Voice- Controlled Security For Car Holders Using Android

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Abstract- *Today human-machine interaction is moving away from mouse and pen and is becoming pervasive and much more compatible with the physical world. With each new day the gap between machines and humans is being bridged with the introduction of new technologies to ease the standard of living. As the Smartphone era has evolved with innovative android based applications, engineers are improvising them to improve robotic vehicles which diminish the aforesaid abyss. The next level of security is given to the car holders. In general, the car gets started just by opening the ignition lock by the key but here apart from key the voice-controlled password is given to the holders by which no one could start or control the car just by the key. If one has to drive or control the car then he should have his key as well as he should be aware of his password.*

Keywords- Ignition lock, Voice-Controlled password.

I. INTRODUCTION

Human-Robot Interaction (HRI) is a field of study dedicated to understanding, designing, and evaluating robotic systems for use by or with humans. Interaction, by definition, requires communication between robots and humans. Communication between a human and a robot may take several forms, but these forms are largely influenced by whether the human and the robot are in close proximity to each other or not. Thus, communication and, therefore, interaction can be separated into two general categories:

Remote interaction – The human and the robot are not co-located and are separated spatially or even temporally (for example, the Mars Rovers are separated from earth both in space and time).

Proximate interactions – The humans and the robots are co-located (for example, service robots may be in the same room as humans).

Within these general categories, it is useful to distinguish between applications that require mobility, physical manipulation, or social interaction. Remote interaction with mobile robots often is referred to as teleportation or supervisory control, and remote interaction with a physical manipulator is often referred to as telemanipulation. Proximate interaction with mobile robots may take the form of a robot assistant, and proximate interaction may include a physical interaction. Social interaction includes social, emotive, and cognitive aspects of interaction. In social interaction, the humans and robots interact as peers or companions. Importantly, social interactions with robots appear to be proximate rather than remote. Because the volume of work in social interactions is vast, we present only a brief survey; a more complete survey of this important area is left to future work.

In this paper, we present a survey of modern HRI. We begin by presenting key developments in HRI-related fields with the goal of identifying critical technological and scientific developments that have made it possible for HRI to develop as a field of its own; we argue that HRI is not simply a reframing and reformulation of previous work, but rather a new field of scientific study. To support this argument, we identify seminal events that signal the emergence of HRI as a field. Although we adopt a designer-centered framing of the paper, work in the field requires strong interdisciplinary blends from various scientific and engineering fields.

After surveying key aspects in the emergence of HRI as a field, we define the HRI problem with an emphasis on those factors of interaction that a designer can shape. We then proceed to describe the application areas that drive much of modern HRI. Many of these problems are extremely challenging and have strong societal implications. We group application areas into the previously mentioned two general categories, remote and proximate interactions, and identify important, influential, or thought-provoking work within these two categories. We follow this by describing common solution concepts and barrier problems that cross application domains and interaction types. We then briefly identify related work from other fields involving humans and machines interacting, and summarize the paper.

II. COMPONENTS DETAIL

1. AT89C51

AT89C51 is and ATMEL family microcontroller. It is a low power high performance CMOS based microcontroller. The device is manufactured using Atmel's high-density nonvolatile memory technology.

AT89C51 has following features:

Receiving antenna from hardware. This is providing simplest architecture for the students to get familiar with robot and Bluetooth communication.

The main objectives of the project are

- Operating the Robot wirelessly through mobile phone.
- Usage of Android touchscreen smart phone in performing the task.
- Bluetooth wireless transmission.
- Indicating Robot directions using LED indicators.

4KB of PROM that is flash memory for programming, 128 bytes of RAM, 4 ports P0, P1, P2 and P3 works as I/O lines so makes 32 I/O lines, Two 16 bit Timer/Counter, 4 interrupts: 2 interrupts for external input and output, 1 interrupt for serial communication, 1 interrupt for time and counter, on chip oscillator and clock circuitry.

