ISSN NO: 9726-001X
Volume 11 Issue 02 April 2023

JOURNAL OF CURRENT SCIENCE

AUTONOMOUS DELIVERY ROBOT WITH PIN CONTROL

Dr P Karunakar, Dr P Karunakar, Dr P Karunakar,
Professor[1,2,3]
Department of ECE,
Viswam Engineering College (VISM) Madanapalle-517325 Chittoor District, Andhra Pradesh, India

ABSTRACT

The concept and development of an autonomous delivery robotthat delivers the products we place on it are presented in this project. The microcontroller known as anArduino Mega is usedto operate this robot. We'll give several instructions on how to move forward, backward, right, and left. Delivering the items, we have placed on the robot with security supplied by an ultrasonicsensor. When receiving a package, a pin codemust beentered as security. The bot can holdand deliver things weighing up to 10 kg in real time. The initiative intends to create contact-free interactions, which were crucialduring periods when it wasinappropriate to touch people, such as during the COVID era. This robot can also be employed in businesses and residences where products are used.

KEY WORDS Arduino Mega, Pin code,contact freeinteraction, ultrasonic sensor

I INTRODUCTION

In the near future, fully autonomous robotswill be present in developing nations like India. Some humanjobs will be replaced by AI as it takes over the planet.

Although autonomous delivery systems are not yet clever enough to transport items across cities, they are capable of moving tinyobjects within short distances. The term "robocar" refers to the open-source robot platform that will be used in conjunction with an Arduino microcontroller to build an autonomous vehicle. The assistance provided by the robocar library, which enables simulations to be run and can be used toteachor develop models or autopilots, is used to carefully trainthe delivery robot. When the pin code is correctly input, the third deliverywill take place. We created this robot to guaranteedelivery to the intended destination and to enable touch-free interactions. These robots can be used for short distance moves.The basic goal is to conserve labour for trivialtasks. It is crucialto look into more avenues for ensuring the security of supplyinga specific product as technology develops.

II LITERATURE SURVEY

Surveys played a significant part of action insearch of new creation by better ideas and how they are controlled, this helped me a lot to know and understand from the basepapers.

Aditi Shinde et.al [1] It is described in the paper how to permit the robot to move aroundthe interior. The technology uses RFIDtags as robot detection location markers. Robotic navigation utilizes a topological map that closely resembles the actual location. At every crossing in the corridors, the robotturns in theproper direction as it travels downthe routes. You can employ aroboticnavigation system in real life and have it work well.

Tej kurani et.al [2] The fundamental idea put out in this paper is to create a self-driving carthat can examine its surroundings and goforward without assistance from outside humans. This automation is accomplished byrecognizing the road, warning of impending hazards, stop signs and making judgements, which include modifying the course of the vehicle. The actuators that control steering and acceleration get commands from the autonomous vehicle after it analyzes the input and follows the course. In order tofunction in line with traffic legislation, the software Programme tracks traffic with the help of hard-coded rules, preventive algorithms, predictive modelling, and "smart"discriminating on objects.

V. K. Eerthana et al. Finding a non-collisionpath from the first line to the objective in themonitoring zones is the first priority after utilising the avoidance approach. The robots'capacity for path detection, obstacle detection, and close-quarters navigation to prevent collisions Additionally, it demonstrates that the robot was adept at navigating extremely narrow curves and dodging any impediments that were in its way. a strategy that enables the robot to accomplish its mission without runninginto any potential roadblocks

III OBJECTIVE

ISSN NO: 9726-001X
Volume 11 Issue 02 April 2023

The primary aim of this project is to establisha secure and trusted delivery of the item without any physical communication ofperson to person and to enabling to savemanpower.

