IJAREEIE

e-ISSN: 2278-8875
p-ISSN: 2320-3765

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

Volume 10, Issue 8, August 2021

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.282

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 7.282|

|| Volume 10, Issue 8, August 2021 ||

| DOI:10.15662/IJAREEIE.2021.1008008 |

Design and Implementation of Agrobot Using IoT

Anoop T M[1], Chandana B G[2], Rangaswamy S H[3], Sushma S[4], Dr. Devananda[5]

UG Student, Department of ECE, PESITM, Karnataka, India[1]

UG Student, Department of ECE, PESITM, Karnataka, India[2]

UG Student, Department of ECE, PESITM, Karnataka, India[3]

UG Student, Department of ECE, PESITM, Karnataka, India[4]

Professor, Department of ECE, PESITM, Karnataka, India[5]

ABSTRACT: Agricultural Robot or Agribot is a robot used in farming. The robots for fruit picking, driverless and sheep shearing are designed to replace human labour. Many parameters (e.g. size and colour of the fruit to be plucked) should in the majority of cases be taken into account before a work begins. The robots may be used to clean, weaven, spray and control other horticultural chores. In livestock applications such as mechanized milking, washing and castrating robots can also be used. Robots such as this benefit farms much, including improved fresh food quality, reduced production costs and less manual labour requirements. Our robotic vehicle is a large-scale agriculture machine with a large dirt clearing capacity. This multi-purpose system provides an advanced seed sowing, ploughing, watering of crop and harvesting approach that enhances efficiency in manpower and labour. This machine will cultivate the farm at a given distance by considering specified rows and columns. The car can also be controlled with an Android smart phone over Bluetooth media. The entire process computation, processing, monitoring and interface with motors are designed.

KEYWORDS: Agrobot

I.INTRODUCTION

The automatic agricultural robot is new to farmers, but it is rapidly gaining popularity in the field of agriculture. This autonomous agrobot quickly becomes a reality rather than a notion. Arduino Uno controls this agrobot when it moves on a surface. The 60RPM DC motor can be shifted forward and backward. These motors can be used to move the robot to the left and right. This project employs Arduino Microcontrollers and includes harvesting and fertilisation using commands from the Arduino decoder. The robot is also connected to the ultrasonic sensors. The echo sensor recognises the obstacles facing the robot and the buzzer is ON. The robot features a watering system that sprinkles the plants with fertiliser to suit their demands. The dc pump helps the robot sprinkle the water in the process of fertilisation. The 12V battery is used in this project and the LCD display is inserted for clearly analysis of the entire mechanism. In addition, this equipment consumes less energy than crop cutters or other farming instrument.

IoT is used for mobile function operation using GPRS RS 32 connections to the android mobile devices and it can automatically and artificially handle the process. For control of the robot using the agrobot mechanism, the Arduino Uno Microcontroller is used.

We use IoT technology to control the equipment from the mobile site. At the receiver end (control side made on the robot) connect a mobile device. If we automatically give a command from another mobile, then the GPRS decoder device positioned on the receiver end will receive it. IoT process the received information from the recipient. The robot's mobility depends on the commands that the recipient unit receives.

The battery is an electrical circuit which permits the application of a voltage over a load. In robotics it is utilised for robotic activities to run the engine forward and backward. Microcontroller is a miniature computer that contains an input, a memory and a programmable processor peripherals on a single integrated circuit. Arduino Uno is an 8051 microcontrollers, each with eight input/output lines, with a total of 32 input/output ports.

