AUTOMATIC SEEDS PLANTATION ROBOT USING Lab VIEW

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Abstract— **In India, about 70% of population is dependent upon agriculture. So the agricultural system in India should be advanced to reduce the efforts of farmers. There are many operations which are performed in the agriculture field like plugging, seeds sowing, cutting, pesticide spraying leveling of soil etc. Very basic and significant operation is seed sowing. But the present methods of seed sowing are problematic. The equipments used for seed sowing are very difficult and inconvenient to handle. So there is a need to develop equipment which will reduce the efforts of farmers. This system introduces a control mechanism which aims to drop seeds at particular position with specified distance between two seeds and lines while sowing with the help of crank mechanism using LabVIEW. The drawbacks of the existing sowing technique such as, manually digging and sowing seeds which takes more man power and time consumption will be removed successfully in this automatic machine.**

Keywords— **Agricultural Operations, myRIO, Lab VIEW, Agricultural Equipment, Seed Sowing Techniques, crank Mechanism, Robotics Technology.**

I. INTRODUCTION

Our whole economy is based on agriculture. Agricultural field involves the effective production of food, feed, fiber and other goods for humans and animals [1] .Also agriculture includes operations like production of cut flowers, timber, fertilizers, animal hides, leather and industrial chemicals .Heavy material handling is required in the farming operations. As compared to other fields, globalization and development in agriculture field is less [3]. So, it

is necessary to make some advancement in this field. Today's agricultural field demands to find new ways of agricultural operation to improve performance efficiency [2]. In the field of agriculture various problems are faced by the farmers in the operations like seed sowing, pesticide spraying, weeding. Also the equipments used to perform the operations are very heavy. Due to migration of humans in the cities the labor problem occurs [6].

Nowadays robotics technology plays an important role in all sections like agricultural field, medical field, industries and various organizations [5]. In other countries robots are used to perform different operations in the agricultural field. We can make the use of available technologies and the robotics technology in the farming system to reduce the efforts of farmers and also to reduce time, energy and required cost.

It requires large number of labor operators and long working hours to accomplish the task. Using the present techniques problems of mismatch of distance between seeds and the rows of the seeds occurs.

Problems faced by the farmers during seed sowing:

- Low germination percentage leading to wastage of seeds.
- Creation of gap due to non-germination of seeds.
- Declination of total yield.
- Scarcity of labor, demanding high wages.

II. AUTOMATIC SEEDS PLANTATION

In addition with seed sowing, multipurpose operations such as Leveling & Plugging are also needed. But most of the problems are faced by farmers during seed sowing operation, like proper adjustment of distance between two crops, distance between two rows etc. Seed sowing is very basic and paramount operation in the agricultural field. Nowadays seed sowing is done either manually or by tractors. Manual method includes broadcasting the seeds by hand. Sometimes method of dibbling i.e., making holes and dropping seeds by hand is used. Also a pair of bullocks is used to carry the heavy equipment of leveling and seed dropping.

Our system is nothing but the four tyre vehicle which is driven by geared DC motor. According to My Rio program, after some distance or some time instant it will dig as well as the seed should be dropped through the pipe and the leveling process will be done sequentially.

Connect the myRIO to nearby Wi-Fi network. From the fig.1 explains initially the robot will dig and drop the seed. Next it moves 1 feet ahead and step 2 will be repeated. Step 3 will be repeated until the row will get completed. Now the robot stops digging and turns 180 degrees right. Again step4 and 5 will be repeated until the field completes its seed sowing.
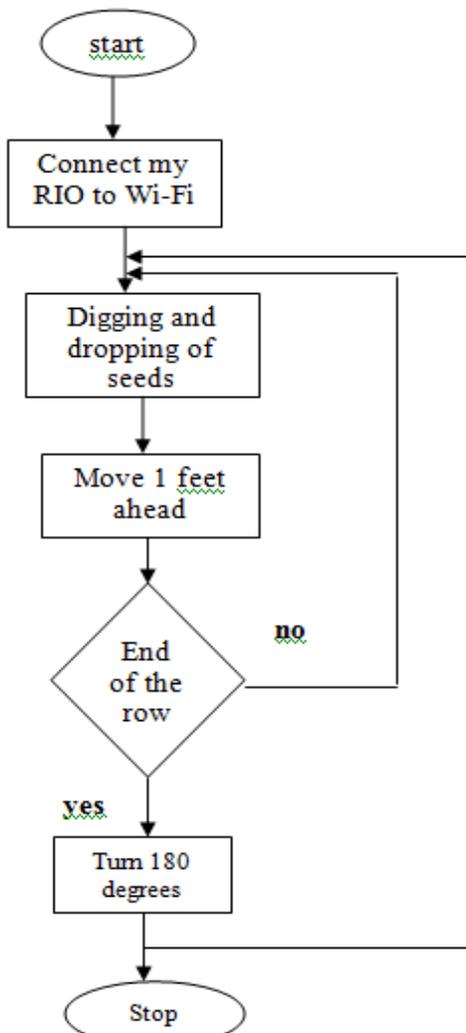
Fig. 1: Flow chart

