

- 1. Project Reference Number** - 46S_BE_3001
- 2. Title of the project** - DUAL MODE MULTIFUNCTIONAL AUTOMATIC GRASS CUTTER
- 3. Name of the College** - Anjuman Institute of Technology and Management
Department - Electronics And Communication Engineering
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5. Keywords:

Fully automatic grass cutter, dual mode, manual, embedded system, sensor.

6. Introduction

Nowadays, self-contained personal service Users all across the world are becoming more interested in robots. It makes logical to construct low-cost robots for the home that are designed to perform extremely particular duties, given society's increasing drive for efficiency and the prevalence of cheap technology. The lawn mower is an aid in the task of grass cutting and tending to lawns. Due to the revolution of green movement in the present scenario the industries with major campus areas are changing the percentage of greenery in the campuses and increased greenery causes increased effort and money to tend to. In such cases the lawn mower proves to be a good sent. Due to increased availability of system on chips, the lawn mower can be automated very easily and also the reduced size and cost of DC motors causes the system to be independent of fossil fuels to be able to tap into renewable energies.

A dual-mode multifunctional automatic grass cutter is an innovative device designed to efficiently maintain and trim grass in outdoor areas. Combining advanced technology with automated features, this grass cutter offers versatility and convenience. The dual-mode multifunctional automatic grass cutter is designed to handle the tedious task of grass cutting with minimal human intervention. It integrates various functions and features to provide efficient and precise grass maintenance. One key feature of this grass cutter is its dual-mode capability. It can operate in both manual and automatic modes, offering flexibility to cater to

different user preferences and requirements. In manual mode, users can control the grass cutter manually, guiding it along the desired cutting path. This mode allows for precision trimming and cutting in specific areas.

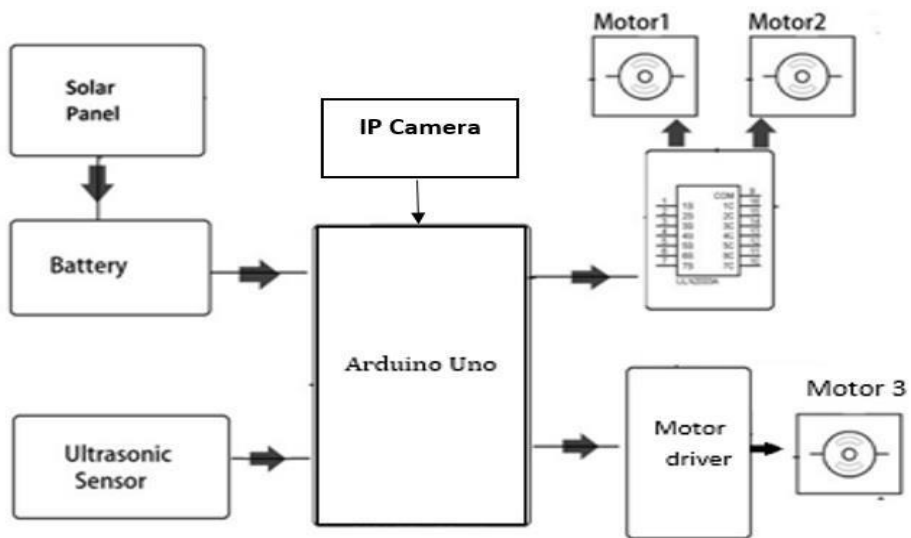
7. Objectives

1. objective of this project is to design an automatic grass cutter which operates on solar energy and avoids the drawback of old grass cutter. The project is powered by solar energy hence the consumption of fossil fuel is reduced.
2. The main objective is to reduce human efforts by using fully automatic grass cutter.
3. To manually control the grass cutter remotely using mobile phone as a controller.
4. To detect the object using ultra sonic sensor to avoid damages to life and property.