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II.BLOCK DIAGRAM

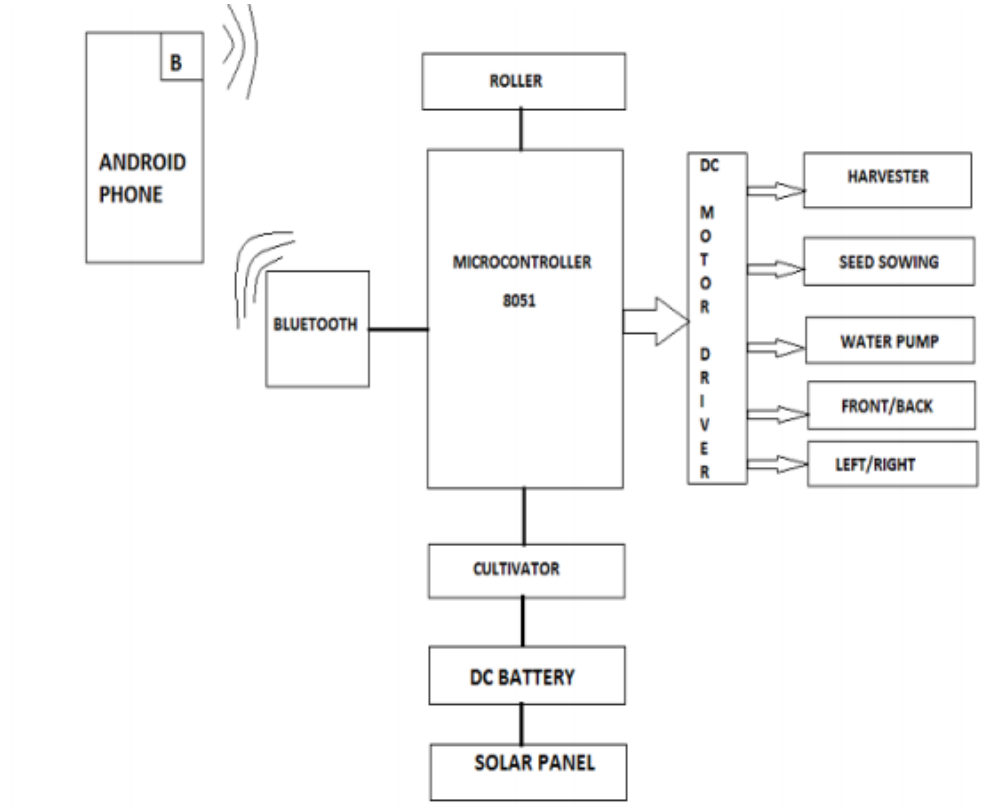

Fig. 1 Block diagram of Agribot

Agribot is deployed on a metal sheet with an embedded roller and grower. The front end of the metal sheet has the harvesting characteristic, while at the end of the cultivator both the water pump used to irrigate the crops and the seed sowing is added. Two engines are used to regulate the movement in front, back, left and right. Each engine is used to control harvest, seed seed seed, and watering of plants. The process starts when the Application is opened by the Farmer and the display options can be pressed. It is developed with Java utilising Android. The Bluetooth on the android phone will serially deliver the RF signal, and the Bluetooth on the robot will execute steps according to the Farmer's directions. We have a compiler of Embedded C and Keil Vision. The interface is performed by Microcontroller 8051.

The core of our robot is the most powerful microcontroller family of Intel 8051. Two microscopes IC2 is the first mcrocontroller which decodes all commands received from the transmitter and executes all commands received from the remote and also generates speed control pulse pulse. Motor IC LD293 driving two engines IC These two engines are motor drivers and they also run engines for all other agricultural vehicle attachments.

III.RESULTS AND DISCUSSION

The various stages of the output are shown in the following figures. The Microcontroller AT89S52 that is used. This is the decision making unit of the entire system