IV BLOCK DIAGRAM

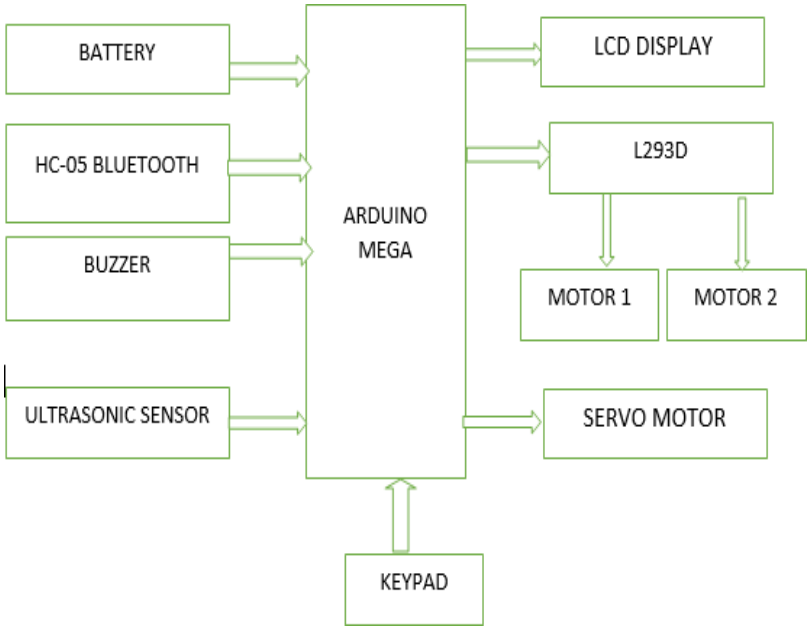

Fig.1 block diagram

A. Arduino Mega

A microcontroller board called the Arduino Mega is based on the ATmega 2560.Themega board's numerous inputs and outputs, which include 54 digital pins, make it very well-liked.

B. Ultrasonic sensor

It is a gadget that employs high-frequency sound waves to locate objects and gauge distances; it works on the basis of echolocation. These phobias reverberate off surfaces as they come into contact with objects in their route.

C. Servo motor

A Servo motor is essentially an electromechanical device that is frequently used for accurate angular position control using the electrical signals as a basis themovement-designed servo motor illness.

D. HC-05 Bluetooth

The H-05 Bluetooth module is a well-liked option that is frequently

ISSN NO: 9726-001X
Volume 11 Issue 02 April 2023

V PROPOSED SYSTEM

Autonomous delivery robot with pin control is the suggested system. In this case, we use a pin that we enter through the keypad to operate the delivery robot. The package will be transported to its designated location securely, and if there is anobstruction in its path, a buzzer will ring, allowing us to reroutethe robot and safely deliver the package to the intended recipientover shorterdistances.

VI WORKING

The working process of the robots that carry packages autonomously have a range of sensors to help them understandtheir environment. Cameras, lidar (light detectionand ranging),radar, ultrasonic sensors, and other devices are examples of these sensors. These sensors aid the robot in learning aboutits surroundings byassisting it in determiningdistances, recognizingobjects, and detectingimpediments. The robot uses its sensors to continually scan its surroundings as it travels along the predetermined course. In order to prevent collisions, it recognizes impedimentsor moving objects (such as pedestriansor cars) and modifies its course or speed asnecessary. To decideon real-time navigational modifications, the robot may use machine learning and collision avoidance algorithms.

This outlines a few actions to complete the procedure.Step 1 is to enable Bluetooth on our phone.
Step 2: Connect the microcontroller's 12-voltpower supplybattery to it.
Step 3: After Bluetooth has been establishedwith our phone, weshould be required to giveit instructions.

Four possible representations of the directions are *F, *B, *R,and *L.

Step 5: As we input these, the robot goes in various ways. If a barrier appears, a buzzer will ring, signaling us to send the robotin a new route.

Step 6: The robot opens the package after delivering theitem to the recipient and having them input the pin.

ISSN NO: 9726-001X
Volume 11 Issue 02 April 2023

.

