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"VOICE CONTROLLED ROBOTIC CAR"

MRS. GHOUSIA SANOBER SABREEN[1], RANJITH KUMAR S[2], RAHUL PRABHAKAR GITTE[3], REKHA G[4], SADIYA[5]

Asst. Professor, ECE-Department, Ballari Institute of Technology and Management, Jana Gangothri Campus, Ballari-Hospet Road, Allipur, Ballari, India[1]

ECE-Department, Ballari Institute of Technology and Management, Jana Gangothri Campus, Ballari-Hospet Road, Allipur, Ballari, India[2-5]

Abstract: This project is designed to control a robot with voice commands. An Android application with a microcontroller is used to complete the required tasks. The connection between the Android application and the vehicle is provided via Bluetooth technology. The robot is controlled by buttons in the app or commands from the user. Two DC servo motors connected to the microcontroller on the receiver side facilitate the movement of the robot. The command from the mobile application is converted into a digital signal via the Bluetooth RF transmitter and sent to the appropriate distance of the robot (approximately 100 meters). At the end of the receiver, the data is determined by the receiver and fed to the microcontroller, which ensures smooth operation of the DC motor. The purpose of the voice-controlled robot car is to perform tasks by listening to the user's commands. In order for users to work effectively on the robot, prior preparation is required. Similarly, program code is used to give instructions to the controller.

Keywords: Robot, Design, Fabrication, Sensor, Automation.

I. INTRODUCTION

Our goal is to create a robot car that can be controlled with human voice commands. Many of these systems are called voice control systems (SCAS). Our design is an example of the process described above. The idea is to create a robot that works with voice commands. Remote control of robots from mobile phones; There are many communication guidelines between robots and smartphones. Smartphones are a good interface for remotely automated robots. It has many useful features. In this design, a microcontroller Android application was used to perform the necessary tasks. Bluetooth technology facilitates the connection between applications and robots. The outgoing command will be sent over the channel and received by the module.

The purpose of a Voice Controlled Vehicle (VCRV) is to listen and follow the user's commands. Here the system needs emphasis training, after which the device will start to understand the given commands; and commands are added with numbers. The main purpose of creating VCRV is to analyze the human voice and study commands. The most basic commands are back, forward, right, left and stop the robot. The car will be controlled wirelessly using an Android smartphone, and our goal is to make a simple and economical robot car by using smartphone technology very well. Currently, the vehicle is autonomous, and all work is done by the driver. All actions such as starting/stopping, braking, shifting, acceleration require manpower. However, new technologies are now being developed that can be combined with traditional tools and transformed into new vehicle information. The emergence of the concept of gesture in the age of technology has narrowed the gap between the physical world and the digital world. We like to use technology for humans for all the dangerous work. Although these robots are autonomous in their early stages, they can now be controlled with voice and gestures. These gesture and speech recognition tools can be interpreted through the interaction between computers and human body language. This creates communication between technology and people. The aim of this project is to increase the overall safety of the robot and facilitate its control [1]. Use advanced mobile phones to give voice instructions. A human rights robot is built from a small-scale controller-based platform and can learn the current environment. The feasibility of volume control with separate transmissions has been evaluated through comprehensive analysis. The success rate is determined by the bottom search results. Prediction development will include applications in industry, medical facilities, and their models, including environmental laboratories [2]. Labour supply is the world's biggest problem. With this device, they can move around on their own from the wheelchair by giving voice commands via Bluetooth. If it detects a problem while moving, it warns the user and stops. In addition, it can be checked whether there is a fire or smoke explosion due to an emergency by calling the specified number to get the necessary help. Prototypes are created by combining all functions into one module [3].

