Automatic Seed Sowing Robot

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Abstract – Agriculture *is a most important field in life of human being. It is a backbone of our country economy system. In this project work we have focused on seed sowing processes and tried to solve the problem. In seed sowing machine system we have used battery powered wheels, dc motor inbuilt in these wheels and Arduino Uno is used for control the all system process. When the seeds are empty it detects the level of storage seed and indicates with the help of LED. When any obstacle comes in-front of machine or divert path the seed sowing machine can detect the obstacle very easily with the help of IR sensor. In each complete rotation of rotating wheel there is seeds falls from this seed drum and the seed plantation process can take place smoothly as well as without wastage of seeds. The end of system machine reached and it create alarm or indicate the LED. This system provides all the facility which can work efficiently.*

Keywords: Atmega328, Arduino Uno, battery operated wheels, IR Sensor.

1. INTRODUCTION

As we know backbone of our country is agriculture. Recently numbers of changes are happening in agriculture technology like ploughing, seeding, fertilizing, weeding, harvesting, spraying etc. For developing our economical condition it is necessary to increase our agricultural productivity and quality also. Out of them Seed plantation is one of the most important and day-to-day job of the farmers. With the help of automation the work becomes easy and errorless. Robots small sized wheels performs well, the lightweight of the robots do not compact the soil.

1.1. Existing System

The conventional method for seeding is manual one but manually seed filling method suffers from various problems.

Conventional techniques depend on human power and old techniques; it requires more time and more efforts. Humans need rest, they may not be able to work in hazardous environments also large sized wheels required in muddy soil it may be compact the soil. In agriculture we require skilled man power. Need of man power can be accomplished by automating the process of soil loosening and sowing seed by robot. So conventional system suffer from various problems.

The main aim of our project is to reduce the human effort, time requirement and to increase accuracy of the seed sowing project design.

1.2. Proposed System

The proposed method consists of the system which provides fast soil loosening, sowing seed and robot moves forward in automatic mode. Here in manual mode robot moves forward, backward, left, right by remote for this RF module is used. The 12v battery is used for giving power supply to system. The Arduino Uno is used to operate the motor drivers. The DC motor is used in the robot applications. Here we can use L293D driver motor for control two motors. The L293D motor driver is used to control two motors in both directions. The left and right side motors are used to drive the motor from turn left and turn right. The mechanical set up used to loosening the soil and sowing seed.

2. LITERATURE SURVEY

Table -1: Literature Survey Overview

Sr. No	Title	Methodology	Remark
1	Design and implement-ation of seeding agricultura-l Robot.	This system is controlled by microcontroller assembly.	This paper is mainly based on minimizing man power and cost of the equipment, which can be affordable to all farmers.
2	Seed Sowing Using Robotics Technolog-y.	A)Electric Assembly Design. B)Mechanical Assembly Design	The mode of operation of this machine is very simple even to the lay man.
3	Seed Sowing Robot.	This is an Electromechani-cal: Wireless control of automated	The seeds have been sowed in a proper sequence which results in proper

		guided machine	germination of seeds.
4	Agriculture Seed Sowing Equipments: A Review.	The microcontroller is used to control and monitor the process of system motion of vehicle	By using innovative seed sowing equipments we can save more time required for seeding process.
5	Design and Development of Automatic Seed Sowing Machine.	Autonomous agriculture system is controlled by microcontroller assembly.	In each complete rotation of rotating Wheel there is seeds falls from this seed drum and seed plantation process taken place.

