

CYBERNATIC SEED RANCHER

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ABSTRACT:

Farming structures a fundamental aspect of the Indian economy. The approach actualized in doing farming exercises faces numerous imperatives, for example, non-accessibility of work, low-profitability rate, abnormality because of climate limitations and exhaustion. These requirements alongside the broad utilization of the non-renewable energy sources to control I.C motors or outer flammable motors have added to the predicament of the farming area in our nation. With the target of killing such bottlenecks the possibility of a programmed sunlight based controlled seed-planting machine is presented, which could viably complete the burrowing, planting, and watering of the land at a decreased expense and with no damage to the earth. The system includes the utilization of a sunlight based board to catch the sun powered radiation and at the same time convert it into electrical vitality for additional capacity. The electrical vitality along these lines put away charges a 12V battery, which thus gives the necessary information capacity to the shunt wound D.C engine. The engine sends the ability to the battery-controlled haggles development of the framework. To upgrade the usefulness of the framework a distant controlling activity and a water dribbling unit is connected which will help in moving the framework in the field and empower steady water gracefully after each burrowing and planting activity. Seed planting machine will execute ground burrowing, seed planting, and watering activity at the same time with decreased expense and exhaustion.

KEYWORDS —Seed sowing, microcontroller, digging, L293D control, sensors, solar battery cells.

I. INTRODUCTION

In the current age the vast majority of the nations don't have adequate talented labor exceptionally in agrarian division and it influences the development of creating nations. The principle necessity of Robotization is to lessen labor in our nation. Robotization spares a great deal of repetitive manual work and accelerates the creation measures. So it is a chance to robotize the part to conquer this issue. In India there are 70% individuals reliant on farming. Seed has been a significant horticultural product since the main harvest plant was tamed by pre-noteworthy man. In this model seed planting measure is computerized to lessen the human exertion and increment the yield. The estate of seeds is naturally done by utilizing DC engine. The separation between the two seeds are controlled and fluctuated utilizing Microcontroller.

It is additionally conceivable to develop various types of seeds with various separation. At the point when the framework arrives at the finish of the field we can alter the course with the assistance of distant switches.

II. PROPOSED SYSTEM

The figure.1 shows that the squares graph of seed planting framework. This framework has four wheel framework. The seed planting machine is built up that has appallingly less cost.

Moreover the incompetent rancher might be just worked programmed seed planting framework. In seed planting machine framework they're utilized battery supercharged haggles engine worked in these wheels. In this framework the seed tank square

measure utilized.

When any obstruction comes quite close to machine or occupy way the seed planting machine will locate this impediment horrendously basically. In each total pivot of turning wheel there's seeds tumbles from this seed drum and consequently the seed manor strategy will occurred wonderfully still as while not wastage of seeds. This framework gives the total office and rancher sow the seeds awfully.

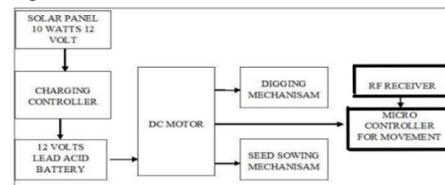


Figure.1 Block diagram of proposed system

III. SYSTEM DESIGN

It is planned according to cultivate condition conjointly it's according to the need all together that it will burrow the predefined size of oves for seed planting. The pivoting wheels square measure planned conjointly its invented rib parts in this manner it assists with passing on grasp all through the seed planting, all together that client will essentially pull the full gathering according to required course.

The each wheels square measure power-driven by battery and DC engine is necessary fitted in these wheels. The engine particulars square measure DC power, 12V, and 9amp current. Inside this drum we can pour the seed for planting/planting activity. Base of this seed

tank there's seed planting circle course of action. In each total revolution of pivoting wheel there's seeds tumbles from this seed drum and seed estate strategy occurred great and keeping in mind that not wastage of seeds.

These seed cans square measure fitted on the seed planting circle with the help of screws. The cans square measure planned in such how that they'll pick the size of basin according to seed kind, size and structure. Conjointly these basins coordinate on the seed planting plate in such how that the space between 2 seed all through the ranch we can control and set in accordance with request.

IV. SYSTEM IMPLEMENTATION

1) ARDUINO UNO:

Arduino could be a solitary board microcontroller to make misuse material science in multidisciplinary comes extra available. The equipment comprises of partner ASCII text document equipment board planned around partner 8-piece Atmel AVR microcontroller, or a 32-piece Atmel ARM. The code comprises of a standard counterfeit language compiler and a boot loader that executes on the microcontroller.



Figure.2 Arduino UNO Board

Arduino sheets are frequently bought pre-amassed or as custom made packs. Equipment style information is open for those that couldn't want anything more than to gather partner Arduino by hand. It had been measurable in mid-2011 that more than 300, official Arduino's had been monetarily made.