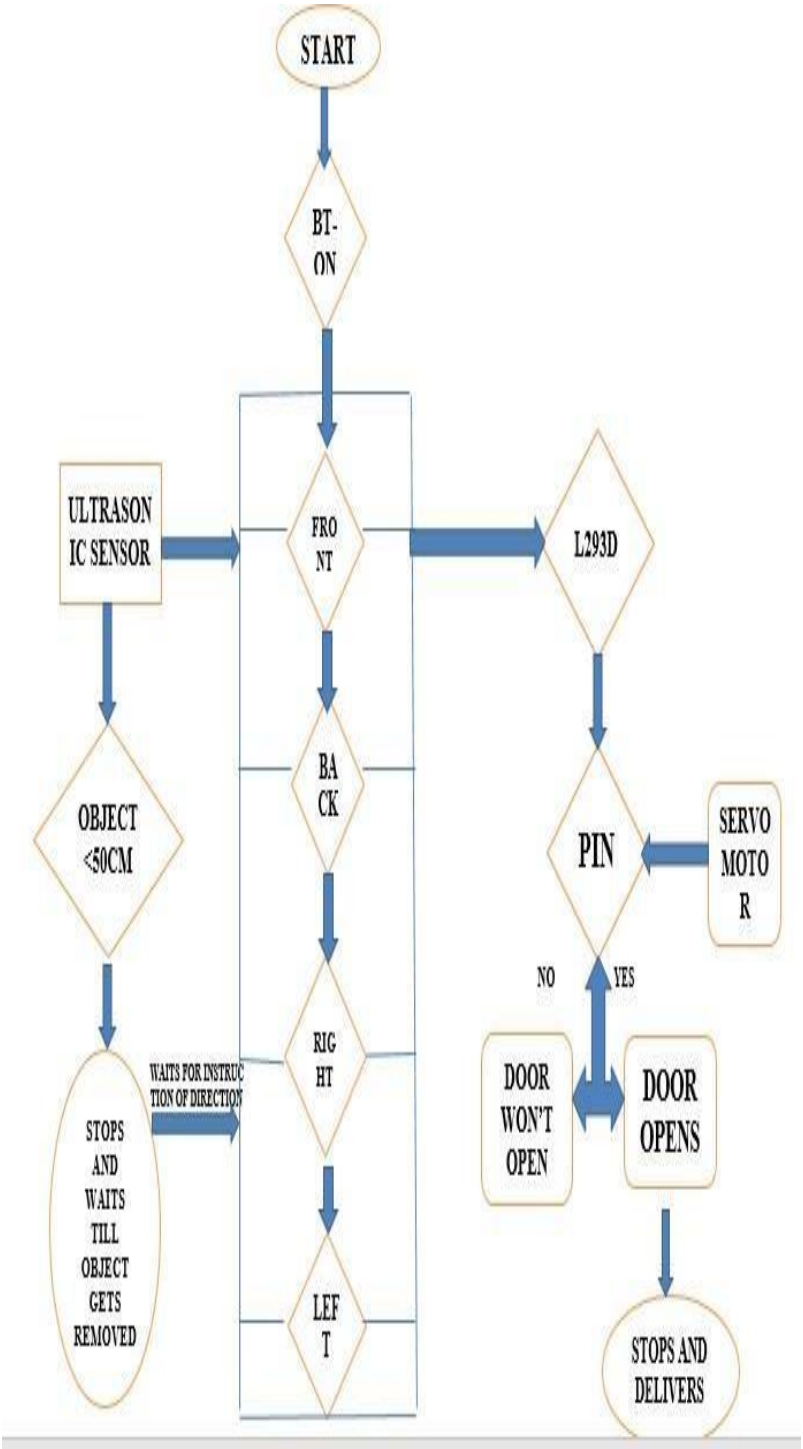

Fig.2 Flow chart of delivery process

VII RESULTS

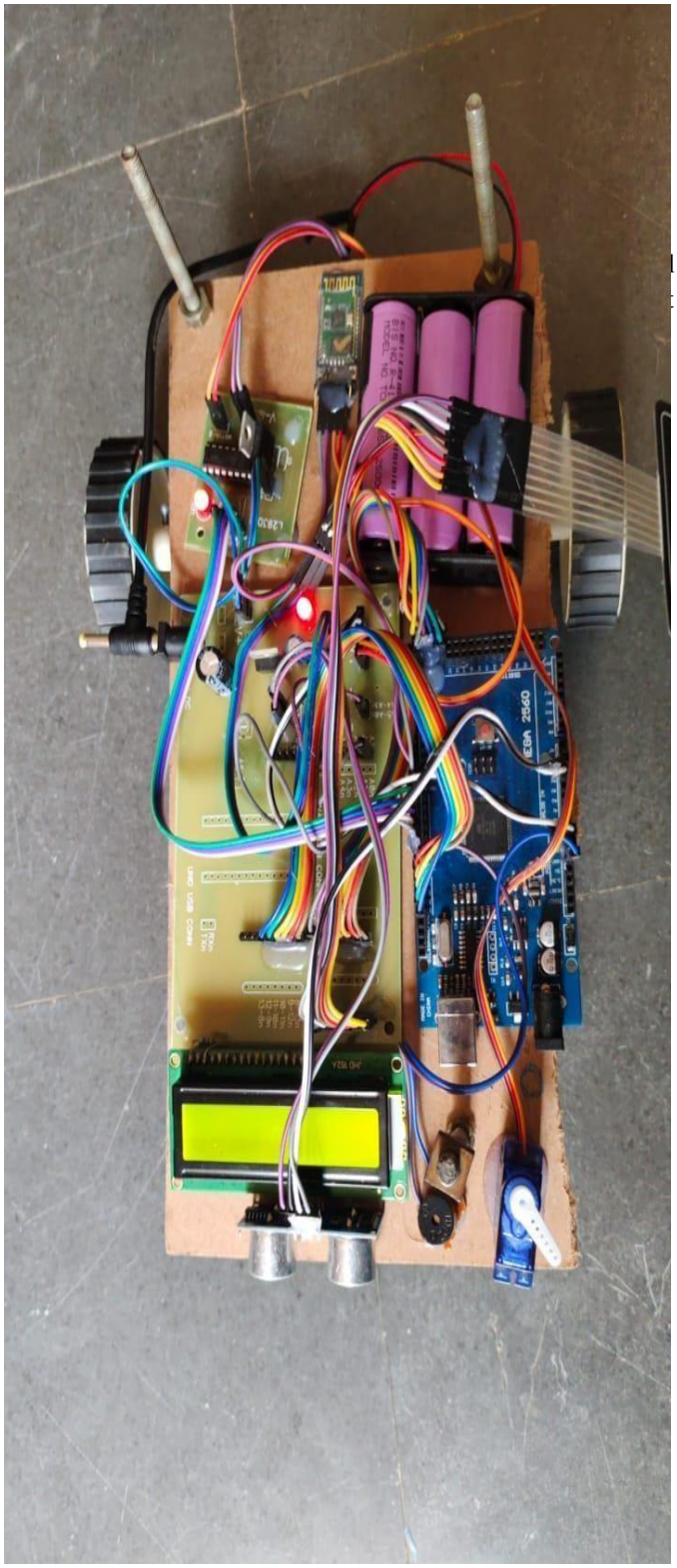

Fig. 3 Circuital view of the robot

Above, the delivery robot can be seen with every part connected to an Arduino Mega microcontroller. The task that the robot completes is displayed on an LCD monitor.

