PROJECT REPORT

**GSM Cell Phone Operating Robot**

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INTRODUCTION

INTRODUCTION :

Radio control (often abbreviated to R/C or

simply RC) is the use of radio signals to remotely control a

device. The term is used frequently to refer to the control of

model vehicles from a hand-held radio transmitter. Industrial,

military, and scientific research organizations make [traffic]

use of radio-controlled vehicles as well.

A remote control vehicle is defined as any

mobile device that is controlled by a means that does not

restrict its motion with an origin external to the device. This is

often a radio control device, cable between control and

vehicle, or an infrared controller. A remote control vehicle

(Also called as RCV) differs from a robot in that the RCV is

always controlled by a human and takes no positive action

autonomously.

One of the key technologies which underpin this

field is that of remote vehicle control. It is vital that a vehicle

should be capable of proceeding accurately to a target area;

maneuvering within that area to fulfill its mission and

returning equally accurately and safely to base.

Recently, Sony Ericsson released a remote control car

that could be controlled by any Bluetooth cell phone. Radio

is the most popular because it does not require the vehicle to be limited by the length of the cable or in a direct line of

sight with the controller (as with the infrared set-up). Bluetooth is

still too expensive and short range to be commercially viable.

HISTORY

HISTORY OF REMOTE CONTROLLED VEHICLES:

**The First Remote Control Vehicle /**

**Precision Guided Weapon :**

This propeller-driven radio controlled boat,

built by Nikola Tesla in 1898, is the original prototype of all

modern-day uninhabited aerial vehicles and precisionguided

weapons. In fact , all remotely operated vehicles in air,land

or sea. Powered by lead-acid batteries and an electric drive

motor, the vessel was designed to be maneuvered alongside

a target using instructions received from a wireless remote controltransmitter. Once in position, a command would be

sent to detonate an explosive charge contained within the

boat's forward compartment. The weapon's guidance system

incorporated a secure communications link between the

pilot's controller and the surface-running torpedo in an

effort to assure that control could be maintained even in the

presence of electronic countermeasures. To learn moreabout

Tesla's system for secure wireless communications and his

pioneering implementation of the electronic logic-gate

circuit read ‘Nikola Tesla — Guided Weapons & Computer

Technology’, Tesla Presents Series Part 3, with commentary

By Leland Anderson.

TECHNOLOGY USED and working

TECHNOLOGY USED :

Dual-Tone Multi-Frequency (DTMF)

Dual-tone multi-frequency (DTMF) signaling is

used for telecommunication signaling over analog telephone

lines in the voice-frequency band between telephone handsets and other communications devices and the

switching center. The version of DTMF used for telephone

tone dialing is Known by the trademarked term Touch-Tone (canceled March 13,1984), and is standardized by ITU-T

Recommendation Q.23. It is also known in the UK as MF4.

Other multi-frequency systems are used for signaling

internal to the telephone network. As a method of in-band

signaling, DTMF tones were also used by cable television broadcasters to indicate the start and stop times of local commercial insertion points during station breaks for the

benefit of cable companies. Until better out-of-band signaling equipment was developed in the1990s, fast, unacknowledged, and loud DTMF tone sequences

could be heard during the commercial breaks of cable

channels in the United States and elsewhere.

**Telephone Keypad**

The contemporary keypad is laid out in a 3×4

grid, although the original DTMF keypad had an additional

column for four now-defunct menu selector keys. When used

to dial a telephone number, pressing a single key will

produce a pitch consisting of two simultaneous pure tone

sinusoidal frequencies. The row in which the key appears

determines the *low* frequency, and the column determines

the *high* frequency. For example, pressing the '1' key will

result in a sound composed of both a 697 and a 1209 hertz (Hz) tone. Original keypads had levers inside, so each button activated two contacts. The multiple tones are the reason for calling the system multi frequency. These tones are then decoded by the switching center to determine which key was pressed.

A DTMF Telephone Keypad

DTMF Keypad Frequencies (With Sound Clips)

*1209 Hz 1336 Hz 1477 Hz 1633 Hz*

697 Hz 1 2 3 A

770 Hz 4 5 6 B

852 Hz 7 8 9 C

941 Hz \* 0 # D

DTMF Event Frequencies

*Event Low Freq. High Freq.*

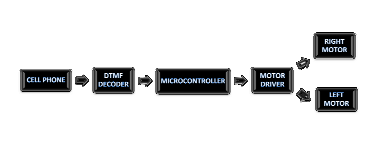
Busy Signal 480 Hz 620 Hz

Dial Tone 350 Hz 440 Hz

Ringback Tone(US) 440 Hz 480 Hz

PRLIMINARY DESIGN

1. BLOCK DIAGRAM

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**DESCRIPTION:**

As shown in the above block diagram, fi is the Cell Phone. So, it acts as a DTMF generator with tone depending upon key pressed. DTMF Decoder, i.e., IC CM8870 decodes the Received tone & microcontroller. The controller

appropriate output is given to Motor Driver IC L293D which

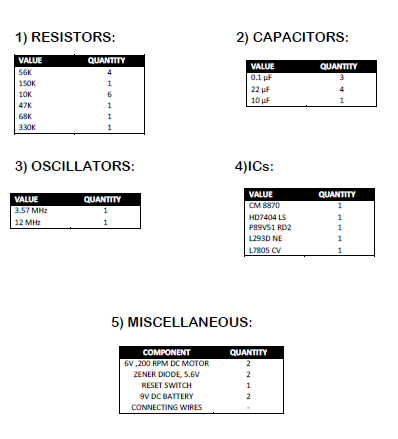
will drive the two DC Motors connected to it. The concept

