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# Autonomous Seed Sowing and Watering Agribot

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**Abstract:- In India agriculture plays a important role in day to day life. It is backbone of our Indian economy .In this project we focused on farmers problem, basically here we tried to solve the problem regarding seed sowing , digging and watering and pesticides in the farm . The project is totally based on seed sowing, digging, watering and pesticides .Here various sensors, motors are used to build the project. The autonomous seed sowing and watering machine are developed .here pesticides are used for plant growing without any weeds. The seeds are stored in container to to fulfill in the field with the help of container. The dc motor is used for seed sowing process. The obstacle is detected by using ultra- sonic sensors. If any problem in field like any obstacle are detected the ultra-sonic sensor will detect. Watering process done by using container in machine once the seeds are dropped machine will automatically do the watering process (drop the water at seed sowing). Ardunio UNO is the heart of the system which will support the other sensors and motor.**

***Keywords:-*** *Arduino Uno, Sensors, Agriculture, Servomotor, DC motor.*

## I. INTRODUCTION

Agriculture is plays most important role in day to day life because without agriculture we can't ate or we can't fulfill our basic needs of our body .In India there are various method of agriculture .The agriculture process are very bulky. This process takes times also, To overcome this problem we done the project of autonomous seed sowing and watering agribot. In this project we done various operation at a time, it consume less time also. Seed sowing process is done by servomotor and seed mechanism rotates 360 degree. Watering is done by joining of tiny tanker in machine. Digging is done by motor with the help machine.

Ardunio is the brain of the project with help Ardunio all sensor and motor are connected. Ultra- sonic sensor are used to detect obstacle detection in field.

## II. LITERATURE REVIEW

*A. Paper 1: "Autonomous seed sowing agriculture robot"*

In this paper the author have discussed that both electrical and mechanical operation. This project is budget friendly to farmers. This project includes a keypad, LCD, ardunio mega microcontroller, servomotors and various motors and sensors. Here keypad is used to give input to device, number of seed dropped are related to input device. In input device with help of Ardunio the length and breadth are given to the machine. The diameter are given through input device. This project calculate accurately. Output is displayed on LCD. This project done the seed sowing, digging in rectangular field.

*B. Paper 2: "Automated seed sowing Agribot using Arduino"*

In this paper the author have discussed that they project on seed regenerating the solar energy run the agribot solar energy is to convert electrical energy to charge battery. This project is uses android application and Wi-Fi interface to run the machine, basically it runs on android application. It contains labor dependency to run the machine in field. The machine is costly according to farmer's budget. The project successfully works on digging, seed sowing with the help of android application.

C. *Paper 3: "Design and development of an agribot for* automatic seeding and watering application"

In this paper the author have discussed that it deal with low cost robot or machine is invented for farming process. Here the project will done the seed sowing and watering process in the farming .this machine will act as ecofriendly gardening prototype. Here this project various sensors and circuits are used like integrated development environment, global positioning system, global system for mobile communication, graphical user interface.

## III. METHODOLOGY

We are developing autonomous vehicle to move in agriculture field. There are various method to cover our field depends on circumstances. If our farm is having boundaries than we can program as per it. We can program as per gps co-ordinate. We can control with wireless remote control or with mobile application. But here we are covering our rectangle farm land with adjustable predefined distance of line and number of lanes. Considering seeds are grow on predefined distance. We are connecting three potentiometers for adjusting time first is to adjust forward movement time, second potentiometer is used for time to take turn, and third potentiometer is used for number of lines to be cover. We have programed our vehicle in to move in a line for set time, time is set with potentiometer connected to analog input of microcontroller. Our vehicle is having constant speed so for given time delay it will travel same distance. Depending on vehicle size and battery voltage time is set to take u turn. One switch is used for operation selection if this pin is low pump will be on and if high seeding motor will be on.

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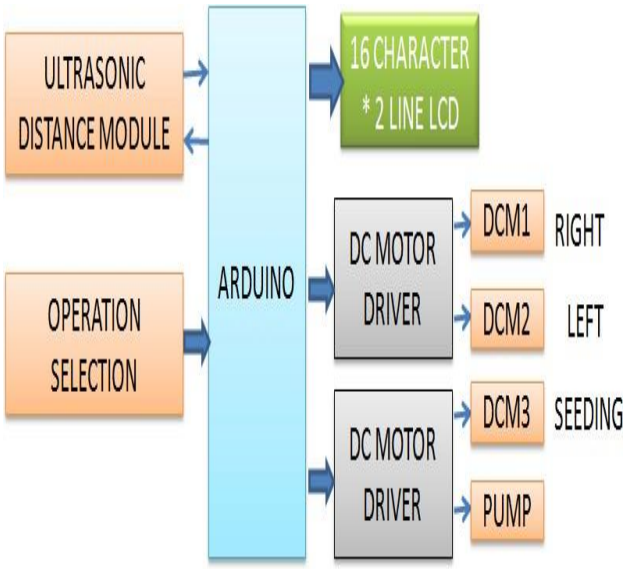


Fig. 1

The agribot (agriculture robot) moves various directions. This machine will move all the directions like left, right, forward, backward or reverse these command are automatically controlled by the machine or inbuilt feature in the machine. After getting the instruction from microcontroller (Ardunio) will performs task like ploughing, seed sowing, watering and obstacle clearance.