Block diagram in fig.2 explains the whole architecture of the robot. We have connected two L293D motor drivers to myRIO. One is for two motors which are used to drive the wheels and the other one is for motor used to digging and seed sowing. Whole equipment is powered by 12V battery.
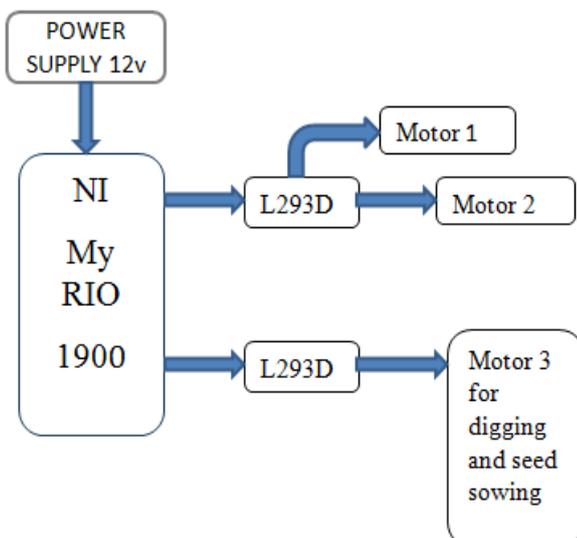

Fig. 2: Block Diagram

III. .SOFTWARE SPECIFICATIONS

- **LabVIEW:**

LabVIEW (short for Laboratory Virtual Instrumentation Engineering Workbench) is a platform and development environment for a visual programming language from National Instruments. The graphical language is named "G".

- **My RIO:**

The NI's (National Instruments) myRIO-1900 is a portable reconfigurable I/O device. RIO means the device that students can use to design control, robotics, and mech atronics systems. This document contains pin outs, connectivity information, dimensions, mounting instructions, and specifications for the NI myRIO-1900. The NI myRIO-1900 provides analog inputs and outputs (AI) &(AO), digital input and output (DIO), audio and power output in a compact embedded device. The NI myRIO-1900 connects to a host computer with a USB and wireless 802.11b,g,n.

Fig.3 MyRIO

Advantages

- More work is done in less time.

- Problem of labor shortage is reduced.

- Very beneficial for small, medium and large scale farmers.

Disadvantages

- Cost is high due to MyRio.

- Accuracy may reduce due to mud.

IV. RESULT

The proposed system implemented using myRIO and Lab VIEW 2015. The purpose of this paper work is to develop a real time application which digs the soil and drops the seed in that along with these tasks it also levels up the field after seed sowing. The wheels move accordingly (forward, backward, left and right).

Fig.4: Prototype of seeds plantation robot using Lab VIEW

V. CONCLUSION

This system is beneficial for the farmers to achieve the basic seed sowing operation. The mode of operation of this machine is very simple even to the lay man. By using this machine we can overcome low germination percentage which is leading to wastage of seeds. Creation of gap due to non germination of seeds can be avoided. Total yield percentage can be increased effectively. Labor problem can be reduced. As compared to the manual and tractor based sowing time, energy required for this robot machine is less. Also wastage of seed is less. So this system will be a better option for the farmers who want to perform the seed sowing operation in a well-organized manner.

VI. FUTURE SCOPE

This system can be implemented for further use as listed below:
We can also update this robot to work for more than two rows at a time. Water sprinklers can also be added for effective output.

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