

“RESEARCH WORK ON AUTOMATED SOLAR GRASS CUTTER”

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Abstract

Automation is very important in a magnet. The aim of the project is to create a functional and functional device, without time-consuming clutter, that can be used on a smart phone via Bluetooth and with good security. brushing the grass really requires technique and technique; the cutting edge can also be cut to preserve different grass lengths. The aim of the project is not just to create demonstrations that can be used to implement a project. The required work is done with Adriano microcontroller, DC motors, block sensor sensors, motor protectors, relay modules, DC batteries, rods and Bluetooth modules. In this project, we create a system of fur robots that are able to move the area of grass where the user wants to cut the grass immediately or according to the required pattern. The starting cutting brush, similar in design as a round, round, rectangle, begins the cutting brush, which is similar in design to a round, round, rectangular, continuous pattern. We know that the necessary techniques can be applied in the future under favorable conditions to many, which will be useful in robotics and sports facilities such as sports, football and hockey, and so on.

Keyword. ROBOT GRASS CUTTER, Grass – cutter controlling, Arduino UNO,

1. INTRODUCTION

In the present system of things, the sun is a source of energy. Automation is widespread at this time, it is necessary to reduce human effort. Nothing is possible to stop in today's world without electricity, but we use energy from the sky to make robotic machines. As technology changes daily, these efficient and intelligent workers will be replaced by well-educated and intelligent people. Automatic cutting machine is a high-performance, high-performance machine that prevents blockage and can cut grass with no one around.

Many lawnmowers should be replaced with everyday purpose robots that can be planted in grass and grass without human intervention. This system will have some automated functions to help identify and identify additional barriers. It is powered by a battery and placed on a solar arm on a robot. It will not be easily absorbed by the large, growing machine, which causes noise pollution due to noise generators and local air pollution due to fire.

Along with consumers, consumers are also dangerous and not easy for everyone to use. In addition, if an electric motor is used, moving it can be a challenge and unsafe. Therefore, it is still more efficient to use an electric motor that will get worse and take less energy. The product of the footprint from the sun can be charged using the solar arm.

The design of fire equipment (equivalent lawnmower) includes the current motor (DC), rechargeable battery, rods, stainless steel and shift control. The automatic grinder performs the cutting process of its own saw, which means that no power is required. This would be better because no human energy is needed to operate the mower on hot summer days where you would rather not stay in the sun. the remote control allows the user to control the speed and direction of the brush. This work is done with the appropriate layout of the Arduino Uno microcontroller, sky panel, infrared sensor, simple DC motor, DC motor, Android mobile app, Bluetooth module and relay module. is connected to the transmission. and there may be less speed and more energy. The robot is a dual-drive hybrid solar cell and a lithium-ion battery that provides power to circuits, motors, and more.

2. LITERATURE REVIEW

In the literature survey we have searched the IEEE journals in the subject of solar panels, arduino base technology, batteries. In this paper describe manually handled device is commonly used for cutting the grass over the field which creates pollution and loss of energy, technical solutions J. Hammond developed lawn ranger, Arduino controller lawn mover can be describe in journal by Vipul patel, Tanvi Patel, at volume 2. 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. Andree colens, evertt. G, improves function and Battery used is rated 12v 1.2 Ah, it won't be overcharged due to the small output of solar panel. To detect the obstacles, they used IR sensors which has 1m 555 IC. There are two sensors, one on each side. This is because in case the obstacle is on the left then it will move in right direction and if the right sensor detects the obstacle then it goes towards the left.

Obert Zondlo, U.S. Patent 5,461,292, remote controlled guidance system for working vehicle on 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.

Introduction to robotics : Analysis , Control, Application 2nd Edition by saeed B. Niku in their design contain 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. They robot they need a sensor to detect orientation. They decided to go with the one that work best with solar charging.

3. RELATED WORK

There have been no recent disruptions in product development in the lawnmower industry. The advantages of electric motors and their small size have prompted us to incorporate these improvements into lawn motor designs, and previous human effort and time was also lost in doing work that was, of course, unnecessary.

The use of explosives in ordinary households can cause little and other human harm. The difficult-to-control nature of the motor has been enhanced by the simplified power of the electric motor. We want to save this human effort that can be put to better use.

4. ROBOT GRASS CUTTER

In the time where technology is merging with environment awareness, consumers are looking for ways to contribute to the relief of their own carbon footprints. Pollution is manmade and can be seen in our daily lives, more specifically in our owns homes. Gas powered lawnmower are in 90% of U.S. home and they create 5 % of the total U.S. pollution cooperates Green technology initiatives are being support by both the government and business. Our new design for and old and outdated habit will help both the consumer and the environment this design is meant to be an alternate green option to the popular and environmentally hazardous gas powered lawn mower. Ultimately, the consumer will be doing more for the environment while doing less work in their daily lives.

