Automated Agribusiness Furrowing Seeding and Grass Cutting Utilizing Android Smartphone

Deekshitha K P, P Prasanna

M.Tech Student, Dept. of C.S., P.E.S College of Engineering, Mandya, India

Associate Professor, Dept. of C.S., P.E.S College of Engineering, Mandya, India

ABSTRACT: The paper aims on the design, development & the fabrication of the robot which can put the seeds, dig the soil, plough the land, cutting the waste plant these whole systems of robot works with battery. In India near about 70% people dependent on agriculture. So the agriculture system in India should be advanced to reduce the efforts of farmers. Various operations are performed in the agriculture field like seeding, weeding, waste plant cutting, plowing etc. Very basic operation is seeding, plowing & plant cutting. But the present method of seeding, plowing & 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 man power. The machine can be advanced for sowing seeds in farm with particular distance between seed is adjusted. In this paper robot direction is provided by using Software programming. By using that proper direction is given to the robot. The farm is not the straight line and smooth. If any obstacle is occurred like stone, electric light pole, trees etc the automatically robot get stop.

KEYWORDS: Agricultural machinery, Bluetooth, ultrasonic sensor, robotic technology.

I. INTRODUCTION

Agriculture is the main occupation. So this system in India should be advanced to reduce the efforts of farmers. Agriculture is the cultivation and breeding of animals, plants and fungi for food, fibre, bio fuel, medicinal plants and other products used to sustain and enhance human life. Agriculture was the key development in the rise of sedentary human civilization, whereby farming of domesticated species created food surpluses that nurtured the development of civilization. The study of agriculture is known as agricultural science. The history of agriculture dates back thousands of years, and its development has been driven and defined by greatly different climates, cultures, and technologies. Industrial agriculture based on large-scale monoculture farming has become the dominant agricultural methodology. The machine can be advanced for sowing seeds in farm with particular distance between seed is adjusted. It cans automatically sowing seed in land. It can be also used fertilizer sowing instead of seed. The basic requirements of this machine for small scale cropping, they should be suitable for small farms, simple in design and technology and versatile for use in different farm operations. An automatically operated template row planting will designed and developed to improve planting efficiency and reduce drudgery involved in manual planting method. Seed planting is also possible for different size of seed at variable depth and space between two seeds. In the present era the vast majority of the nations don't have adequate talented labor particularly in agrarian area and it influences the development of creating nations. So it's an opportunity to computerize the area to defeat this issue. Remote control applications, all things considered, seem to an ever increasing extent, particularly in farming. Industry assumes an essential part. Presently a day's Robotics is a piece of today's correspondence and correspondence is a piece of progression of innovation, so chosen to take a shot at Robotic field, and plan something which will make human life today's perspective. There are distinctive sorts of portable robots which can be separated into a few classifications comprises of wheeled robot, creeping robot and legged robot. This venture manages a wheeled self sufficient Robot. It is the piece of Automation; Robot has adequate knowledge to cover the most extreme territory. This venture work depicted here is very helpful in the rural fields. The venture points on the plan, advancement and manufacture of the

exhibition unit of the venture "Automated Agribusiness furrowing seeding and grass cutting utilizing Android Smartphone".

II. RELATED WORK

• In olden days technology was not developed that much. So they were seeding by hand in sunlight
In the field of Agriculture various problems are faced by the farmers. Nowadays seed sowing is done either manually or by tractors. Manual method includes broadcasting the seeds by hand. Sometimes method of dibbling this is making holes and dropping seeds by hand is used.

• Plowing or Furrowing is one of the means in cultivating. Amid this procedure we till the land and make it prepared for the seed sowing. By working we imply that furrow will be utilized which will have teeth resembles structure toward the end and will have the capacity to turn the top layer of soil down and bad habit versa. In the field of horticulture different issues are confronted by the ranchers in the operation like furrowing, seeding and so on. Additionally the types of gear used to play out the operation are overwhelming and hard to deal with.

• Grass cutting is the fundamental operation in development. The primary piece of the grass cutting machines are DC engine, transfer for controlling engine. The grass cutting is giving a rapid turn to the sharp edge, which cuts the grass. The edge will get motor vitality while expanding the RPM. The supplies are badly arranged to deal with. So there is a need to create hardware which will diminish the endeavors of agriculture.