ISSN NO: 9726-001X
Volume 11 Issue 02 April 2023

JOURNAL OF CURRENT SCIENCE

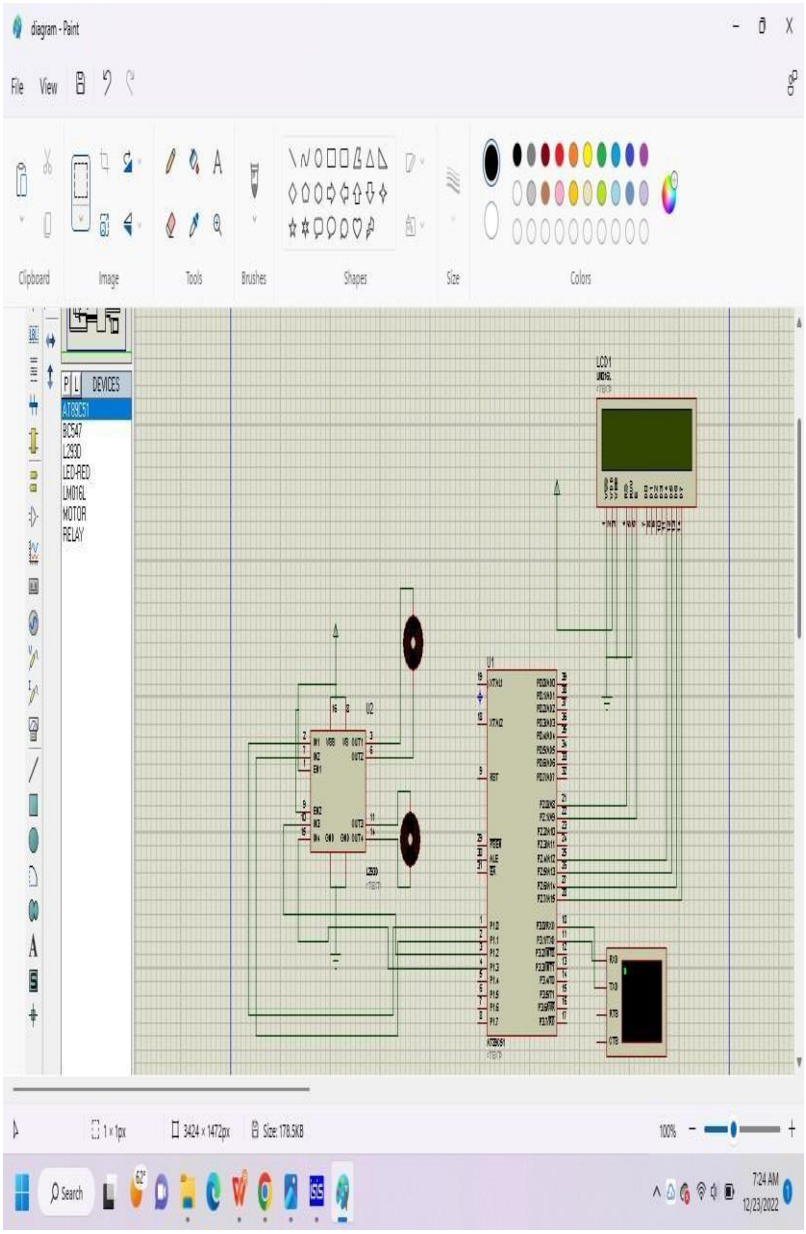

Fig .4 Simulation view of delivery robot

The simulation view truly reveals whether or notthe robot actually performs the required output Using a design tool called proteus, which iswhere all the electrical equipment is located, all the components in this simulation are linked.