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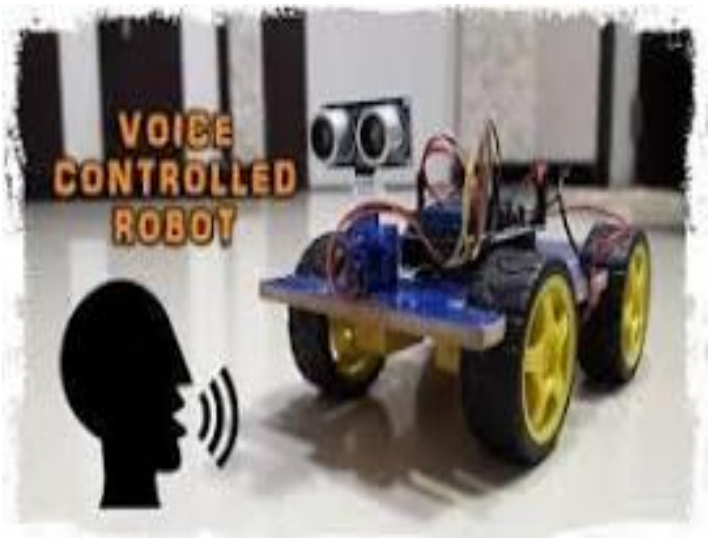

Fig.1. Voice Controlled Robotic Car.

Labour supply is the world's biggest problem. With this device, they can move around on their own from the wheelchair by giving voice commands via Bluetooth. If it detects a problem while moving, it warns the user and stops. In addition, it can be checked whether there is a fire or smoke explosion due to an emergency by calling the specified number to get the necessary help. Prototypes are created by combining all functions into one module [3]. Voice controlled robot. The software part includes advanced algorithms that transform the desired message into a set of target elements, as well as control algorithms that ultimately enable the robot to act according to specific instructions. The writing process here is based on grammar. This speech recognition can be achieved using a microphone or an Android application [4]. Personal robotic assistants help reduce the physical labour required by people in daily tasks. The goal is to use voice control as a Personal Advisor (IPA) that can perform many tasks or services for individuals. This puppy is specifically designed for this group of people because its main purpose is to provide assistance to elderly or disabled people [5]. This article describes basic tools for face, object, speech and recognition. Use online cloud servers. Voice signal instructions are converted into text messages sent to the robot via the Bluetooth network [6].

II. PURPOSE

Voice controlled cars are used to operate robots from mobile devices. By connecting the mobile phone to the circuit, the robot can be controlled with voice commands and problems can be detected.

III. METHODOLOGY

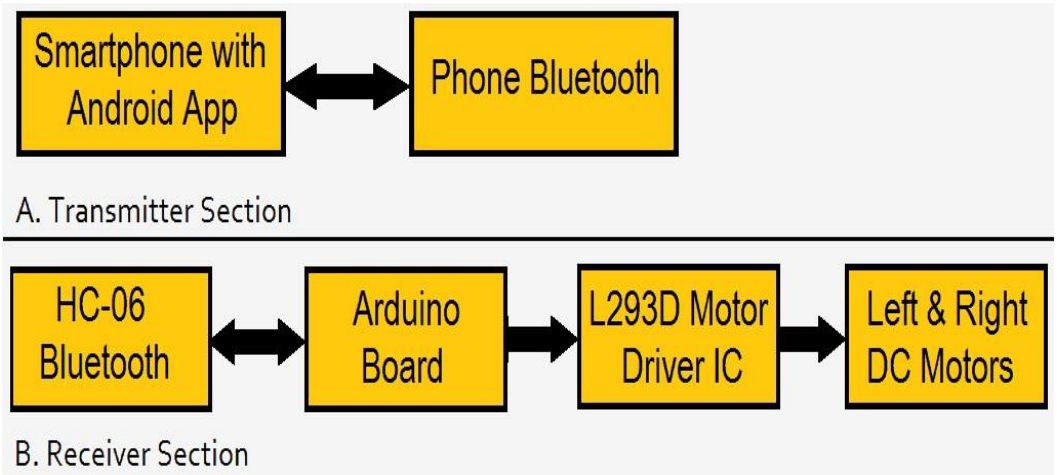

Fig.2. Internet Of Things Schematic showing system architecture.

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The above block diagram depicts the basic connection of the of the Voice Controlled Robotic Car.

Required items include Bluetooth module, ultrasonic sensor, servo motor, motor driver expansion board L293D, Arduino UNO, DC motor, battery (5v-10v), human metal wheels (1 x 4). Connection consists of the following steps:

- A smartphone with an application that converts commands into text and sends them to the vehicle via Bluetooth. Receive text from smartphone and send to microcontroller.
- A Bluetooth module on the car that can receive the text from the smartphone and forward it to a microcontroller.
- Microcontroller in the car that can process text and control motors based on command.
- A motor driver IC on the car that can drive the motors according to the signals from the microcontroller.
- There are two DC motors in the car and the motor driver integrated can make the wheels move in different directions.