III. PROPOSED SYSTEM

The Block graph for the most part contains ultrasonic sensor, Bluetooth module, microcontroller, L293, hand-off, LCD and Power supply. These modules are incorporated to do a solitary assignment. The proposed framework is controlled with Renesas 64 stick microcontroller. Here, Bluetooth will send the contribution to the microcontroller. Microcontroller takes just advanced info. Robot machine can't read computerized input so L293 is a Motor driver circuit that believers advanced flag to simple or mechanical info. Engines are appended to robot machine that is controlled by driver circuit. To do development, engines are required. Driver circuit is utilized to control speed. In Seeding valve there is opening and shutting development. At right position it will open and close, will settle some deferral. Ultrasonic sensors will distinguish the plants. Plant cutting is finished by engines. Transfer is an exchanging operation and furrowing is performed.
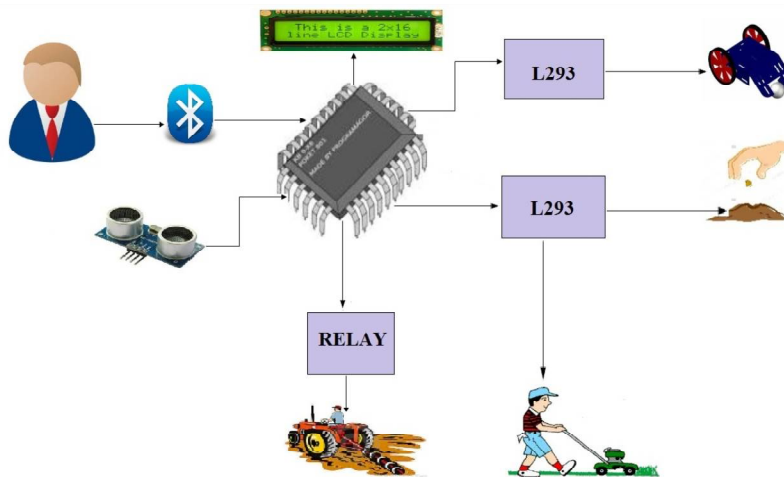

Fig 1 Block diagram of System model

SOFTWARE
Cube suite +.
Embedded C.
Renesas flash tool.

HARDWARE
It is the level integration of the hardware components into android application. Here using Renesas microcontroller interacting between all modules. Bluetooth (HC-05) will be given to communicate with the robot. Ultrasonic sensor (HC-SR04) will detect the plants on both left and right side. And plants cut automatically. The complete project will be displayed on LCD screen. 12v Power supply is provided to drive Motor and Microcontroller; drivers are used to control the speed movement of the robot.

IV. PROPOSED METHODOLOGY

1.Bluetooth module

HC-05 Bluetooth is a serial port convention module. It is a simple to utilize "Bluetooth" and intended for straightforward remote serial association setup.HC-05 Bluetooth module was associated with the same microcontroller to set up a duplex correspondence channel amongst itself and the android advanced Mobile Phones.

Fig 2: Bluetooth Module

2.Ultrasonic Sensor module
HC-SR04 ultrasonic sensor is used. The module naturally send wave and distinguish the deterrent and how far it is. Supply voltage will be given 5v. This is eye of the robot. The Ultra-sonic sensor is a gadget you can use with the BASIC Stamp to gauge how far away a protest is. With a scope of 3 centimeters to 3.3 meters, it's a shoe-in for any number of mechanical autonomy and robotization ventures. It's likewise surprisingly precise, effortlessly distinguishing a protest's separation down to the half centimeter.