3. SYSTEM ARCHITECTURE

Architecture of system gives overall idea of the project and how system components are connected to each other and perform there role of work in this project. Arduino Uno is main technology used in this project. A 12V power supply is provided and passed through regulator so that it can be converted to 3.3v and provided to Arduino Uno. The input given as embedded 'C' Code to Arduino device which is interface with L293D motor driver IC and the output from this is given to motor. The motors are connected to wheels which moves the robot and seed plantation process is done.
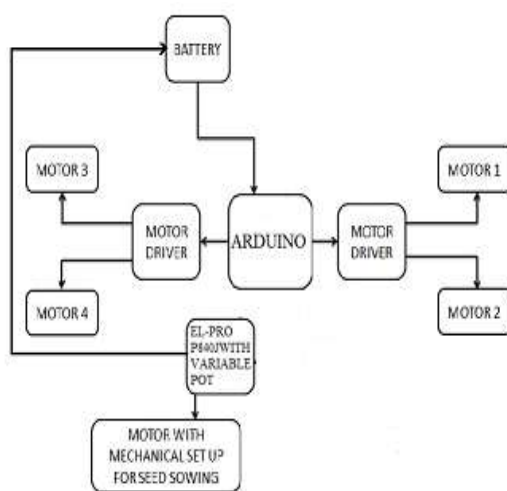
Block Diagram:

Fig.a: Block dia. of proposed system.

4. TECHNOLOGY USED

4.1. Arduino Uno:

Arduino Uno is the heart of system which is connected with all the sensors and other hardware assembly required to achieve the desire work. The features of Arduino Uno that it is a small, complete, and breadboard friendly board based on the ATmega328.The ATmega368 has 32 KB of flash memory for storing code in which 2 KB is used for the bootloader. The ATmega368 has 2 KB of SRAM and 1 KB of EEPROM. It is low cost and easily available controller. All the software programming is written in Arduino Integrated Development Environment (IDE). Arduino IDE is open-source software which makes it easy to write code and upload it to the Arduino board. It runs on the Windows, Mac OS X, and Linux. Interrupts are used in programming to make system more effective and respond to changes accordingly.

4.2. Arduino IDE software

IDE stands for integrated development environment. It is a computer program that encompasses the tools required by programmers to develop software. Common elements found in an IDE include a source code editor, compiler, builder and debugger. Programmers use IDEs over simple text editors because of the convenience they provide when writing code. Examples of IDEs include Visual Studio Express, Eclipse and Net Beans. Every IDE has its unique features and benefits, along with their own drawbacks. IDEs have specific language support, with some being limited to only one programming language. They also vary according to the different kinds of software development, such as mobile, web and desktop.

5. Expected Result

By putting the seed and fertilizer in rows at desired depth and seed to seed spacing, cover the seeds with soil and provide proper compaction over the seed. The recommended seed to seed spacing and depth of seed placement is varying from crop to crop and for different agro-climate conditions to achieve optimum yields.
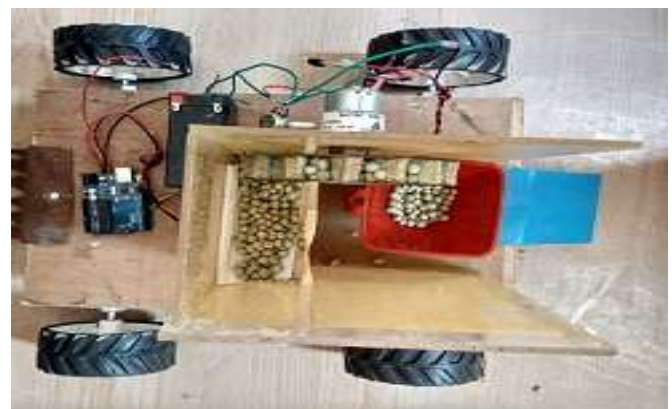

Fig. System Model

The distance between two crops of different seeds:

Table 2.Different seeds and Distance

Seeds	Distance
Soyabean	18cm
Groundnuts	15cm
Jowar	12cm

6. Conclusion

In each complete rotation of rotating wheel there is seeds falls from this seed drum and seed plantation process taken place smoothly and without wastage of seeds. The sowing disc is rotate in the seed chamber, the seeds are falls in the seed chamber through seed storage tank. The seed buckets are collect the seeds from the chamber and it sow in the ground as required depth with the help of plough. Also the any obstacle comes in front of seed sowing machine the IR sensor are detect that obstacle and indicate the buzzer.

7. Future Scope

The project can be improved with reference to the number of arms we are using in order to sow the seed. We can extend up to 6 or 8 rows at a time. This reduces the time required for seed sowing. The system can be further modified by one or many systems can be monitored through GSM system.

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