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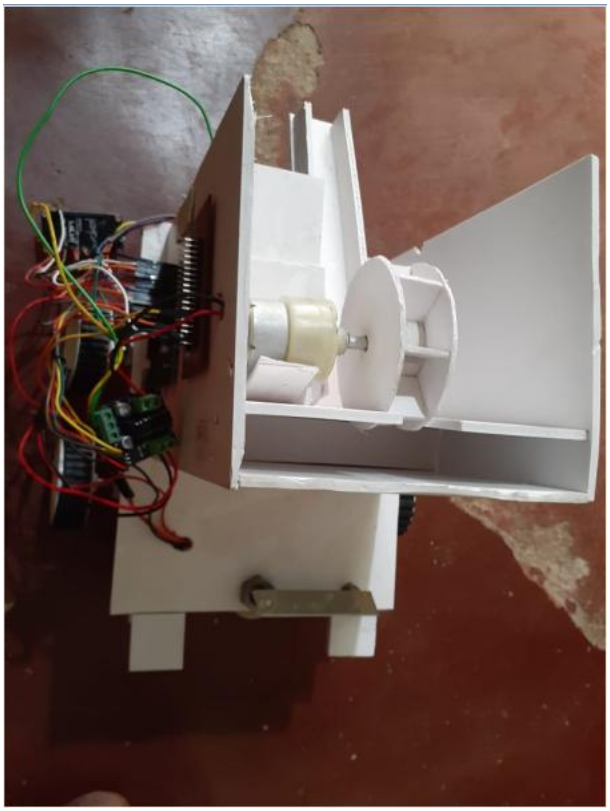

Fig. 2

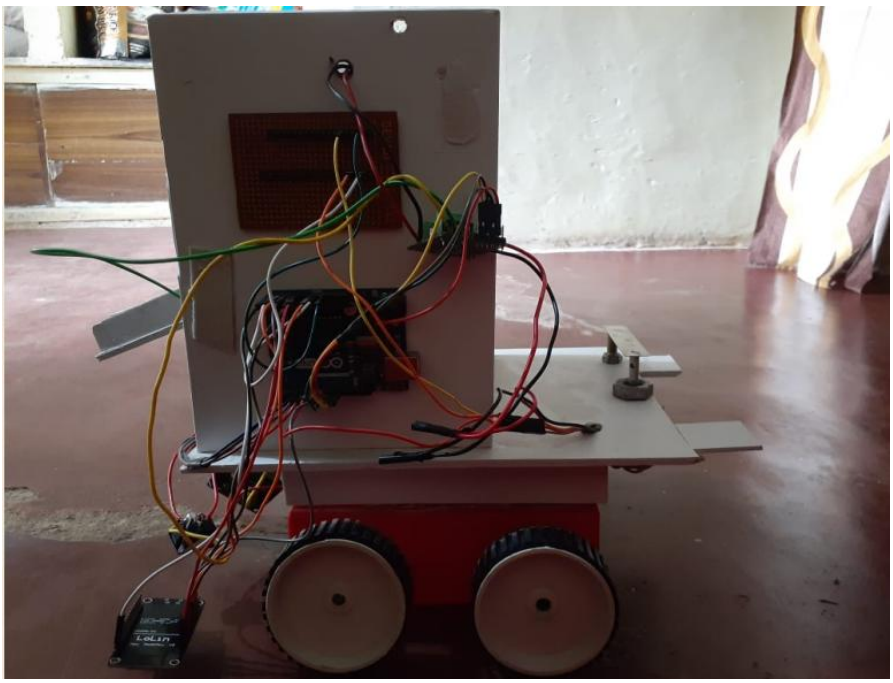

Fig. 3 Results

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IV.CONCLUSION

Agribot is a farming robot. Human labour is replaced by fruit harvesting, driving and sheep shearing robots. Many factors (such the size and colour of the fruit to be plucked) should be considered before work begins. They can clean, weave, spray, and regulate other horticultural tasks. Robots can also be utilised in livestock applications such as washing and castrating. This robot improves food quality, reduces production costs, and reduces the need for manual labour. Our robotic vehicle is a large-scale agricultural machine. This multi-purpose system includes sophisticated seed planting, ploughing, crop watering, and harvesting methods that reduce labour costs. This machine will develop a farm at a specified distance using rows and columns. The automobile can also be operated over Bluetooth from an Android phone. They are meant to work with motors and to compute.