### *A. PLOUGHING*

The Ardunio will perform the task of ploughing, the ploughing will perform in three modes on, off, mid condition.ploughing is also known as tilling. The command will get from Ardunio and then task will get performed.

### *B. SEED SOWING*

The seed sowing is also done by using Ardunio, Ardunio will instruct the machine then the process will continue with help of switch. Here switch will act as on ,off controller because if the soil do not want any seed at waste land then the switch will get off then there is no seed will get wasted. Seed are placed in tiny container or tanker to get drop in soil. This seed sowing process will done with the help of servomotor, this will rotate 180 degree angle. Hence the seeds are sown in the field..

### *C. WATERING*

The watering process also done in project, after the seed sowing watering process will automatically started. Here watering is very important in any seed to get correct moisture in the soil. In this project watering process will converted in pesticide process also, as the need of the soil we can change the liquid system.

### *D. OBSTACLE DETECTION*

The obstacle detection will done by ultra-sonic sensor. With the help of ultrasonic sensor obstacle will detected in field and the machine will stop the running condition and change the route. This detection will happened with the help of ultra-sonic sensor and servomotor.

## IV. WORKING

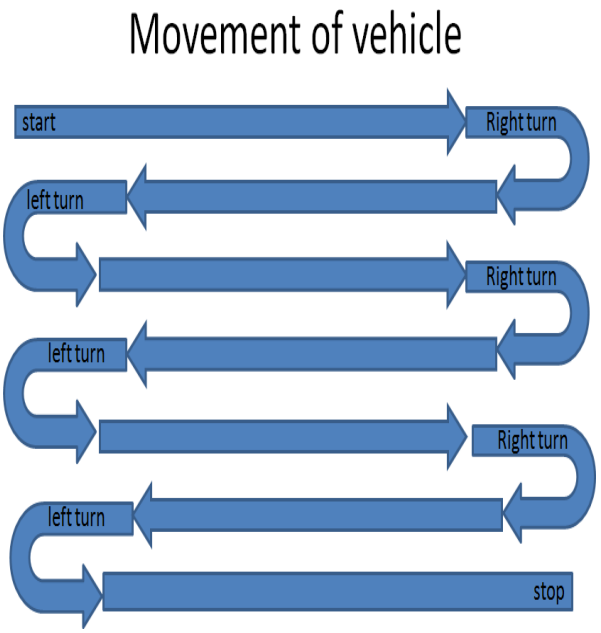


Fig. 2

We are developing autonomous vehicle to move in agriculture field. There are various method to cover our field depends on circumstances.

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One switch is used for operation selection if this pin is low pump will be on and if high seeding motor will be on. We are developing autonomous vehicle to move in agriculture field. There are various method to cover our field depends on circumstances.

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## V. EXPERIMENTATION AND RESULTS

The Hardware and software are used in this project will mentioned below, the seeding technology is done by machine technology by using switch. The pesticide and watering process also done by switch with help of filtering the liquid in the tank or container.the ultrasonic sensor is used for obstacle clearance.

Hardware and Software to be used:

- Software:
  - Arduino IDE.
- Hardware:
  - Sensors
  - Arduino Uno Microcontroller
  - GSM Module

## VI. CONCLUSION

For future purpose we enhanced the project for development in large arcs of area or land. This project checks the system's capability of plants in agriculture. In project we add new technique , it will detect the weeds and removed from soil. Here ultrasonic sensors, temperature sensor, microcontroller are used for their requirement in the field. Here this project concluded that the machine will be autonomous for digging, seed sowing, watering and pesticide for the crop or plants in agriculture. As per farmers future need the device will done the work development of agriculture sector is the main motive of this project.

## REFERENCES

[1.] Umarkar,S.andKarwankar,A.,(2016),april."Automated Seed Sowing agribot using Aurduino" In Communication and signal processing (ICCSP),2016 International conference on(pp.1379-1383)IEEE.

[2.] Jayakrishna PVC,Suryavamsi Reddy M,Jasuwanth sai N, Susheel N, Peeyush K. P."Autonomous Seed Sowing Agricultural Robot", Department of Electronics and Communication Engineering, Amrita school of Engineering, Coimbatore.(2018)IEEE.

[3.] Kruthika. R, Prajwal. KT, Roopini. C, Sitaram. V, "Design and Development of an Agribot for Automatic seeding and watering Applications" ,proceeding of the second international conference innovative mechanism for industry. Application (ICIMIA 2020) IEEE XPLORE.