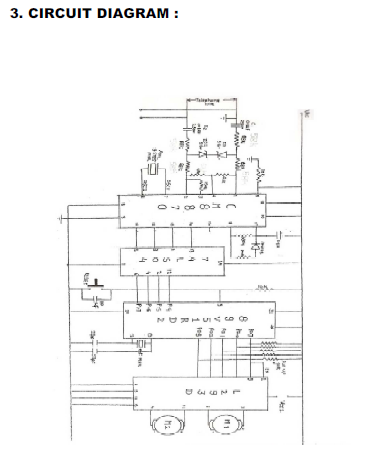
used for driving is ‘Differential Drive’. So, ultimately the two

motors rotate according to the key pressed on the keypad of the cellphone.

2) COMPONENTS USED:

**VALUE QUANT**

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SOFTWARES USED

SOFTWARES USED :

**1. pcbwizard**

ROLE IN THE DESIGN:

Pcbwizard proved to be a very handy & easyto-

use tool for the PCB layout process. Many of its features

were utilized leading to an accurate & efficient design. It has

Design Error Check & Electrical Rule Check tools which

proved to be helpful in the design. It is loaded with a huge

component list that is categorized in various libraries for

giving simplicity. Placement of components is also very easy

& they can be rotated in 360⁰ to customize the design.

**2. μVision Keil**

ROLE IN THE DESIGN:

μVision Keil provides IDE for 8051 programming

& is very easy to use. When starting a new project, simply

select the microcontroller you use from the Device Database

and the μVision IDE sets all Compiler, Assembler, Linker, and

Memory options. It’s device database is large which supports

many ICs of the 8051 family. A HEX file can be created with the help of Keil which is required for burning onto chip. It has a powerful debugging tool which detects most of the errors in the program.

WORKING WITH \_Vision Keil :

**3. FlashMagic**

ROLE IN THE DESIGN:

Flash Magic is a PC tool for programming flash

based microcontrollers from NXP using a serial or Ethernet

protocol while in the target hardware. It has some excellent

features like changeable baud rate, erase all flash before

programming, setting security bits etc. The HEX file created with

the help of keil was selected through it for programming the

microcontroller.

APPLICATIONS

APPLICATIONS :

**Scientific**

Remote control vehicles have various scientific

uses including hazardous environments, working in the deep

ocean , and space exploration. The majority of the probes to

the other planets in our solar system have been remote

control vehicles, although some of the more recent ones were partially autonomous. The sophistication of these devices has fueled greater debate on the need for manned spaceflight and exploration. The Voyager I spacecraft is the first craft of any kind to leave the solar system. The martian explorers Spirit and Opportunity have provided continuous data about the surface of Mars since January 3, 2004.

**Military and Law Enforcement**

Military usage of remotely controlled military

vehicles dates back to the first half of 20th century. Soviet Red Army used remotely controlled Teletanks during 1930s in the Winter War and early stage of World War II. There were also remotely controlled cutters and experimental remotely controlled planes in the Red Army.

Remote control vehicles are used in law

enforcement and military engagements for some of the same

reasons. The exposure to hazards are mitigated to the person

who operates the vehicle from a location of relative safety.

Remote controlled vehicles are used by many police

department bomb-squads to defuse or detonate explosives.

See Dragon Runner, Military robot.

Unmanned Aerial Vehicles (UAVs) have

undergone a dramatic evolution in capability in the past

decade. Early UAV's were capable of reconnaissance missions

alone and then only with a limited range. Current UAV's can

hover around possible targets until they are positively

identified before releasing their payload of weaponry.

Backpack sized UAV's will provide ground troops with over

the horizon surveillance capabilities.

**Search and Rescue**

UAVs will likely play an increased role in search

and rescue in the United States. Slowly other European

countries (even some developing nations) are thinking about

making use of these vehicles in case of natural calamities &

emergencies. This can be a great asset to save lives of both

people along with soldiers in case of terrorist attacks like the

one happened in 26 Nov, 2008 in Mumbai, India. The loss of

military personnel can be largely reduced by using these

advanced methods. This was demonstrated by the successful

use of UAVs during the 2008 hurricanes that struck Louisiana

and Texas.

**Recreation and Hobby**

See Radio-controlled model. Small scale remote

control vehicles have long been popular among hobbyists.

These remote controlled vehicles span a wide range in terms

of price and sophistication. There are many types of radio

controlled vehicles. These include on-road cars, off-road

trucks, boats, airplanes, and even helicopters. The "robots"

now popular in television shows such as Robot Wars, are a

recent extension of this hobby (these vehicles do not meet the classical definition of a robot; they are remotely controlled by a human). Radio-controlled submarine also exist.

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