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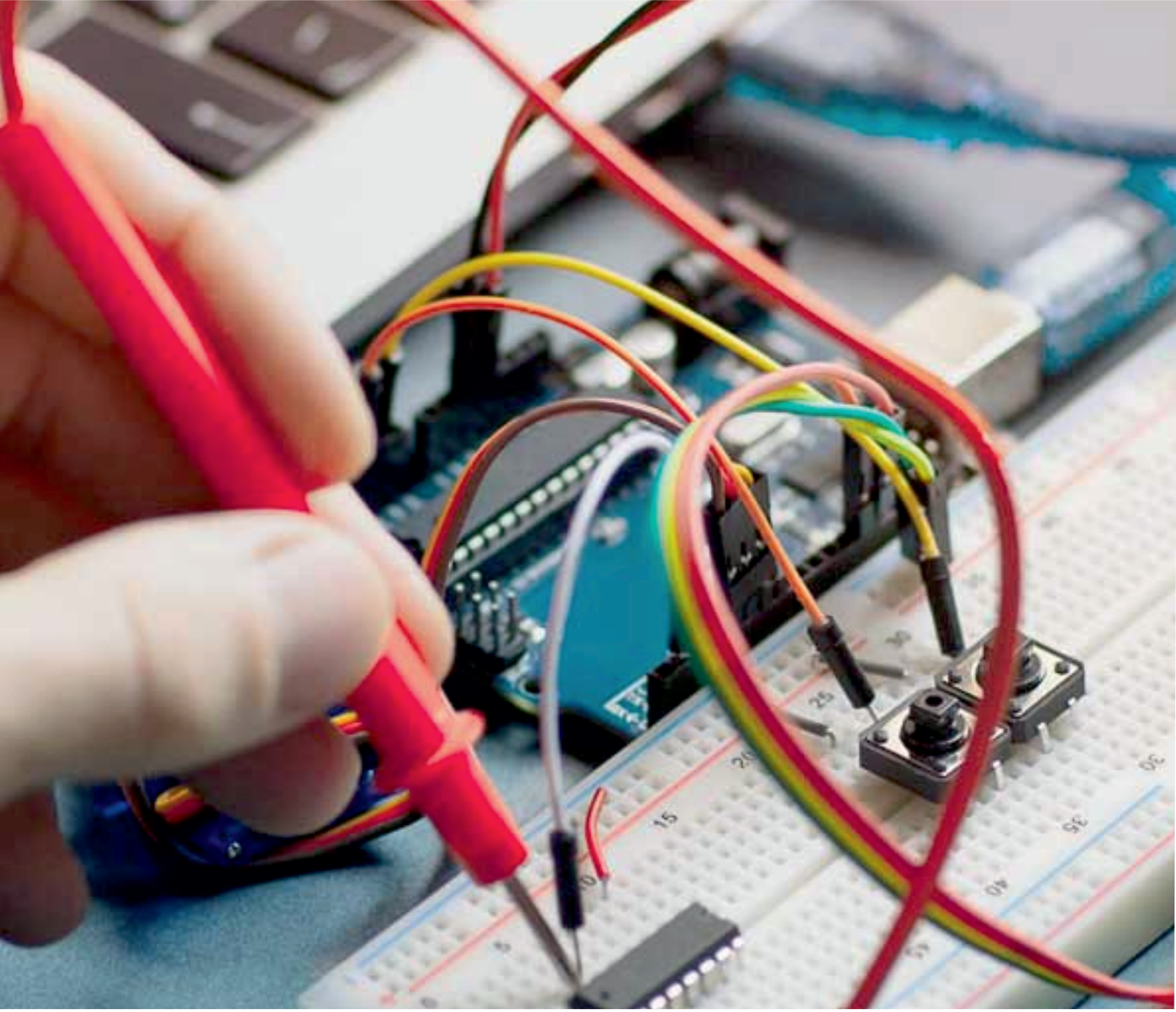

INNO SPACE
SJIF Scientific Journal Impact Factor

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doi cross ref

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International Journal of Advanced Research

in Electrical, Electronics and Instrumentation Engineering

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