



Seed Sowing Robot

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Abstract:

In modern globalization many technologists are trying to update a new development based on automation which works very effectively and is based on real time technology. Nowadays we see the problem faced by the farmers. The wages of the labours are high. The aim of the design is to reduce the labour work and increase the efficiency of the production. The reduction of labour reduces the man power and due to use of high technologies in the system the crop production will be increased and people can do other works. The essential objective of sowing operation is to put the seed and fertilizer in desired depth and provide required spacing between them and cover the seed with soil. We can achieve yield by proper compaction. The requirement of small scale sowing machine are they should be simple in design, affordable for small scale peasant farmers, easy maintenance for effective handling by unskilled farmers.

I. INTRODUCTION

India record of progress in agriculture over the past form decades has been quite impressive. We know that Indian economy is based on agriculture. Development in agriculture leads to raise economic status of country. India is facing problems due to unavailability of labours and nowadays the wages of labours are also at the highest peak. The farmers put there whole effort and dedication in the traditional farming methods using non efficient farming equipments which are time consuming and also increase the labour's cost. These factors force the farmers who are interested in agriculture activity to leave their land uncultivated. This project is attempted to produce multifunctional and high efficient seed sowing robotic system which will play an immense role in all sections of society's organisation and industrial units. The object of the project is to develop a microcontroller based system in on- farm operation which reduce time of plantation, cost of labour and enhance production and also the pre designing system. As per change in climate farmers are facing one more problem which occurs due to harmful insects and pest. Farmers have to stay alert for fighting to this problem by using different pesticides.

II. METHODOLOGY

Propose system is based on Mechatronics. It is automated multipurpose robot. Features of this robot are seed sowing, insecticide sprinkler and humidity detector. The control section as well as robotic station possess the amenities viz, temperature sensor, humidity sensor, ph sensor, soil moisture sensor, seed dispenser, seed storage, fertilizer storage, fertilizer dispense, robotics system with motors, microcontroller and power supply. It consume less time and other as well as light weighted. It is more efficient than other system. The microcontroller is the brain of this system, which can dedicates the order of suggestions received to all networks and sensible factors processed by their corresponding embedded program. According to the received signal the robot will move in the given direction and will place the seed and fertilizers on field with equal spacing and specified distance. When the robot covers a specific distance the robot stop to sow the seed. When robot stops, the microcontroller sends the signal to the seed

sowing mechanism to sow the seed at required pitch. After the process of sowing the robot will move forward and the microcontroller send the signal to the motor which is assign for levelling the surface. During fertilizing process the fertilizer section will spray fertilizers on the field when required. Seed storage and fertilizer container are used to store the seed and fertilizer respectively for seeding and fertilizing. Level detector is used to indicate amount of seeds and fertilizer in storage container. Bluetooth is used for communication between robot end and controlling end. There is probe to determine the soil moisture contained which can be inserted when required to determine the moisture of the soil and can be displayed on to the display provided on the robot.

Block Diagram:

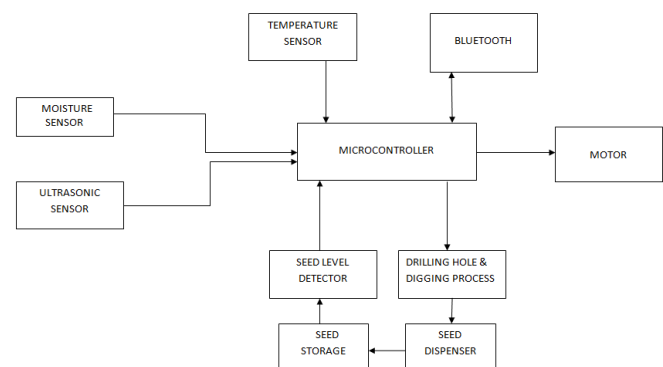


Figure.1. Block diagram of robot

Components Used:

Microcontroller:

The microcontroller that has been used for this project is from PIC series. PIC microcontroller is the first RISC based microcontroller fabricated in CMOS (complementary metal oxide semiconductor) that uses separate bus for instruction and data allowing simultaneous access of program and data memory. The main advantage of CMOS and RISC combination is low power consumption resulting in a very small chip size with a small pin count. The main advantage of CMOS is that it has immunity to noise than other fabrication techniques. Microcontroller is the heart of the system. DC motor:

The operation of DC motors consists of conversion of electrical energy into mechanical energy. Basic parts of DC motor are axle rotor, stator, commutator, field magnets and brushes. The DC motors are used to drive the wheels connected to the robot base .

L293D Driver IC:

L293D is a driver, basically used to drive the DC motor.

LCD display:

LCD display is used for displaying text which we get from sensors or other components.

Stepper Motor:

These motors are basically used for movements. Every stepper motor has a particular degree of rotation. A stepper motor divides a full rotation into equal number of steps.

Temperature Sensor:

In this circuit the thermistor is used to measure the temperature. Thermistor is nothing but temperature sensitive resistor. There are two type of thermistor available such as positive temperature co-efficient and negative temperature co-efficient.

IV.RESULTS:

The measurement of the moisture of soil, temperature of soil and ph value of soil, performing of the seeding and fertilizing in agriculture field is designed in the agriculture Robot. Instead of using line follower, obstacle detecting sensor is used. The robot is chanelled by Bluetooth when obstacle is faced by robot so that it does not get distracted from its path. Seed and fertilizer can be drop in field by using solenoid switch, which is in the seed dispenser and fertilizer dispenser. LDR is used for indicating seeds and fertilizer in the dispenser by glowing the LED, if seeds and fertilizer is empty then led stop glowing.

V.CONCLUSION:

In this project we tried to overcome the problem of farmers which they face in day to day life. Since we know that wages of farmers is too high, and after spending their whole day in the farm land their production is found less. So we had made an automated robot which will be a helping hand to the farmers in field. Observing the current scenario this prototype robot can provide high efficiency in production and their cultivation. This robot can do multitasking which is lots of time consuming when done by manual based method farming. It can sow seed, spray fertilizers and also levelling of the surface. This project can be a better substitute for the human who performs the seeding and fertilizing. This project is very useful for the farmers who are intended to do agriculture activity but facing the labor problem.

VI.REFERENCES:

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