

ANDROID BASED AGRICULTURAL ROBOT

¹Geetha V, ²Prajwala S, ³Prithvi P, ⁴Reshmashree E

¹ Assistant Professor, Department of ECE, Sambhram Institute of Technology

^{2,3,4} Students, Electronics and Communication, Sambhram Institute of Technology

ABSTRACT

In India, nearly about 70% people are dependent upon agriculture. So the agricultural system in India should be advanced to reduce the efforts of the farmers. Various number of operations is performed in the agricultural field like seeding, weeding, weed cutting, ploughing etc. Very basic and significant operation is seeding, ploughing, weed removal. But the present methods of seeding, ploughing and plant cutting 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 the 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. The robotic arm helps in weed removal. Therefore, the drawbacks of the existing system will be removed successfully in this automatic machine.

Keywords- Pesticide effected plant removal, Ploughing, Seed Sowing, Weed Removal.

1. INTRODUCTION

In the earlier days, there wasn't much of technological advancement. So the farmers performed seeding, ploughing and plant cutting by hand. But in recent times, technology has fairly advanced, so now it's not necessary to do seeding in sunlight. By using robot technology one can sit in a different location or a shaded place and can do seeding by monitoring the robot motion. Today's agricultural field demands to find new ways of agricultural operation to improve performance efficiency. In the field of agriculture various problems are faced by the farmers in the operations like seed sowing, ploughing, and waste planet cutting, weeding. Also the equipments used to perform the operations are very heavy. Due to migration of humans to the cities, there is very little labor available. Robotics technology plays a paramount role in all sections like medical field, industries and various organizations. In other countries robots are used to perform different operations in the agricultural field. We can make use of the 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.

2. LITERATURE SURVEY

1. Mahesh R Pundikar – A review: Multiseed Sowing Machine, IJESS Volume 3, Issue 3. ISSN:2249-9482

Mahesh R. Pundikar et al [1] studied the performance of seeding, ploughing and plant cutting devices by using image processing algorithm using flash magic. They also studied the effect of seed depth, seed spacing, miss seeding ratio and performance seed sowing device on germination of seed and efficiency of yield crop.

2. Aditya Kawadaskar- Review method of seed soil and concept of multipurpose seed sowing machine , IJPRET , 2013; Volume 1(8): 267-276 Aditya kawadaskar et al [2] redesigned and tested the seed sowing machine using CAD package like PROE. They concluded that multipurpose seed sowing machine maintain row spacing, control seed and fertilizer rate, control the seed and fertilizer depth.

3. B.Mursec – Testing of quality of sowing by pneumatic sowing machines, JAMME, Volume 26, Issue 1, January 2008

B.Mursec et al [3] presented two sowing machines pneumatic vacuum sowing machine OLT and pneumatic pressure sowing machine Aeromat-Becker for interval sowing, differing in the mode of operation for cultivation of sugar beet. They concluded that on the pneumatic vacuum sowing machine OLT the optimum distance between seeds in the sowing row is reached with 4.5 - 8 km/h speed and on the pneumatic pressure sowing machine Aeromat - Becker with 4.5 - 10 km/h.

4. Joginder Singh – Study relating to formulating long term mechanization strategy for each agro climatic zone in India

Joginder Singh [4] studied the effect of farm mechanization on Indian economy. He concluded that Production and productivity cannot be enhanced with primitive and traditional methods. Thus, selective mechanization is the need of the future.

5. Shivaprasad B S , Ravishankara M N , B N Shoba – Design and implementation of seeding and fertilizing agriculture robot , Volume 3 , Issue 6 , 2014

The agricultural robot can be controlled by the Internet using Raspberry Pi. Live streaming can be seen in the computer by typing IP address and password, it measures the moisture of soil, temperature of soil and performing seeding in fertilizing in agricultural field.

