



INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X

Impact factor: 4.295

(Volume 4, Issue 3)

Available online at: www.ijariit.com

Microcontroller based seeding and plowing using sensor and Bluetooth technology

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ABSTRACT

In the field of agriculture in India, seeding and plowing are the two important operations. In order to increase the agricultural yield, these two operations must be effectively carried out. Agriculture is a vast economic zone and plays an important role in the overall economic development of the nation. Technical advances in the field of agriculture determine the potential for some agricultural activities. In this paper, we have proposed a novel approach to smart farming by connecting smart sensitivity systems through wireless communications technology. At present, the technologies used for these two operations are not up to the mark. Therefore, an attempt is made in this project to suggest effective technical methods to improve the seeding and plowing operations. Agriculture is a major economic sector and plays an important role in the overall economic development of the nation. Technical advances in the field of agriculture determine the efficiency of some agricultural activities. In this project Renesas 64 pin microcontroller is used, it is the main component of the project, it controls all the operations performed by the machine. Bluetooth is used for communication purpose. When the machine starts moving in a forward direction, ultrasonic sensor detects the obstacle present in the path of the vehicle, and it starts plowing with the help of DC motor, connected to the plow mechanism. Seed sowing is done with the help of solenoid valve. The names of two operations (seeding and plowing) is displayed on LCD. So that these machines reduce the human effort ensuring efficient utilization of resources.

Keywords: Microcontroller, Android, LCD, Sensor.

1. INTRODUCTION

Progress in agriculture is huge. The agriculture sector has succeeded in increasing demand for food. Increased territorial contributors to agriculture production have since been rejected over time and the increase in productivity during the last two decades has been largely driven by increasing productivity, Farm contribution. Growth is vast for overall progress. Increased productivity has helped poor, enhanced agricultural income and provides opportunities for direct and indirect employment Power. The objective of this project is to increase human power, reduce the time and increase production rates. All basic automation robots work for weeding, harvesting, etc. Most countries in the current generation do not have enough human aspects of agriculture and affect the development of developing nations, so it's time to automate the zone to overcome this problem.

Our project is a new idea to automate the cultivation of crops such as sunflower, baby corn, peanut and beans, lady

finger, pumpkin and black gram, and pulses like green grams. Increase yield.

The main objective of the project is to develop a mechanized system to facilitate the familiar depth with interruption detection. And to create seed sowing systems at intervals on the farm field. And enable farmers to cook large amounts of land at least.

1.1 System Model

The system model focused on the design, development and the fabrication of the multipurpose agricultural machine with ploughing and seeding. Bluetooth module is used as a control device, it sends the information given (like seeding, plowing) to the microcontroller. The microcontroller will process the information given and perform the operation, and it is displayed on the LCD screen. Ultrasonic sensor detects any obstacle in the path of the machine. And it continuously sends the data to the microcontroller, if there is any obstacle in the path of the machine, information is sent

to the microcontroller. Thus, the system stops performing the further operation.

The system overview which can be implemented in the agricultural system is as follows,

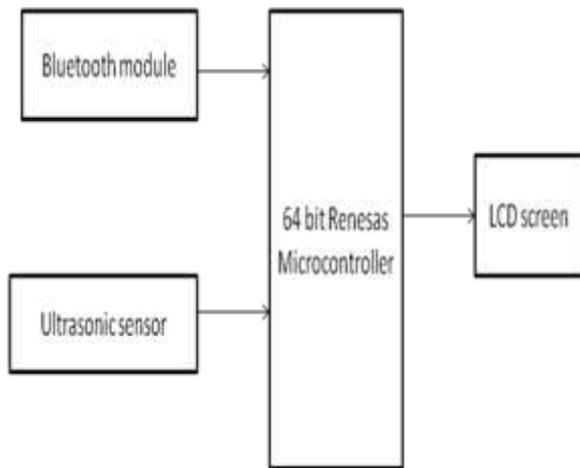


Fig 1 shows the overview of the system.

1.2 Proposed Methodology

The block diagram of the proposed system is as follows fig4.1. The multipurpose agricultural machine is used to control the two functions like digging the soil, seed sowing, and level the ground to close the mud. It consists of 64 bit Renesas microcontroller, DC motors with the driver, LCD, Solenoid valve, relay and its driver. Here, as soon as the users supply the power the robot starts moving in the forward direction. In Microcontroller, we have already programmed the system working. When the machine starts moving in the forward motion it starts plowing with the help of a dc motor connected to plow mechanism. After this process, there's a solenoid valve arrangement through which the seeds are being dispensed in the soil. This same procedure continues until the user does not switch off the circuit. Plowing is done with DC motor and seed dropping in the land is done with the help of a two-port solenoid valve. All these processes are displayed on LCD.