IV. LITERATURE SURVEY

Human-Computer Interface (HRI) is used by or with humans and is an area of research for understanding, measuring, and designing robotic systems. Human-robot communication takes many forms, and this information is influenced by the relationship between humans and robots.

The robot model is designed using human-robot interaction (HRI) and is controlled by user-specific commands given by the robot user. The design uses an Android phone for speech recognition. To store written words, convert them to numbers. Human voice commands are carried out by the robot with a built-in microphone. The Bluetooth transceiver module also receives and sends commands to the Arduino robot as it controls the description of the robot based on the commands it receives. According to the voice command, the robot can stop in the direction of "forward", "backward", "left", "right", "backward" and can stop forward, backward and left. The model was designed to overcome the problems of manual wheelchairs and provide people with physical disabilities with a better independent life.

V. EVALUATION AND RESULTS

Voice recognition using the microphone on an Android smartphone. Conversations are analyzed and translated into English using Android operating system code and artificial intelligence software. Speech recognition is an integrated field of communications technology that creates systems and processes that enable computers to recognize spoken words and translate them into text. Automatic speech recognition (ASR) is also called computer speech recognition or speech-to-text (STT). It combines knowledge and research from English, computer science and electrical engineering. Theoretically, speech recognition has a long history and has experienced many waves of innovation. Recently, this field has benefited from advances in deep learning and big data. These advances are not only about the growth of educational materials published in the field, but more importantly the adoption of deep learning in many ways when building and using language skills in the international market.

The project was completed in accordance with the specifications and requirements. Simple things can be controlled with your voice. The proposed system is based on voice control of the robot and helps control the robot with voice commands received from the Android application. The voice control of the vehicle is controlled by the voice command given by the user device. These voice commands must be given from the Android application installed on the user's Android phone. Voice recognition is done in the Android application and commands are sent to the voice control robot. The microcontroller mounted on the vehicle determines the commands and gives the necessary commands to the motors connected to the vehicle.

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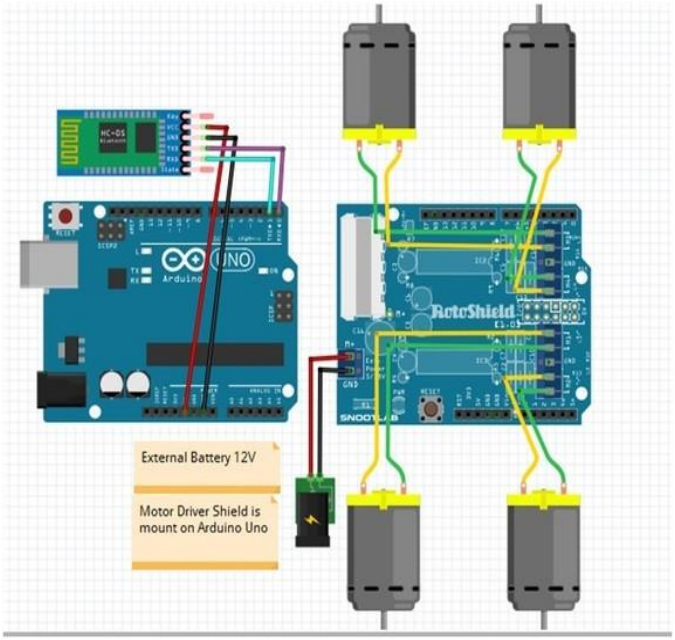

Fig.3. Circuit connections for the Voice Controlled Robotic car.

VI. CONCLUSION

The "Voice Control Robot" project has many applications now and in the future. Features may be added in the future to make the project better. It is widely used in military, home security, rescue work, business, medical assistance, and other work. The project is easy to use and therefore the robot is beneficial to human life. Voice-controlled robots are useful for people with disabilities and for surveillance purposes. It is easy to use this bot for monitoring as it uses simple commands. It can be used for surveillance purposes. We can use the network. Useful for areas that people cannot access. Since these robots are small in size, we introduced these robots for security purposes. Speech recognition software has the ability to recognize voice commands and is also sensitive to ambient noise.

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