PROJECT REPORT

OBJECT FOLLOWING ROVER And Remotely controlled vehicle(ROVER)

GUIDED BY :

PROF K T DEEPAK

DONE BY :

SURAJ MALTHUMKAR

V S V SOMESHWARA SARMA

PRAVEEN CHAUHAN

INDEX

Page No.

INTRODUCTION

Robotics is part of today communication. In today's world ROBOTICS is fast growing and interesting field. It is simplest way for latest technology modification. Now a day's communication is part of advancement of technology, so we decided to work on ROBOTICS field, and design something which will make human life simpler in day today aspect. Thus we are supporting this cause.

We have used two D.C motors to give motion to the ROBOT. The construction of the ROBOT circuit is easy and small .The electronics parts used in the ROBOT circuits are easily available and cheap too.

DESIGN OF THE PROJECT

DESCRIPTION:

Basically circuit consist of following blocks:

- IR Sensors
- Microcontroller ATMEGA32
- Motor Driver L298N H-BRIDGE
- Motors
- DTMF Decoder
- Ardiuno
- Mobile phone

Let us take the overview of each block one by one.

- **IR Transmitter & Receiver**

The IR Transmitter block mainly used to generate IR signal. It uses timer IC555 in astable multivibrator mode to generate square wave which have continuous pulses of 50% duty cycle of frequency 38 KHz. This transmitter is so arranged that the IR rays are focused on the sensor.

IR sensor (TSOP 1738) which gives normally 5v at output of it. After receiving infrared light at output of sensor we get 0v.

- **Microcontroller**

This is the most important block of the system. Microcontroller is the decision making logical device which has its own memory, I/O ports, CPU and Clock circuit embedded on a single chip.

- **Driver**

L298 N H-BRIDGE is used as driver IC. Motors are connected to this IC. According to program in µc it drives the two left and two right motors.

ARDIUNO

What is Arduino?

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on Wiring), and the HYPERLINK "https://www.arduino.cc/en/Main/Software"Arduino HYPERLINK "https://www.arduino.cc/en/Main/Software" Software (IDE), based on Processing.

Over the years Arduino has been the brain of thousands of projects, from everyday objects to complex scientific instruments. A worldwide community of makers - students, hobbyists, artists, programmers, and professionals - has gathered around this open-source platform, their contributions have added up to an incredible amount of accessible knowledge that can be of great help to novices and experts alike.

Arduino was born at the Ivrea Interaction Design Institute as an easy tool for fast prototyping, aimed at students without a background in electronics and programming. As soon as it reached a wider community, the Arduino board started changing to adapt to new needs and challenges, differentiating its offer from simple 8-bit boards to products for IoT applications, wearable, 3D printing, and embedded environments. All Arduino boards are completely open-source, empowering users to build them independently and eventually adapt them to their particular needs. The software, too, is open-source, and it is growing through the contributions of users worldwide.

Why Arduino?

Thanks to its simple and accessible user experience, Arduino has been used in thousands of different projects and applications. The Arduino software is easy-to-use for beginners, yet flexible enough for advanced users. It runs on Mac, Windows, and Linux. Teachers and students use it to build low cost scientific instruments, to prove chemistry and physics principles, or to get started with programming and robotics. Designers and architects build interactive prototypes, musicians and artists use it for installations and to experiment with new musical instruments. Makers, of course, use it to build many of the projects exhibited at the Maker Faire, for example. Arduino is a key tool to learn new things. Anyone - children, hobbyists, artists, programmers - can start tinkering just following the step by step instructions of a kit, or sharing ideas online with other members of the Arduino community.

There are many other microcontrollers and microcontroller platforms available for physical computing. Parallax Basic Stamp, Netmedia's

BX-24, Phidgets, MIT's Handyboard, and many others offer similar functionality. All of these tools take the messy details of microcontroller programming and wrap it up in an easy-to-use package. Arduino also simplifies the process of working with microcontrollers, but it offers some advantage for teachers, students, and interested amateurs over other systems

