Wheel chair Control using Android Phone

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Article Info
Page Number: 364 - 370
Publication Issue:
Vol 70 No. 2 (2021)

Article History
Article Received*: 05 September 2021*
Revised*: 09 October 2021*
Accepted*: 22 November 2021*
Publication*: 26 December 2021*

Abstract
The elderly population has grown in recent years. Some live with their children, while others live in their parents' homes or live alone. When elderly people lose their ability to move, problems arise. Not everyone is able to support them whenever they need it. The primary controller, a c Nano and 5V 4 channel relay module, manages the motor, transmits commands to the Bluetooth HC-05 signal receiver, and receives serial data from the Android smartphone.Bluetooth communication protocol is employed in order to connect Android smart phones and controller boxes. The L298N motor driver is used to control the motor's direction and speed.The wheelchair movement can be controlled by using smart phone utilising software and propelling the wheelchair by hand. There are four possible movement directions: Left, right, forward, and backward. The system can also control the flow of electricity by laying down or sitting, thanks to Bluetooth wireless communication. Finally, this product not only enables disabled people to manoeuvre their own wheelchairs without help from others, but it also allows others to control wheel chairs and electrical devices using Android smart phones.

IndexTerms-Bluetoothhc-05, Arduino, DC Motors, Wheel chair, Relay Module.

1. INTRODUCTION

A wheel chair is necessary for a disabled person with locomotor difficulties to do tasks that call for movement. He or she can accomplish this by using his or her hands to push the wheelchair. However, many of us have weak upper limbs or find the annual form of operation to be too taxing. For tasks requiring movement, a disabled person with locomotor impairments needs a wheelchair. He or she can accomplish this by using his or her hands to push the wheelchair. But many of us are physically incapable of using manual devices or find them to be excessively taxing.A wheelchair is necessary for a person with a disability who has trouble moving around and carrying out tasks. He or she can propel the wheelchair manually by using his or her hands.

However, a lot of us have weak upper limbs or find manual labour to be too exhausting. As a result, it is preferable to provide them with a motorised wheelchair that can be controlled by moving a smart phone command. Because it is critical for a motorised wheelchair to be able to it can move at a fair speed and automatically detect and avoid obstacles in real time.As many disabled people as possible, as well as organisations that support it, can afford the price of this motorised wheelchair.We suggest a wheelchair that is motorised and with real-time Herald avoidance technology in light of these criteria. In order to enable mobility for a sizable number of disabled individuals, power wheel chair control interfaces are currently insufficient. The wheelchair's design and studies have allowed it to be utilised to limit growth while promoting autonomy and self-use mobility. People with impairments will benefit from this project's novel speech interfaces for controlling wheelchairs.

2. PROPOSEDMETHOD

A research methodology is a systematic planning approach of a clearly defined process that should be followed when conducting extensive research. An extensive study project, as well as a greater level of accuracy and efficiency, would be guaranteed by an appropriate approach. In order to get a fair amount of acclaim for the research, it was decided to use the widely used software engineering paradigm, which is The user's biometric data is once again taken during authentication, and the features that are extracted are compared to those in the database (using a matching algorithm) to establish whether a match exists. Physical accomplishments are not necessarily advantageous, as has been demonstrated. Utilizing biometrics approach is a much better choice. The system recognises a person during identification by comparing his or her biometrics to each entry in the database. Enrolment and authentication are the two stages that biometric identification typically consists of. The user's biometrics are taken at enrolment using a finger print scanner (likely an optical, solid state, or ultrasound sensor, or another suitable device), and the distinctive features are extracted and saved in a database as a template for the subject along with the student ID.

I. Algorithm:

The examination room guidance system's step-by-step algorithm employing the finger print module is as follows:

Step 1: Gather all of the components required for the project's establishment.

Step 2: Assemble the components one at a time on a single-sided PCB according to the circuit diagram.

Step 3: Connect the components as shown in the circuit diagram, with no errors.

Step 4: Finally, construct the kit as shown below:

Step 5: Now turn on the kit's power supply.

Step 6: Get and install the Bluetooth controller app.