Fig 3: Ultrasonic sensor

3. **Flowchart of the overall System**

Figure shows the flow of events in overall system. The user activates Bluetooth Once connection is established user selects any of the operation like seeding, plowing and waste grass cutting is performed until the stop signal is received
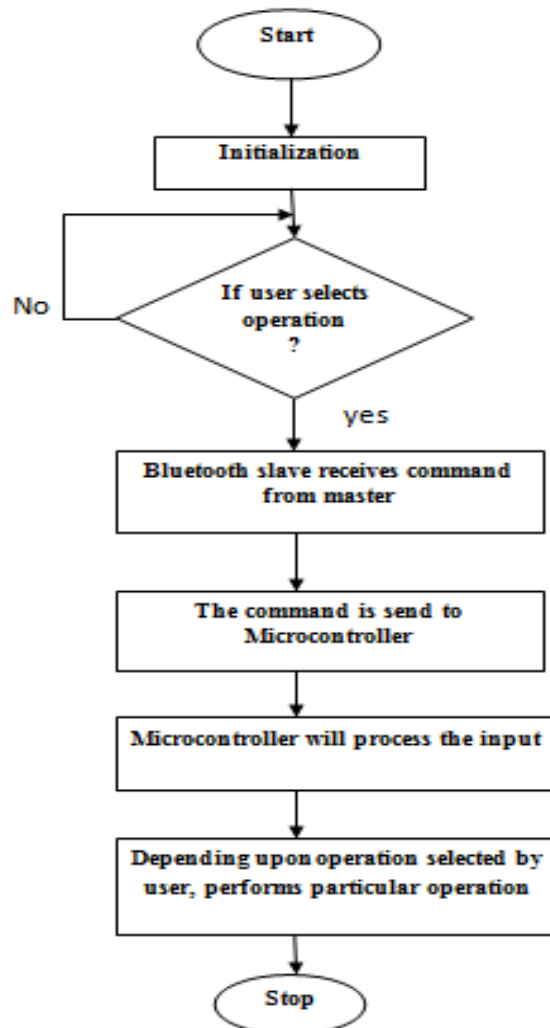

Fig 4: Overall Flowchart of the System

V. RESULT

Bluetooth is utilized to communicate with robot through android and send the charges to the Microcontroller. As per the guidelines given by the client the robot move in forward, turn around, left and right bearing to drop the seeds at a specific position. Four wheels are associated at the base for the adaptable development of robot. Two DC engines are utilized to drive the wheels associated with the robot. L293D is utilized to drive the DC engines. Hindrance locator sensor is utilized to identify diverse obstruction in the way of the robot. In the event that any obstruction is distinguished in the way of the robot the data of the snag is sent to the client through remote association. In Seeding engines are utilized to drop a seed one by one. Plant cutting is finished by engines. Transfer is an exchanging operation and Furrowing is performed.
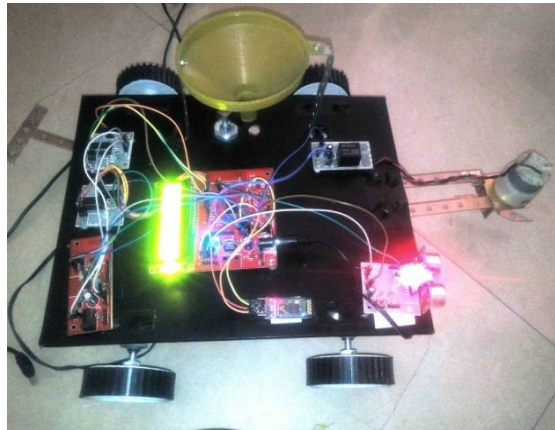
Fig 5: Snapshot of Overall Robot Model

VI. CONCLUSION AND FUTURE WORK

The system is beneficial to the farmers for the basic seed sowing operation. The mode of operation of this machine is very simple even to the lay man. Low germination percentage leading to wastage of seeds can be reduced by the use of this system. 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 manual & 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 basic operation in a well organized manner. To make the system applicable for real time purposes components with greater range needs to be implemented.

In future, this project can be taken to the product level. To make this project as user friendly and durable, I need to make it compact and cost effective. Going further, most of the units can be embedded along with the controller on a single board with change in technology, thereby reducing the size of the system. Solar panel can be provided for minimize the usage of renewable sources. Bluetooth can be replaced by GSM, Zigbee for longer distance. And can use camera for video interaction which will detect the obstacles during seed sowing. Smart robots can be used which will work automatically for sowing the seeds without use of human interaction. Temperature sensor, soil moisture sensor and motion sensors can be added for the excellent working of the robot. It also includes the weeding and harvesting in this system.

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BIOGRAPHY

Deekshitha K P is a final year student of Master of Technology(M.Tech) pursuing in Computer Science & Engineering, P.E.S College of Engineering, Mandya, Karnataka. She received Bachelor of Engineering(BE) from P.E.S College of Engineering, Mandya, Karnataka, India. Her research interests are Embedded system, Big data, etc.

P Prasanna Associate Professor in the Computer Science Department, P.E.S College of Engineering, Mandya. He received Master of Technology(M.Tech) degree from Sri Jayachamaraja College of Engineering, Mysuru, Karnataka, India. His research interest are Network Security.