SPY ROBOT USING DTMF TECHNOLOGY

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Abstract: To stay up to date with the quickly developing need of people, mechanical technology and mechanization assumes an unmistakable part all through. The paper presents a model which empowers the controlling of the robot distantly by means of cell phone through Double Tone Multi Frequency (DTMF) decoder. DTMF is perhaps the latest and cutting edge innovation for of information transmission. It is more effective and better than the Bluetooth and Wi-Fi as in the scope of DTMF is extremely huge for example the gadgets can be worked through DTMF independent of the geological area of the individual controlling it; additionally, DTMF is coordinated communication not at all like Bluetooth in which up to 7 gadgets can be matched and Wi- Fi where very nearly 10 gadgets can be subsequently giving greater security to the channel through which information is being sent. DTMF ordinarily discovers its utilization in protection observation just as call focuses. The utilization of DTMF can be additionally reached out by utilizing this innovation in everyday life, for instance, for contrastingly capable individual this can fill in as their all-inclusive arm permitting them to screen their homes from one spot and in any event, assisting them with picking and hold things by observation
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Index Terms -
Border security, surveillance, IOT, Arduino, Night Vision Camera.

I. INTRODUCTION

Prior communication was confined distinctly to wired methods yet as the progression occurred, remote communication came into picture. Remote communication happened by means of Wi-Fi, Bluetooth, RF (Radio Frequency). Remote Ethernet similarity coalition was dispatched by Bright in 1966 which was later rename as Wi-Fi partnership which characterized the 802.11 norm for remote correspondence. By 2000, Bluetooth consolidated gadgets were out on the lookout and in 2002, IEEE 802.15 standard was supported for Bluetooth innovation. Above expressed innovation has a few impediments concerning the scope of communication for example gadgets can impart simply up to a specific distance in particular. Term DTMF was authored in 1963 by Ringer Frameworks under the brand name "contact tone". Killing the reach and the security issues, a model is created chipping away at DTMF which is additionally clarified in this paper.

With the expect to foster a superior robot that can work with high velocity, simple control and better openness, a calculation was contrived that gave a quicker, solid and precise way to deal with acknowledge a particularly model. Prior the robots were controlled through wired organizations yet now to make robot more clients amicable, they are outlined to make client told work. Consequently, to accomplish the prerequisites we can utilize android as a sight and sound to control the easy to understand robot. To achieve a remote control of the robot an innovation viz. DTMF is utilized. A call is made on the telephone which is joined to the robot and the call is addressed naturally. During the telephone all, any key is pressed by the guest, a DTMF (double tone different frequency) tone is created which is decoded by the DTMF decoder in to a 4-digit twofold number which is additionally taken care of as a contribution to the microcontroller. The unmistakable utilizations of this idea in such robot can be an advanced mobile phone controlled robots where the development of the robot is constrained by a robot based on android stage.

The design of our project facilitates the robotic movement using DTMF technology operated remotely.

II. LITERATURE REVIEW

IEEE paper on a surveillance and rescue robot using android and the internet published in 2016 International conference on communication and signal processing (ICCSP) This paper presents an economical yet effective robot using and Arduino Microcontroller and smartphone.

IEEE paper on a review of wireless technology usage for mobile robot controller published in International conference on system engineering and modeling (ICSEM 2012) This project presents a comparative study of different wireless technology usage for mobile robot controller such as Bluetooth, WIFI or Wireless LAN and 3G

III. METHODOLOGY

The materials in the spy robot using DTMF involve the following electronics components:

1) Arduino Uno

2) L239 D Motor Driver

3) 12 V Lead acid Battery

4) One android device for controlling robot and any other android /iOS device for viewing footage

5) Android 4.0 or up

6) Arduino IDE

7) Servo meter

8) Capacitor

10) Voltage regulator

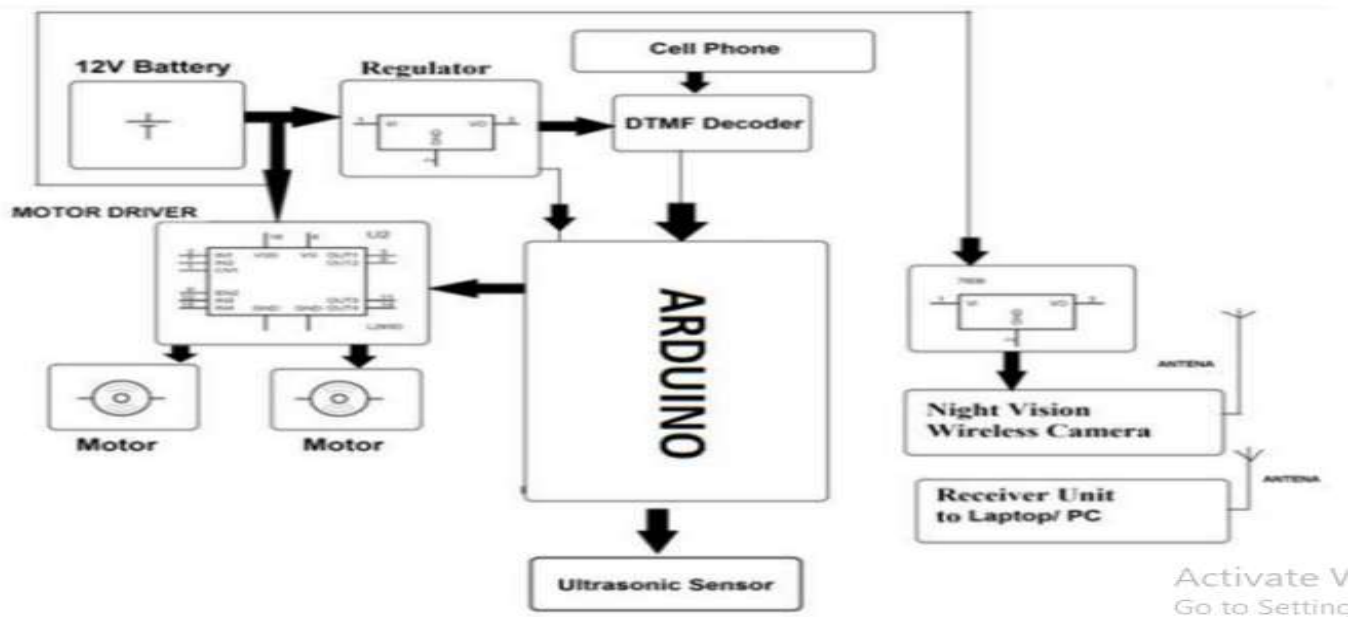11) Two types of led a) flash led b) night vision led