Step 7: Turn on Bluetooth on the Android phone and connect.

Step 8: Next, launch the Bluetooth control app and search for the desired device, then connect to the HC-05 Bluetooth.

Step 9: We can then access or control the robot using the Bluetooth control app.

Step ten: Enter your network credentials, and the code should work immediately.

Step 11: After uploading, open the serial monitor in the Arduino Ide to obtain the device's IP address.

Step 12: Launch a browser and enter the ESP IP address; a similar web page should appear.

Step 13: Now, tilt the Android phone. Examine whether the browser I fit is streaming without lag and receiving commands.

Step 14: When we tilt the phone forward in the Bluetooth controller app, the robot begins to move forward.

Step 15: When we tilt the phone in the left Bluetooth controller app, the robot begins to move left and continues to move left.

Step 16: The robot starts to move in the desired direction when we tilt the phone in the appropriate Bluetooth controller app.

Step 17: The will came to an end when we kept the phone in a stable position.

Step 18: Disconnect the kit's power supply.

II. Block Diagram:

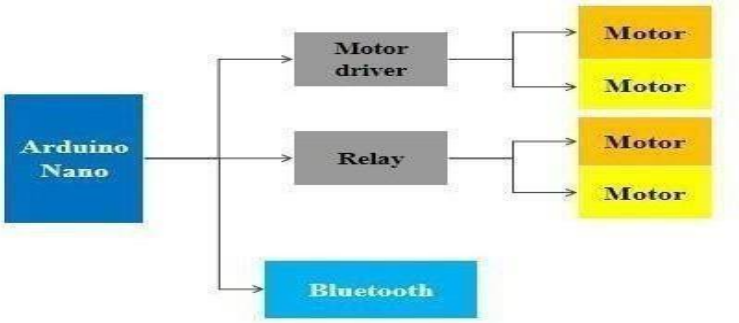

Fig 1:Block diagramofthesystem.

RESULTS

This wireless control wheelchair aids people in controlling their movements. This wireless control wheelchair can also control the wheelchair's forward, reverse, left, right, laying down, sitting position, and compacting it into a lower height.Not only that, but the user can control it using any Android phone or the traditional method.

Experimental Setup:

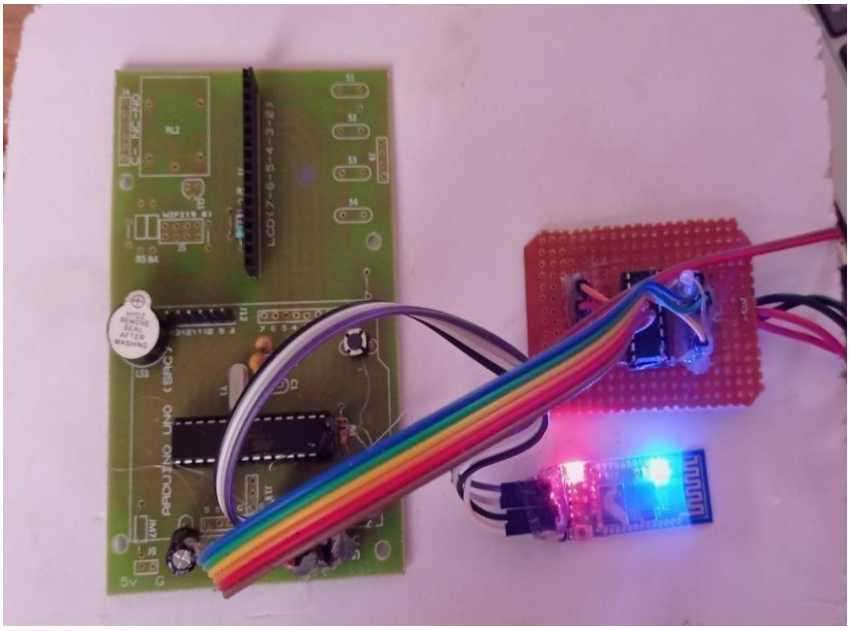

Fig 2:Experimental Setup

Control of wheel chair:

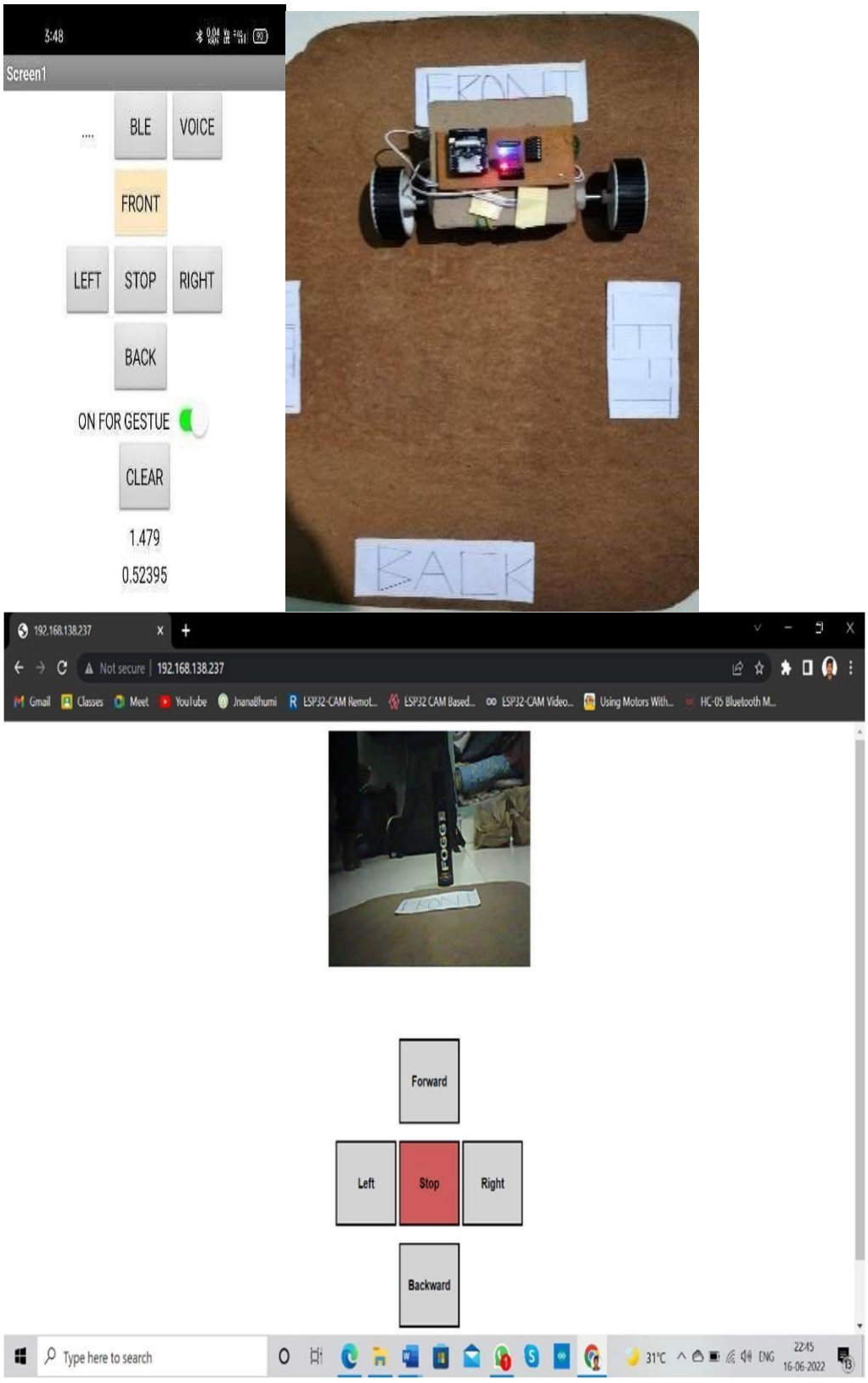

Fig 3:Controlofwheelchair

Final Experimental Result:

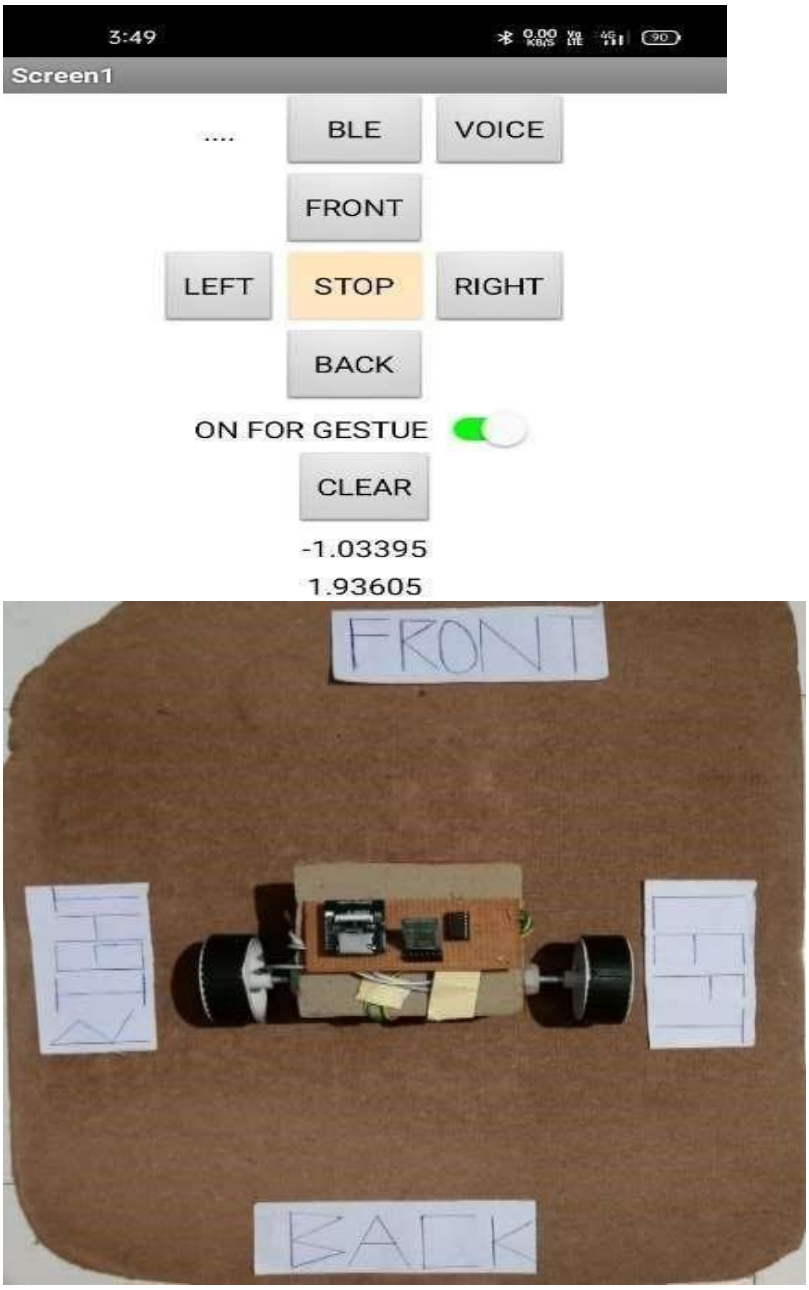

Fig 4:FinalExperimentalResult

CONCLUSION

This project is both effective and inexpensive. In contrast to other projects, it is a low-cost project with a straightforward and user-friendly design, which gives it uniqueness. It is also simpler to utilize the Bluetooth RC Controller application. The robot can be utilized for surveillance because of its small size. This robot might be used by the army to locate and detonate concealed landmines with a few changes and enhancements. It is possible to spy on people with the robot. With the help

of Internet of Things (IOT) technology, we will be able to add sensors to this robot in the future to monitor specific parameters and increase efficiency.We can also add a wireless camera in order to include more security features. The wheelchair ought to be equipped with a health monitoring device that can gauge vital signs like blood pressure, pulse, and temperature. There should be established upper and lower ranges, and if either of these ranges is exceeded, the caregiver should be alerted right away.

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