these elements together, they got there robotic lawn mower. Knowing that the user would be randomly holding the robot they needed a sensor to detect orientation. They decided to go with the one that work best with solar charging. The nickel-metal hydride (NiMH) was found to be the best because given a low charging current, it will not overcharge.

## **[3] Solar Based Grass Cutting (January-June 2017)**

*Ms. Bhagyashri R. Patil, Mr. Sagar S. Patil*

For human enlargement in many countries there are studies and trials going on the solar energy and the wind energy, so they made their new concept solar power grass cutting machine. In this concept they cut the grass on the agricultural land or small plants in lawns and gardens. The design of solar powered agricultural equipment will include direct current (DC) motor, a rechargeable battery, solar panel, a stainless steel blade and control switch. The automatic grass cutting machine is going to perform the grass cutting operation by its own which means no manpower is mandatory. The purpose of the project here is to design and build a remote controlled grass cutter. The device consist of linear blades and it does not affected by climatic conditions. They have used many components for preparing grass cutter like DC Motor(3) for rotating the wheels and blade, wheels(4), battery, Solar panel, IR sensor, Collapsible blade. There are two main components such as transmitter and receiver. Transmitter continuously transmits the rays if any obstacle come in front of grass cutter then the rays are reflected back towards the receiver. The receiver receives the signal in the serial form from encoder but microcontroller requires parallel data for communication so receiver sends data to decoder to convert data in the parallel form and then it is passed to microcontroller.

## **II. CONCLUSION**

Although a conclusion may review the main points of the paper, do not replicate the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications and extensions. Authors are strongly encouraged not to call out multiple figures or tables in the conclusion—these should be referenced in the body of the paper.

In this paper, the work done on grass cutter will meet the challenge of environmental production and low cost of operation since there is no cost for fueling. By using this system we can preserve the non-renewable sources of energy such as petrol, gasoline etc. We can also reduce various forms of pollutions such as air pollution and noise pollution. Electricity is saved as we utilize solar energy that is renewable source of energy and is present in abundance. This grass cutter 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 lawn mowers. We are developed "Automatic grass cutter" by using ATMEGA8 Microcontroller, solar panel, display and for this we are using battery hence it works automatically.

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