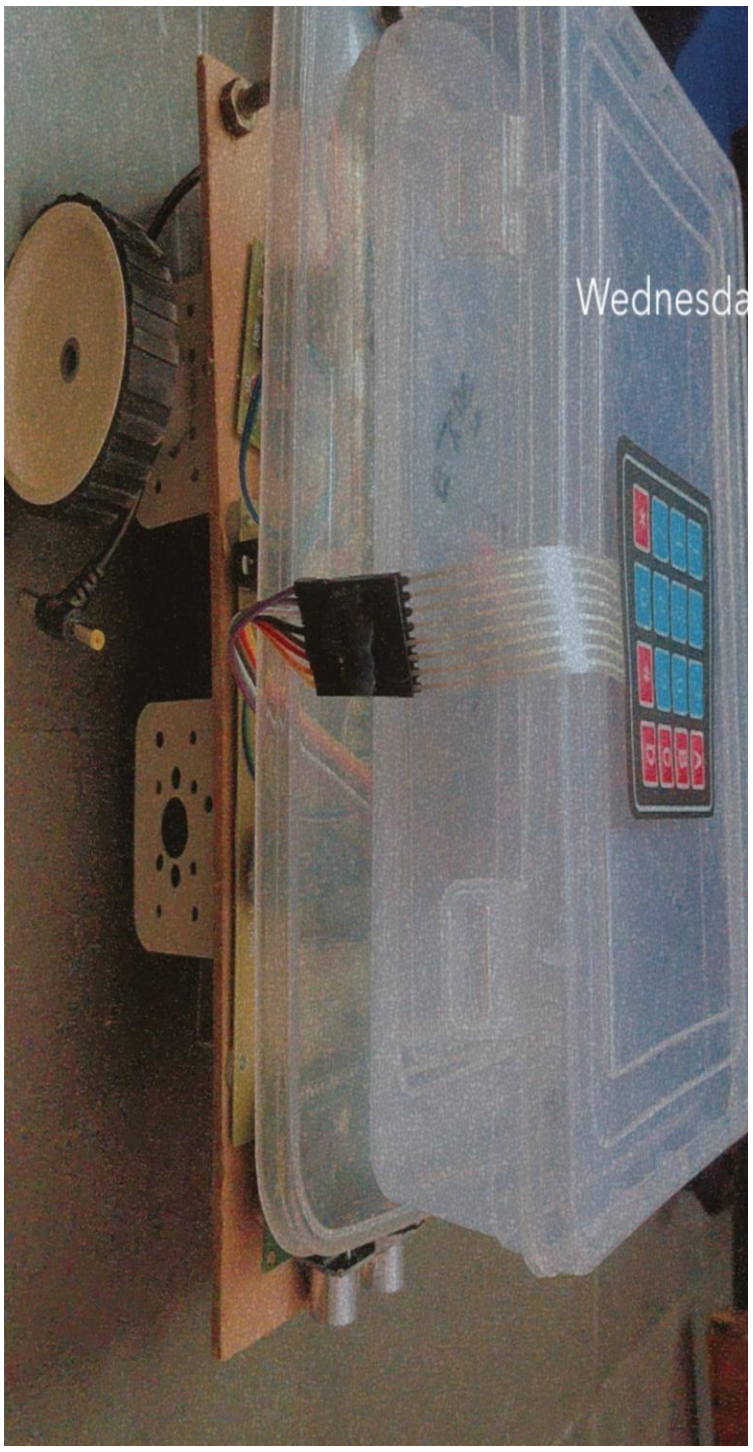

Fig.5 Autonomous delivery robot

Here is the autonomous delivery robot's overall perspective. The object that is stored in the bot is sent to the designated recipient while maintaining PIN security.

This robot was created with the intention of reducing the need for human labour, completing tasks quickly, and serving

shorter-term needs in areas such ashealthcare. The robot finally delivers the item placed onthe bot to the receiver.

VIII CONCLUSION

Our objective was to create an autonomous delivery robot that could move materials to the location we needed. The Bluetooth module (HC-05) and ultrasonic sensor (HCSR04) coupled to the Arduino controllerallow it to read and analyze data from the sensors.

The container is covered with the ultrasonic sensor, which is used to look inside the container to see if there are any letters. If thedelivery robot is not at origin, it must determine where it is. Because Bluetooth beacons are readily available and have a limited range, we employed one to do that. Ifa Bluetooth beacon installed at the destination is within range, the HC-05, whichis attached to the controller, is set up to automatically connect to it. The Arduino receives this information, which allows it to ultimately determine whether or not it is at the origin.

REFERENCES

1. Aditi Shinde et.al [1"Donkey Car", Docs.donkeycar.com, 2016. [Online]. It is possible at https://docs.donkeycar.com.
2. A. Courses and colleagues, "Opens", Opencv.org, 2020. [Online]. Accessible at: https://opencv.org.
3. Tej kurani et.al [2] "TensorFlow", TensorFlow, 2020. [Online]. It is possible at https://www.tensorflow.org.
4. V. K. Eerthana et al[3]. A. Satan, "Bluetooth-based indoor navigation mobile system," 19th International Carpathian Control Conference (ICCC), 2018, Szilvasvarad, 2019, pp. 332–337.
5. M. Zaafir Barahim, M. Razvi Doomun, and N. Joomun, "Low-Cost Bluetooth Mobile Positioning for Locationbased Application," 2020 3rd IEEE/IFIP International Conference in Central Asia on Internet, Tashkent, 2007.
6. Samsung Electronics Co. Ltd. is the assignee and inventor is Kim YJ. Bidirectional communications are made possible via the I2C communicationtechnology and approach. US patentapplication US 11/028,319, filed on July 28 of 2005.
7. "Adaptive self-calibration of vision-based robot systems," IEEE Transactions on Systems, Man, and Cybernetics, vol. 19, no. 4, July-August 1989, pp. 811–824.
8. Aditya Kumar Jain. "Working model of self-driving car using convolutional neural network, raspberry pi, and Arduino." 2018's Second ICECA (Electronics, Communication, and Aerospace Technology) InternationalConference. IEEE, 2018.
9. The Géron family. Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques for Building Intelligent Systems: Practical Machine Learning. 2019; O'Reilly Media..