8. Methodology:

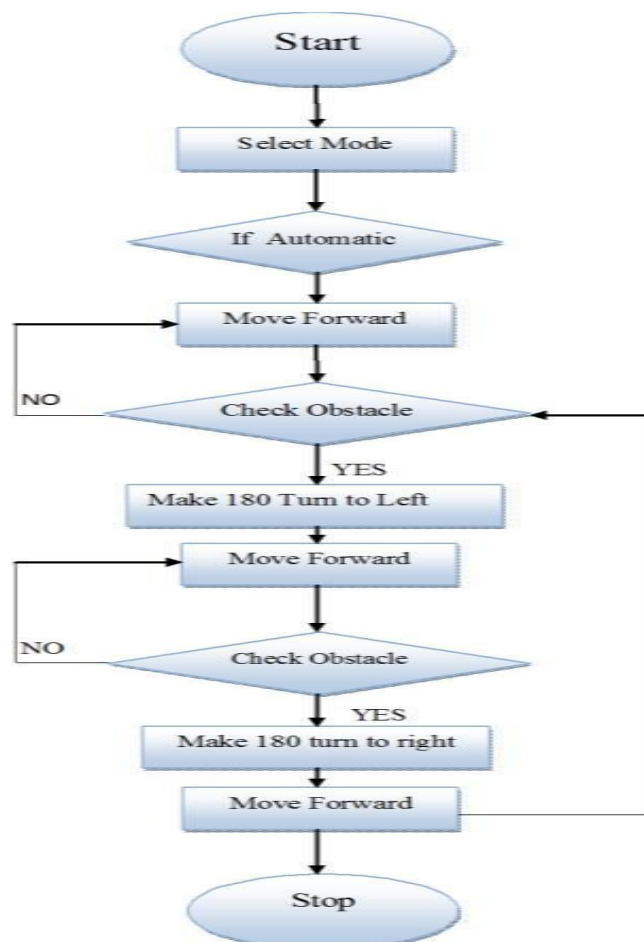
The device consists of Arduino UNO microcontroller, Ultrasonic sensor, Camera module and a Solar powered system. Connecting these elements in required format we get our desired system structure. The Ultrasonic sensors works as the eyes of the device. To provide the required power to the device we use the battery and to charge the battery we mount solar panel at the top of the device. The battery supplies the energy to the components and according to the commands the motor moves. And this machine will also remove the hurdles on its way. The system does not require any human interaction for the operation of the system. Once the input is provided it will all work by itself and as the area is covered it will stop by its own.

Block Diagram:

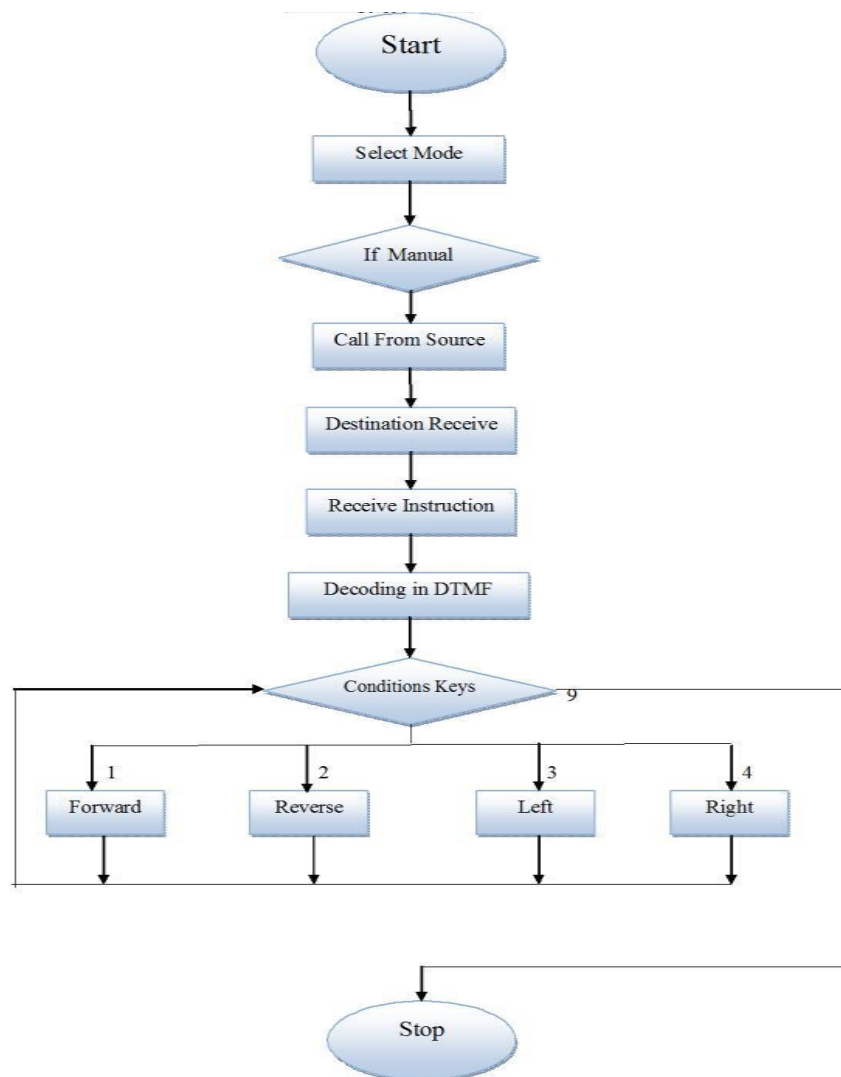


Flowchart

Automatic mode



Manual mode



1. The solar panel receives solar energy from the sun, then it converts to the electrical energy which it stores to the battery. The solar panel is mounted on the top of the bot so it can easily get contact with the sunrays.
2. Ultrasonic sensor is mounted at the front of the bot which acts like eyes to the bot it is used to determine the obstacles. It detects obstacle then stops and takes turn.
3. In the device motor driver is provided to run the bot in any directions, the motor driver is connected with DC motors.
4. A high rpm DC motor is provided to the device which is used to cut the grass.
5. It can also be handled by Bluetooth device as Bluetooth module is provided in the device.
6. And battery can also be charged using electrical energy so device can be used in any weather.

9. RESULTS AND CONCLUSIONS



- In the world today, all machines are designed with the aim of reducing human work and increase efficiency. The automatic grass cutter will meet the challenge, and it will operate on low cost.
- A grass cutter/mower has been developed for the use of residences and establishments that have lawns where tractor driver mowers could not be used. The machines capacity is adequate for its purpose.
- The machine has proved to be a possible replacement for the gasoline powered grass cutter.
- It is a total package of energy saving and Time saving grass cutting machine with minimum human monitoring and cost. It is eco-friendly mower which uses renewable source of energy.
- It does not cause any pollution to the environment. It enables us to trim the grass in a very nice way and if the person is not satisfied he can switch over to the manual mode of operation to get the job done.
- Thus, this project aims have to solve the real world problem by introducing a efficient and cost effective product.

10. SCOPE FOR FUTURE WORK

- The future scope of a dual-mode multifunctional automatic grass cutter project holds significant potential, considering the increasing demand for efficient and automated solutions in various industries.
- As technology advances, there will be opportunities to further enhance the efficiency of the grass cutter. This can be achieved through improvements in cutting mechanisms, power systems, navigation algorithms, and sensor technologies. Increased efficiency will result in faster and more accurate grass cutting, enabling users to accomplish tasks more quickly and effectively.
- A multifunctional grass cutter has the potential to perform various tasks beyond grass cutting alone. It could be designed to handle additional functions such as edging, trimming, weed removal, and even light landscaping tasks.
- Future developments in navigation systems, including GPS, machine vision, and obstacle detection sensors, can greatly enhance the autonomous capabilities of the grass cutter. By incorporating these technologies, the cutter can navigate complex terrains, avoid obstacles, and optimize its cutting path. This will improve productivity and allow the machine to operate safely and efficiently in different environments.
- By collecting and analysing data on grass growth patterns, cutting frequencies, and other relevant parameters, the grass cutter can leverage artificial intelligence (AI) algorithms to optimize its operation. AI can identify and adapt to specific grass types, growth rates, and user preferences, resulting in more efficient and tailored cutting strategies.