4.1 ROBOT

A robot is a machine that can communicate about its surroundings and can control or create a computer to perform certain tasks. All robots have a set of operating systems and can be modified under different types of controls, but they have three different modes: understanding, configuration and operation. In general, perceptions are made by sensors in machines, microcontrollers or in-vehicle processors and, ultimately, operated by motors, machine, performing some of the functions of design, living, and learning from human beings without error. Different methods can be used such as some of them in motion, some have mobile devices, dedicated and independent, etc.

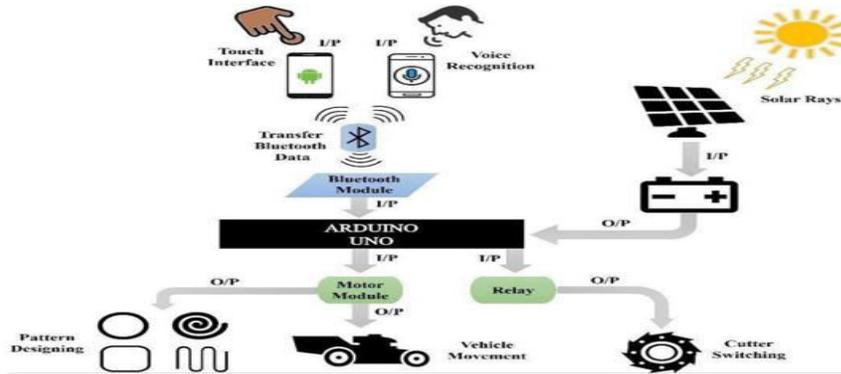


Fig.3.1 The architecture design of pattern design grass- cutter controlling with touch buttons and voices recognition of mobile application.

5. PROBLEM IDENTIFICATION

The lawn mowing industry hasn't seen any disruption recently. The advantages of the electric motor and its small size prompted us to apply these developments in the design of lawn mowers as well as previously wasted human effort and time doing work that is naturally unnecessary.

The use of highly flammable substances in ordinary homes can result in few homes and other casualties. It is difficult to control the engine properties with the simple performance characteristics of an electric motor. We want to save this human effort that can be put to better use. At a time when technology merges with environmental awareness; Consumers are looking for ways to help lighten their carbon footprint. Pollution is man-made and visible in our daily lives, more specifically in our homes.

Gasoline-powered lawns are in 90% of U.S. homes and they make up 5% of the U.S. total. pollution Cooperation projects on green technology support governments and companies. Our new designs for old and out of date habits will help consumers and the environment. This design is intended to be an alternative green alternative to the popular and eco-friendly gas powered lawn mower. Finally, consumers will do more for the environment while working less in everyday life.

6. DESIGN AND METHODOLOGY

To simplify the analysis, Figure shows the operating system and characteristics of the required robotic vehicle, while I / P and O / P represent the operating system as input and output. Figure 2 is an example of a project. The Mower has a transmission and two control systems. The first is the arrow touchscreen button and Android mobile app made specifically for Android phones that is accessible and easy to download. In this system, when the user presses the appropriate button, the signal is sent to the Arduino UNO which is connected to the car via a Bluetooth-enabled device. Upon receiving the next signal command, the Arduino scans this signal through a secretly defined instruction manual and sends the signal next to the motor module to turn the robot wheels, create a screwdriver or relay to turn it on / off. the machine. The second option is to control the robot car with voice recognition system, Android application. In this system, when the user speaks appropriately, Google's voice search system recognizes the spoken subject and sends it to the Arduino UNO when restarting the next command. The Arduino uses a predefined password to verify the password is assigned to move the machine. If the subjects conform to the specifications, the appropriate signal is sent to the engine module to activate the mower or relay to replace the machine. Solar panels also use batteries and sunlight to reduce energy consumption.

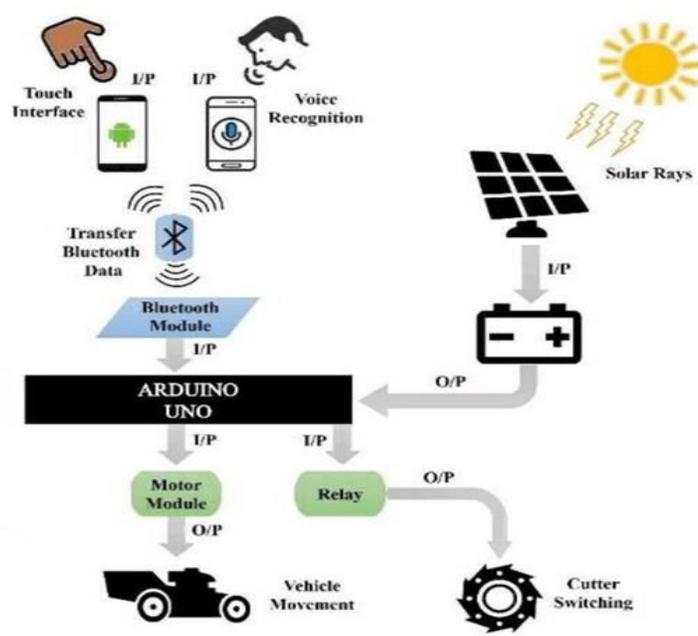


Figure 4.1 Grass – cutter controlling with touch buttons and voice recognition of mobile application