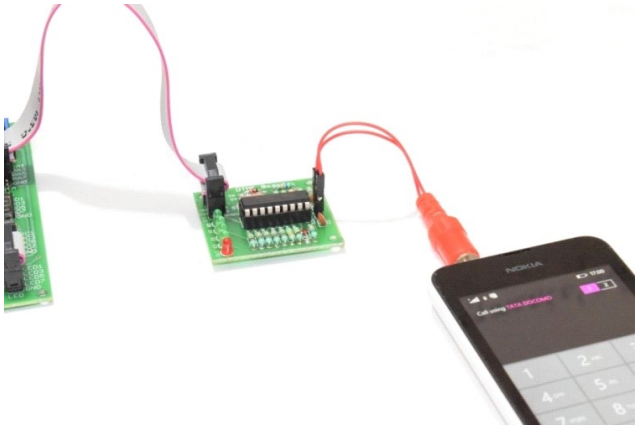
DTMF:

Dual-tone multi-frequency signaling (DTMF) is an in-band telecommunication signaling system using the voice-frequency band over telephone lines between telephone equipment and other communications devices and switching centers.

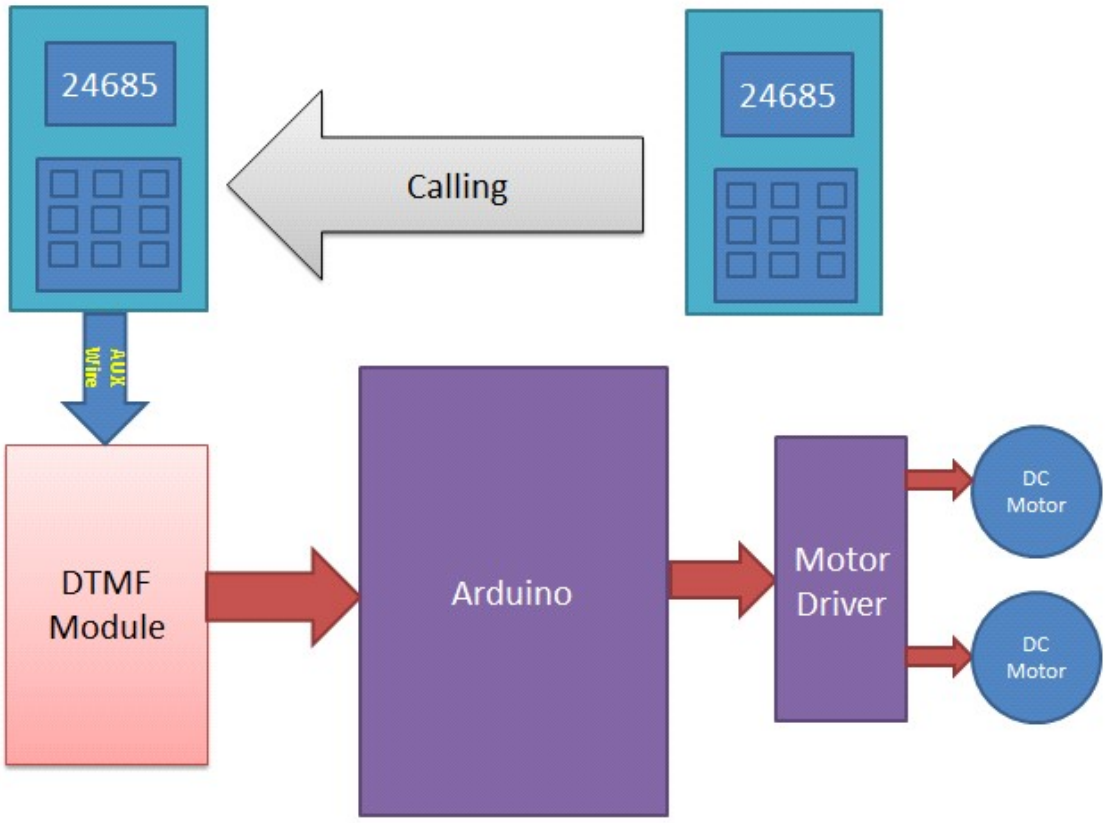
The engineers had envisioned telephones being used to access computers, and automated response systems.[citation needed] They consulted with companies to determine the requirements. This led to the addition of the number sign (#, ''pound'' or "diamond" in this context, "hash", "square" or "gate" in the UK, and "octothorpe'' by the original engineers) and asterisk or "star" (*) keys as well as a group of keys for menu selection: A, B, C and D.