Partner Arduino's microcontroller is also pre-customized with a boot loader that rearranges transferring of projects to the on-chip non-unstable capacity, contrasted and elective gadgets that by and large need partner outer coder.

2) BATTERY:

Battery is a gadget containing an electric cell or a progression of electric cells putting away vitality that can be changed over into electrical force. Battery produces power from a synthetic response. By and large, battery comprises of at least two cells associated in arrangement or equal. A cell comprises of a negative terminal; an electrolyte, which conducts particles; a separator, likewise a particle conductor; and a positive anode. The electrolyte might be fluid (made out of water) or non-watery (not made out of water), in fluid, glue, or strong structure. At the point when the cell is associated with an outside burden, or gadget to be fueled, the negative anode supplies a current of electrons that move through the heap and are acknowledged by the positive cathode. There are two sorts of battery that ordinarily use which are essential batteries (expendable battery) and auxiliary batteries (battery-powered battery).

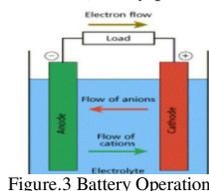


Figure.3 Battery Operation

3) H BRIDGE (L293D):

A H connect is an electronic circuit that empowers a voltage to be applied over a heap in either heading.

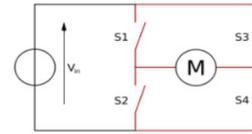


Figure.4 Circuit diagram of H-Bridge

These circuits are regularly utilized in mechanical technology and different applications to permit DC engines to run advances and in reverse. H spans are accessible as incorporated circuits, or can be worked from discrete parts. The term H Extension is gotten from the ordinary graphical portrayal of such a circuit. A H connect is worked with four switches (strong state or mechanical). At the point when the switches S1 and S4 (as per the principal figure) are shut (and S2 and S3 are open) a positive voltage will be applied over the engine. By opening S1 and S4 switches and shutting S2 and S3 switches, this voltage is turned around, permitting reverse activity of the engine. Utilizing the terminology over, the switches S1 and S2 ought to never be shut simultaneously, as this would cause a short out on the information voltage source. The equivalent applies to the switches S3 and S4. This condition is known as shoot-through.

4) IR Communication:

The transmitter is intended to satisfy Worldwide Infra-Red Guideline. This Transmitter can be worked in wherever for example before television, VCR, and VCD Players, Air conditioning machines, in open daylight, in dull region and in saturated climate. This transmitter won't upset any current IR based working equipment's.



Figure. 5 IR Sensor

IR Sending Drove

This Drove discharges the Imperceptible IR beams relating to the code/information send by the customized regulator.

IR Recipient Drove

This gadget distinguishes the IR information sent by the transmitter. This IR recipient is associated with the Regulator.

Highlights

- Wide IR edge inclusion.
- Supports Unregulated voltage source from 6.0V to 9.5V Air conditioning/DC.
- Low force utilization Under 10.0 Mama out of gear condition.
- Supports Air conditioning and DC signals with no misfortune.
- Gadget status Pointer to know the hand-off status(on or off).

5) RELAY:

A hand-off is an electro-attractive switch which is valuable in the event that you need to utilize a low voltage circuit to turn on and off a light (or whatever else) associated with the 220v mains gracefully. The outline underneath shows an average transfer (with "typically open" contacts).

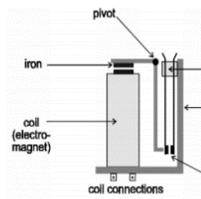


Figure.6 Relay

The current expected to work the hand-off loop is more than can be provided by most chips (operation. amps and so forth), so a semiconductor is typically required, as appeared in the chart underneath. Use BC109C or comparative. A resistor of about 4k7 will most likely be okay. The diode is expected to cut off high voltage "back EMF" instigated when current coursing through the curl is out of nowhere turned off. Much of the time in which you utilize a hand-off, you will likewise require a bi stable flip-flop. One helpful incorporated circuit flip-flop is the 4013. (This i.c as a matter of fact contains two flip-flops.) With the associations as appeared in the circuit underneath, when the voltage on pin 3 changes (quickly) from 0v to the positive gracefully voltage, the flip-flop changes state (it "flips"). Whenever something very similar occurs, the flip-flop changes back to its unique state once more (it "flops"). The semiconductor is as yet required in light of the fact that the 4013 can just flexibly a modest quantity of current (about 1mA).

Transfers are electrically controlled switches. In the typical kind, a curl pulls in an armature when adequate loop current streams. Numerous assortments are accessible including "locking" and "venturing" transfers; the later gave the foundation to phone exchanging stations, they're as yet well known in pinball machines. Transfers are accessible for dc or air conditioning excitation, and curl voltages from 5 volts up to 110 volts are normal. "Mercury-wetted" are "reed" transfers are proposed for rapid (~ 1ms) applications, and monster transfers expected to switch a huge number of amps are utilized by power organizations.