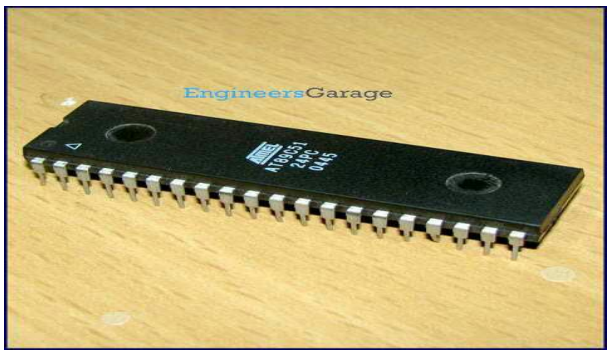

Figure 1. AT89C51

2. HC Serial Bluetooth

HC Serial Bluetooth product consists of Bluetooth serial interface module and Bluetooth adapter. Bluetooth serial module is used for converting serial port to Bluetooth. This module has two modes: master and slaver device.

Step to connect:

- Connect the wiring, power up, while the device is not connected, the Bluetooth module board has a white LED flashing
- At PC side, search Bluetooth device. Found name called "HC-05" device
- Connect it, and passcode is "1234"
- While connection is ok, you can see the LED become always on

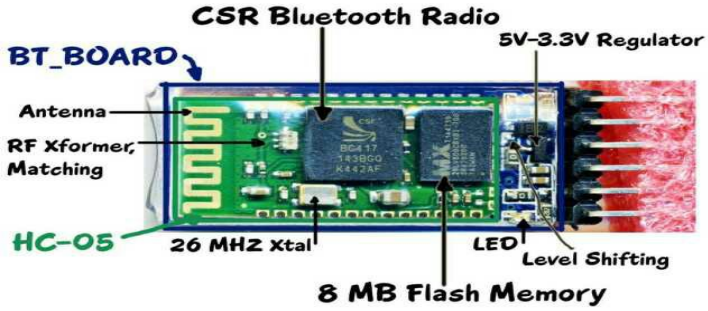

Figure 1. HC-05 Bluetooth Module

The "HC-05" Bluetooth module works on getting AT commands from computer of from programming done in microcontroller 8051. One can check HC-05 communication with computer by using HyperTerminal and by writing AT if response is OK then communication starts. AT+VERSION gives the version of Bluetooth used.

L293D MOTOR DRIVER IC:

L293D is motor driver that is connected with motors. It takes signal from microcontroller 8051 and according it moves motors clockwise or anticlockwise. It is a dual H-bridge motor driver where H-bridge is an electronic circuit that enables the voltage to be applied across load in either direction and because of that it is easy to move motor in both directions i.e. clockwise and anticlockwise. Its output current is up to 1A and voltage range is 4.5V-36V. It is and 16 PIN IC.

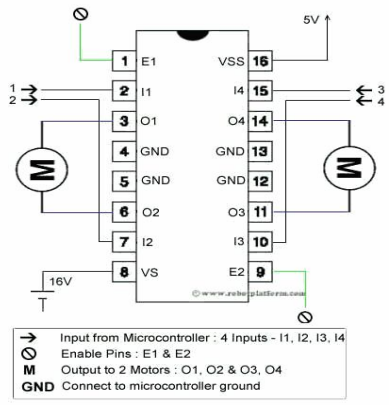

Figure 3.

The direction of rotation of motors depends upon the supply voltage as:

Pin 2 = Logic 1 and Pin 7 = Logic 0 | Clockwise Direction
Pin 2 = Logic 0 and Pin 7 = Logic 1 | Anticlockwise Direction

DC Motors:

DC motor works on dc signal received from the motor driver i.e. L293D. It rotates clockwise and counterclockwise direction. Normal supply voltage to the dc motor is 5 volt dc. DC motor has 2 connections which are connected to motor driver. To change the direction of motor polarity is reversed means if one end of motor is given logic 1 i.e. 5 volt supply and other end is given Logic 0 i.e. ground signal then reversing the connection means changing the logic 1 and logic 0 connections. These motor helps in movement of robotic car in different directions.