6. Riya Desai – Removal of weeds using Image processing, IJACT, ISSN: 2319-7900

A leaf recognition system is proposed in which the use of leaf vein and shape can be used for plant classification; color machine system is specialized for making color measurements such as location of objects based on color, the extent of a color object, color textures.

7. Shohei Nakai , Yasuhiro Yamada – Development of weed suppression robot, IJMME , Volume 8 Issue 12 , 2014

This robot can remove weeds in inter row and intra row spacing because the robot can be freely controlled. Using the stereo camera image is processed.

3. OBJECTIVE

The robotic systems play an immense role in all sections of societies, organization and industrial units. The basic idea in this study is to develop a mechanized device that helps in on-farm operations like seeding/seed sowing at pre-designated distances and depths with all applicable sensors for controlling humidity, temperature. But many problems are faced by farmer during seed sowing operation, like proper adjustment of distance between two crops, distance between two rows. Seed sowing's 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 that is 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. Another method of seed sowing is to use tractor in farms. The heavy equipments of seed storage and dropping mechanism are attached to the tractor to drop the seeds. A ground wheel is attached at the base of the seed sowing machine.

4. EXPERIMENTAL RESULTS

The proposed system has three main sections like seeding, plowing and waste plant cutting, which are inter-communicated using communication technologies. The control station as well as robotic station possess the amenities viz., temperature sensor, humidity sensor, seed dispenser, seed storage, robotic system with motors, microcontroller.

The microcontroller is brain of this system, which can dedicates the order of suggestions received to all the networks, and sensible factors processed by their corresponding embedded programs. We can use android and all the information send throw GSM to Robot machine An android application will be given to communicate with the robot. This communication is done through GSM. A GSM SIM900A module will be connected in the robot unit. In android there will be an option for user login. Once user logs, he can select any of the 3 options that is seeding, ploughing and cutting. In android application we need to set the number of columns and number of steps movement for the robot. Complete agriculture land will be divided into columns and number of steps.

5. CONCLUSION

This project aims to reduce the workload of the farmer by its automated services, this robotic system plows, sows the seeds at required distance and removes the weeds and the infected leaves using IoT and Image Processing. By doing so, this system considerably reduces the time spent in the field in comparison to the traditional method.

7. ACKNOWLEDGMENT

We would like to show our deepest gratitude to **Dr.C.V.Ravishankar**, Head of Electronics and Communication Engineering Department, SaIT was very supportive. He provided us with facilities of the college to help make the project a success.

Mrs. Geetha V, Assistant Professor, Electronics and Communication Engineering, has been very helpful in the design and construction of the concept, and always offered guidance when we faced dead ends.

REFERENCES

- [1] Mahesh R Pundikar – A review: Multiseed Sowing Machine, IJESS Volume 3, Issue 3. ISSN:2249-9482
- [2] Aditya Kawadaskar- Review method of seed soil and concept of multipurpose seed sowing machine , IJPRET , 2013; Volume 1(8): 267-276
- [3] B.Mursec – Testing of quality of sowing by pneumatic sowing machines , JAMME, Volume 26 , Issue 1 , January 2008
- [4] Joginder Singh – Study relating to formulating long term mechanization strategy for each agro climatic zone in India
- [5] Shivaprasad B S , Ravishankara M N , B N Shoba – Design and implementation of seeding and fertilizing agriculture robot , Volume 3 , Issue 6 , 2014
- [6] Riya Desai – Removal of weeds using Image processing , IJACT, ISSN: 2319-7900
- [7] Shohei Nakai , Yasuhiro Yamada – Development of weed suppression robot, IJMME , Volume 8 Issue 12 , 2014
- [8] P.Vijay, K.V.N.Rakesh , B.Varun “Design of a Multi-Purpose Seed Sow Come Plough” International Journal of Emerging Technology and Advanced Engineering, (ISSN 2250-2459, ISO 9001:2008 Certified journal, Volume 3, Issue 4, April 2013)