Keypad:

The DTMF telephone keypad is laid out in a 4×4 matrix of push buttons in which each row represents the low frequency component and each column represents the high frequency component of the DTMF signal. Pressing a key sends a combination of the row and column frequencies.

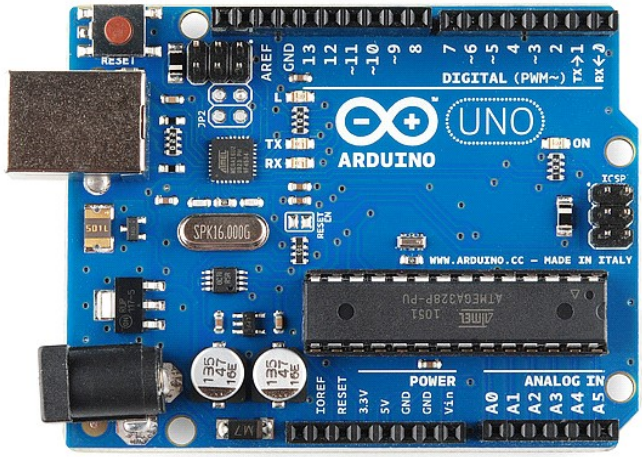

NOKIA

BLOCK DIAGRAM

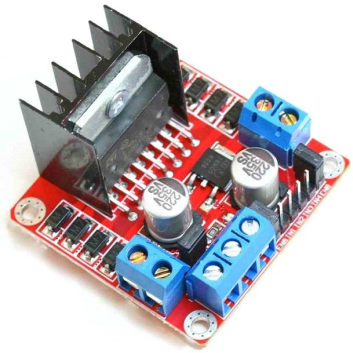


COMPONENTS USED :

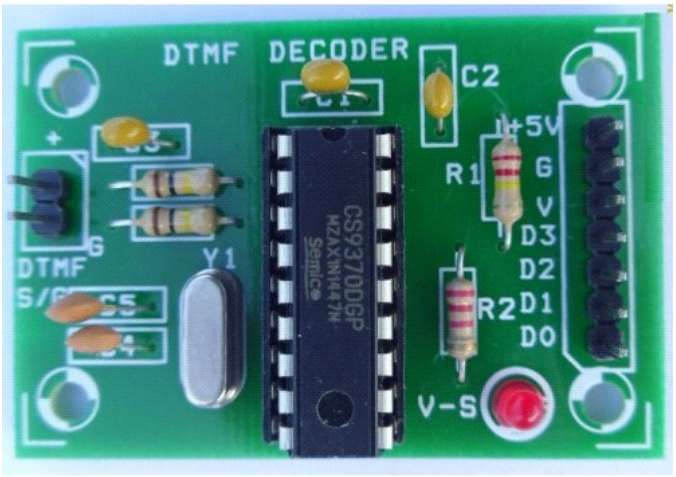
1)Ardiuno



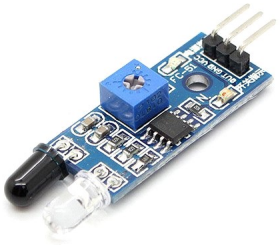
2)Motor Driver -L298N H-bridge



3)DTMF Decoder



4)IR sensors



5)Motors

1)2-1000 RPM

2)2-500 RPM

6)Batterys 9V-2

7)Mobile phone

Programs used for Feed the code in the ROVER

1) Ardiuno compiler

OBJECT FOLLOWING ROVER AS CONTROL SYSTEM

Here we are relating our project ROVER SSP to control system

As we have gone through the components ,the process , actuators ,controller is matched as follows

Process is taken place in Ardiuno board and DTMF Decoder .

Actuators are the motors .

Controller is thee mobile phone .

FURTHER IMPROVEMENTS & FUTURE SCOPE :

1. Adding a Camera:

If the current project is interfaced with a camera (e.g. a Webcam) robot can be driven beyond line-of-sight & range becomes practically unlimited as networks have a very large range.

2. Use as a fire fighting robot :

By adding temperature sensor, water tank and making some changes in programming we can use this robot as fire fighting robot.

3.Can be used in Military

As it is a ROVER(Remote opreational vedio enhanced receiver) can act as a spy , Assassin .