6) BLUETOOTH:

Bluetooth is a remote innovation standard for trading information over short separations (utilizing short-frequency radio transmissions in the ISM band from 2400–2480 MHz) from fixed and cell phones, making individual zone organizations (Container) with significant levels of security. Made by telecom seller Ericsson in 1994, it was initially considered as a remote option in contrast to RS-232 information links. It can associate a few gadgets, conquering issues of synchronization. Bluetooth is overseen by the Bluetooth Specific vested party, which has in excess of 19,000 part organizations in the zones of media transmission, processing, systems administration, and purchaser hardware. Bluetooth was normalized as IEEE 802.15.1, yet the standard is not, at this point kept up. The SIG supervises the advancement of the particular, deals with the capability program, and secures the brand names. To be advertised as a Bluetooth gadget, it must be able to principles characterized by the SIG.

An organization of licenses is needed to execute the innovation, which is authorized distinctly for that passing gadget. An ace Bluetooth gadget can speak with a limit of seven gadgets in a piconet (an impromptu PC network utilizing Bluetooth innovation), however not all gadgets arrive at this greatest. The gadgets can switch parts, by arrangement, and the slave can turn into the ace (for instance, a headset starting an association with a telephone will essentially start as ace, as initiator of the association; however may hence want to be slave). The Bluetooth Center Particular accommodates the association of at least two piconets to shape a disperse net, in which certain gadgets at the same time assume the ace function.

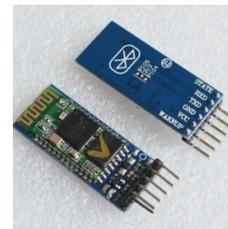


Figure.7 Bluetooth module

At some random time, information can be moved between the ace and one other gadget (aside from the little-utilized transmission mode. The ace picks which slave gadget to address; ordinarily, it switches quickly starting with one gadget then onto the next in a cooperative design. Since the ace picks which slave to address, though a slave is (in principle) expected to tune in each get opening, being an ace is a lighter weight than being a slave. Being an ace of seven slaves is conceivable; being a captive of more than one ace is troublesome. The determination is ambiguous as to required conduct in disperse nets.

7) DC MOTOR:

In any electric motor, movement relies upon direct electromagnetism. A current-passing on conductor makes an appealing field; when this is then situated in an external alluring field, it will experience a force comparative with the current in the conductor, and to the nature of the external appealing field. As you are a lot of mindful of from playing with magnets as a youngster, converse (North and South) polarities attract, while like polarities (North and North, South and South) shock. Within arrangement of a DC motor is expected to handle the alluring correspondence between a current-passing on conductor and an external appealing field to make rotational development.



Figure.8 DC motor

8) Solar cell:

A sun oriented cell, or photovoltaic cell, is an electricity conductor that changes over the vitality of light legitimately into power by the photovoltaic impact, which is a physical and concoction phenomenon.[1] It is a type of photoelectric cell, characterized as a gadget whose electrical attributes, for example, flow, voltage, or opposition, shift when presented to light. Individual sun oriented cell gadgets are regularly the electrical building squares of photovoltaic modules, referred to casually as sun based boards. The basic single intersection silicon sun powered cell can deliver a greatest open-circuit voltage of roughly 0.5 to 0.6 volts.



Figure.9 Solar cell

The activity of a photovoltaic (PV) cell requires three fundamental credits:

- The ingestion of light, creating either electron-gap sets or excitons.
- The detachment of charge transporters of inverse kinds.
- The separate extraction of those transporters to an outer circuit.

V. RESULTS:

The resultant model acquired is equipped for completing seed burrowing, seed planting and water dribbling tasks in a solitary cycle. The extra element of a sun based board to energize the battery as proposed in the underlying plan of the venture must be disposed of attributable to spending requirements and in this way the extra 600mm rectangular case that must be joined to continue a 12-volt 10-watt sun based board has been eliminated to make the machine monetarily proficient.



Figure.9 Final model

VI. CONCLUSION:

The programmed seed-planting machine will have various positive applications for the ranchers during the cultivating cycle. A portion of the advantages of this machine are:

- 1) Lessens weariness and time engaged with the seed estate time.
- 2) Lessens the seed dividing and keeps up the effective appropriation of seeds on the ground surface.
- 3) Joins the highlights of agribusiness in particular seed planting, ground furrowing and bug spray splashing in a solitary machine consequently making it more powerful.
- 4) Use of a controller arrangement makes it simpler for the rancher to move the machine in the field.
- 5) Easy to understand and safe to work.

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