III. BLOCK DIAGRAM

Based on the program loaded into the microcontroller various signals go to the Motor Driver IC. Based on the input signals to the Motor Driver, the DC motors works. The application is connected to the Microcontroller the status of the application changes to "Connected". Before giving the voice commands the microphone button has to be pressed. This particular application deals with the conversion of the received voice commands to text and transfers the text to the connected Bluetooth module. The Microcontroller receives the text from the Bluetooth module as characters and stores them as a string. There are words pre-programmed into the Microcontroller, whenever the received text matches with the preprogrammed words, the Microcontroller executes the command that is assigned to the words. So that vehicle controlled by using voice. According to commands received from android phone, the kinematics of the DC Motor is controlled. The robotic vehicle can be easily controlled by installing the apk files (Android Application Package) of the applications on the android smart phone. Based on the voice commands (forward, reverse, right, left and stop) the vehicle controlled.

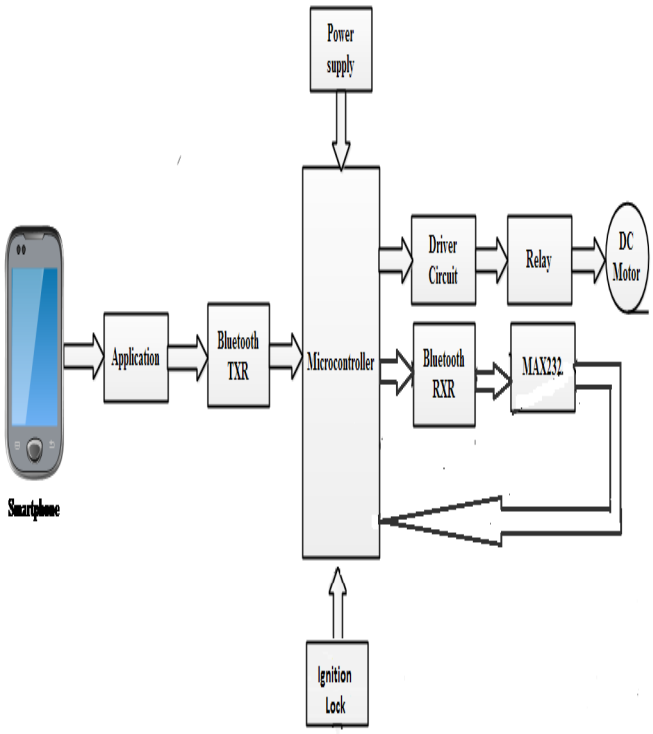

Figure 4. system design

IV. APPLICATIONS

- Bluetooth based home automation system using Android phones.
- Exploiting Bluetooth on android mobile devices for home security application
- Surveillance Application: An android application can be used to send live feeds from the camera on the android Smartphone to a server, which can then be directed to a PC via the web.
- Fire Fighting Robot with Android Application.
- Remote control of car or vehicle.
- Military applications.
- Construction Robot.
- Load carrying

V. CONCLUSION AND FUTURE WORK

Presents three approaches of controlling a robotic vehicle using an android Smart phone. Android Smart Phones are available at reasonable price in the market. As there is a huge increment in the number of people using android smart phone, the possibility of exploiting various applications using the smart phone also increases. Every android smart phone has a Bluetooth which provides the ability to connect to other Bluetooth devices wirelessly without an internet connection. The robotic vehicle can be easily controlled by installing the

apk files (Android Application Package) of the three applications on the android smart phone. The android application makes use of the sensors within the android device, so no extra charges for different sensors gets included in the project. Then a connection is established between the application and the microcontroller via the Bluetooth module. The instructions are passed from the smart phone to the microcontroller. Based on the instructions different signals are sent out to the motor driver, which ultimately drivers the motors attached to the wheel. This technique could be easily used in other applications. Instead of just one, multiple motor drivers can be used. These motor drivers can be used to control any kind of motor.

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