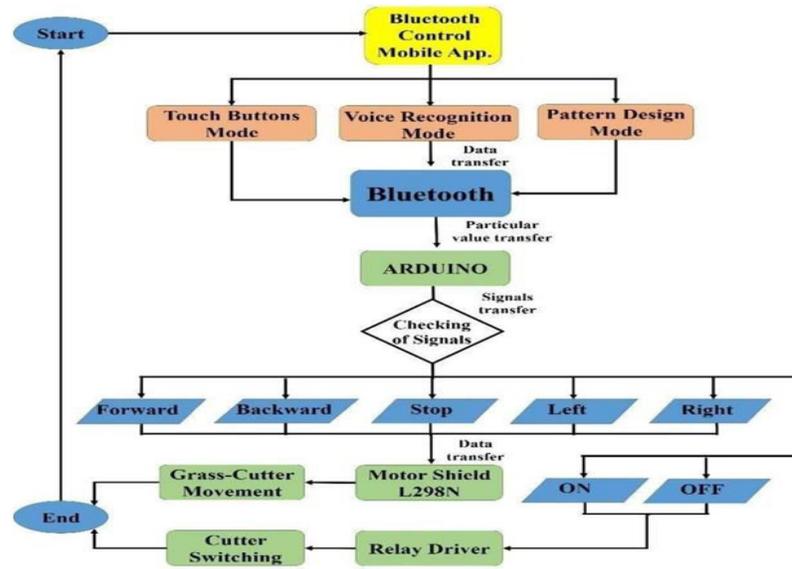


Figure 5.5 : The flow diagram of the android application based grass cutter controller system

7. RESULT

The solar-powered agricultural lawnmower structure of the arduino base includes motor current (DC), battery light switch, opener, stainless steel console switch. The automatic grinder performs the cutting process of its own saw, which means that no power is required. We use the Arduino control system and the wireless connection, which the robot system can control based on Android applications (touch buttons and voice recognition), avoid the end of the description, wireless, etc. Android mobile devices offer three modes (touch screen button, volume recognition, and system configuration). Transfer of application data from Arduino applied to grass vegetation from external module Bluetooth. with a hand-cut simple brush or various complex patterns, how to simply press a button in a mobile app

8. EXPERMENTAL WORK

The main purpose of this project is to be able to remove the mower in a small area where the user wants to cut the mower immediately or according to the required procedure. The user can click the desired process button from the mobile application and the system will start cutting the grass with the shape of the circle such as circle, circle, rectangle and continue with the pattern. We keep in mind that the required system can be applied to a large number of systems in the future, which will be useful in the application of robotics and grass cutting in sports fields such as sports, football and hockey , etc.



Figure 6.1 Arduino base solar power grass cutting robot

9. CONCLUSION

In this article, we design a system for controlling a grass-cutting robot to design a model with Arduino-based solar power, designed to respond to events (based on touch arrow buttons, voice recognition and pattern) designed with Android mobile app as described above) and take appropriate action. The proposed project uses a mechanism to control the grass cutting robot, mainly based on touch arrow buttons (the grass moves in the same direction as it presses the grass cutting buttons) and a voice recognition system (the grass moves according to the cutter). to the key word used by the user.) This system is expanded by forming different complex patterns in the grass with touch buttons on the mobile application. Meanwhile, it is presented that the proposed systems have the capabilities to identify obstacles in front of the grass-cutting robot. The hardware implementations of the proposed systems are provided in a laboratory scale module to demonstrate the simplicity, reliability, integrity, versatility, and affordability of the system. As we learned the lessons, we reaffirmed that the system introduced could be easily implemented on real terms in the future on a large scale. Meanwhile, the lawn mower robot system has the advantages of designing the proposed models, such as ease of use, low consumption and low consumption. - cost approach, easy to use, simple and smaller in system size; so the hardware section requires little space to fit and multiple applications can be added to reduce personal effort in upgrading. Also, voice commands are sent and received wirelessly with the help of Bluetooth technology but on the other hand, Bluetooth technology is only 10-15 m long, the processing distance in the system is shorter. If the Bluetooth connection fails frequently, it will cause a long delay or loss in the transmission and response of commands. In addition, the number of errors in the presented voice detection system will increase if there is background noise or other sound in the area. Here is a limited number of models, but the algorithm can be extended in several ways and more models can be added to the system.

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