1) Ploughing Function

The primary purpose of cultivating is to turn the upper layer of soil, bringing fresh nutrients to the surface, allows the weeds to burst and to the rest of the crops and break them. The dry motor is used to assemble the form by assembling the screw rod. As the screw rod turns, slides are flown to the farmer in the middle of the ride's screws. The grower is then lowered and the soil is dug 1.5 inches. Control the farmers' direction from the Bluetooth app on a smart phone.

2) Seed Sowing Function

These multipurpose spores have a cylindrical shape container to fill the seeds. The container is attached to the four-wheel carrier assembly. It consists of metering plate bevel gear mechanisms and two holes at the bottom depending on the size of the seed. Container and meter plate holes work on a container that acts as a plate when it sinks through the soil.

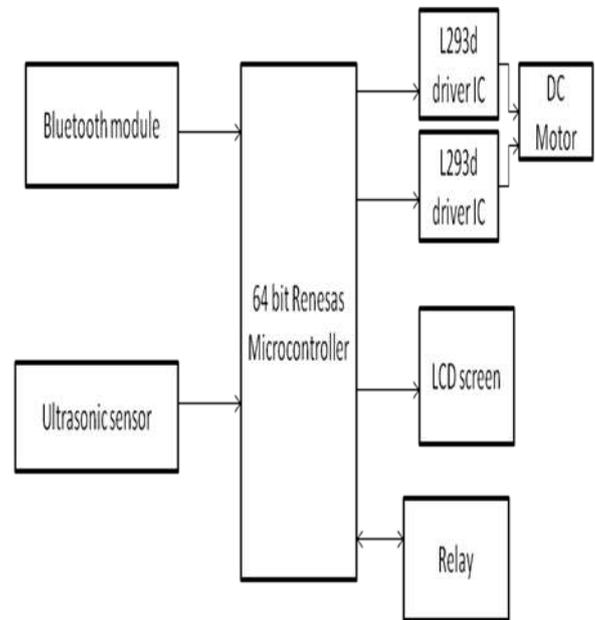


Fig 2 Block diagram of the proposed system

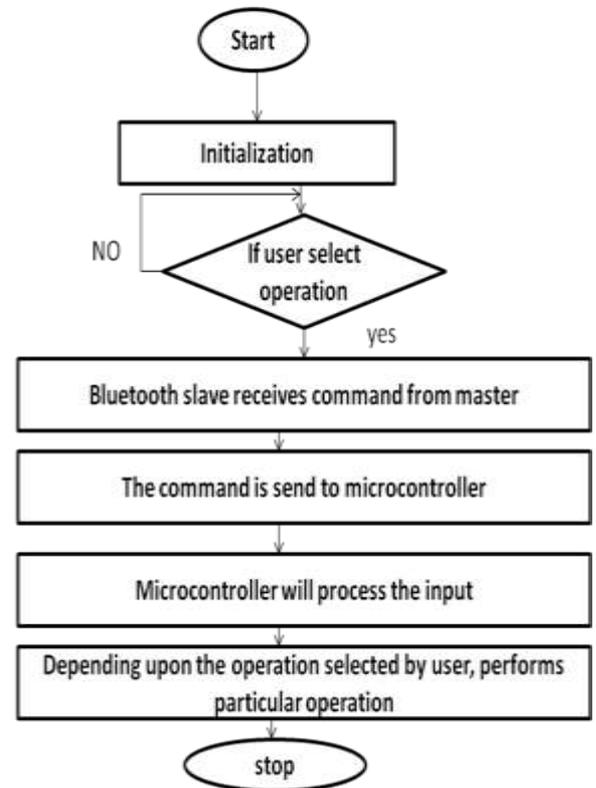


Fig 3 Flow chart of the proposed system

2. CONCLUSION

Automation brings comfort to our lives. Automation reduces any activity of human activity, which increases stable quality productivity. This process is too fast, the process is over. Automatic seed sowing process with this plan and low-cost management. Low-cost automation (LCA), a glossary of all industrial organizations, usually includes pneumatic, electrical and electronic components. LCA is important in factory automation, for example, electronic unit assembly units. Automation saves poor manual work and increases the speed of production processes.

This system is beneficial for farmers for basic seed sowing operations. The mechanism of operation of this machine is

very simple to Le Man. The use of this system may reduce the amount of low germination that is wasted by seeds. Prevents the creation of seed preparation gaps. The total yield percentage can be effectively increased. The labor problem can be reduced.

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