Fig.1 Block diagram of spy robot using dtmf

The working of bot incorporates 5 stages.

1. The portable conveys the message in type of frequency at whatever point a key is pressed. The frequency produced to each tone is superposition of 2 unique frequencies chose in such a way that no two frequencies are necessary different of one another.

2. After the frequency is communicated from the versatile the DTMF decoder gets the sign unravels it as per the decoder table and correspondingly changes over it into advanced sign and sends the information to the microcontroller.

3. The microcontroller is interfaced with DTMF decoder and it gets the yield signal from the DTMF decoder at its PD0 to PD3 pins and as indicated by the program stacked in the ROM it sends the comparing information at its yield pins PC0 to PC3, which is associated with engine driver IC L293D.

4. The engine driver IC gets the information in type of rationale high or low and appropriately turns the engine with the rationale. Rationale high is positive 5 volts while rationale low is 0 volts or ground.

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6. The android application makes an intra network between the cell phone mounted on the bot and the laptop. It sends the continuous video caught by the cell phone to the PC as the bot crosses, in this way, getting the inclusion.

IV. SYSTEM DESIGN

1. L293D

L293D is a Motor driver IC which permits DC engine to drive one or the other way. It chips away at the guideline of H bridge. The H-connect is a hardware which comprises of four exchanging components with the heap at focus The exchanging components Q1, Q2, Q3 and Q4 are typically bi-polar or FET semiconductors and the catch diodes D1, D2, D3 and D4 are normally of a Schottky type diodes. A L293D module has two h-Bridge circuit inside the IC which can turn two dc engine autonomously. The working voltage scope of L293D module is 4.5V to 36V. This module was intended to drive transfers, solenoids, DC and bipolar venturing engines.
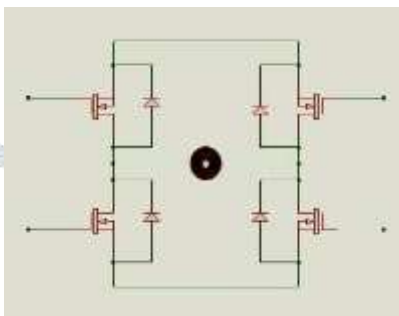

Fig.2. L293D basic architecture

2. DTMF Decoder

The DTMF CM8870 decoder gets the tones communicated by the guest and unravels them into a 4 cycle code. This decoder utilizes a computerized tallying plan to distinguish and interpret each of the 16 potential tone sets into 4digit code . The above shown figure is a finished module of DTMF decoder. The decoder IC has an inbuilt operational enhancer, the communicated signals from telephone are taken care of into rearranging terminal of operational intensifier and the non-altering terminal of operational speaker is associated with reference voltage for example 5V. The pin 3 (Gain Select) is the output of operational speaker; a criticism signal is given to operational intensifier by associating the yield pin GS to upsetting contribution through a resistor. The output of internal Operational Amplifier is passed through a pre filter, which separates the low and high frequency signals. Next section is frequency detector circuit, which is used to detect the frequencies of the limited tones.
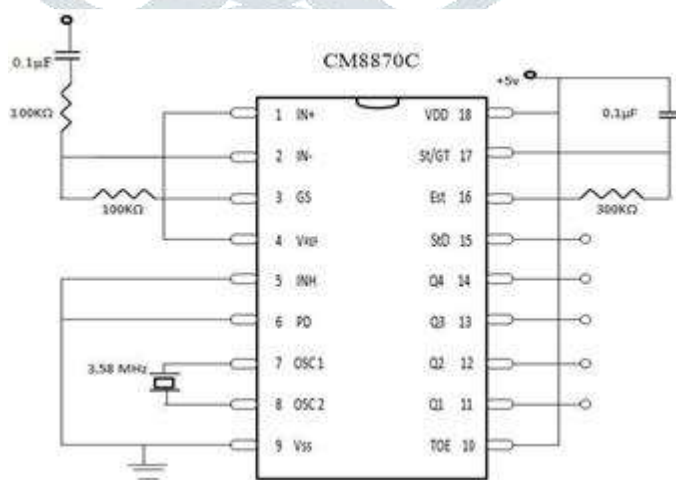

Fig.3.DTMF decoder

V. PROPESED SYSTEM

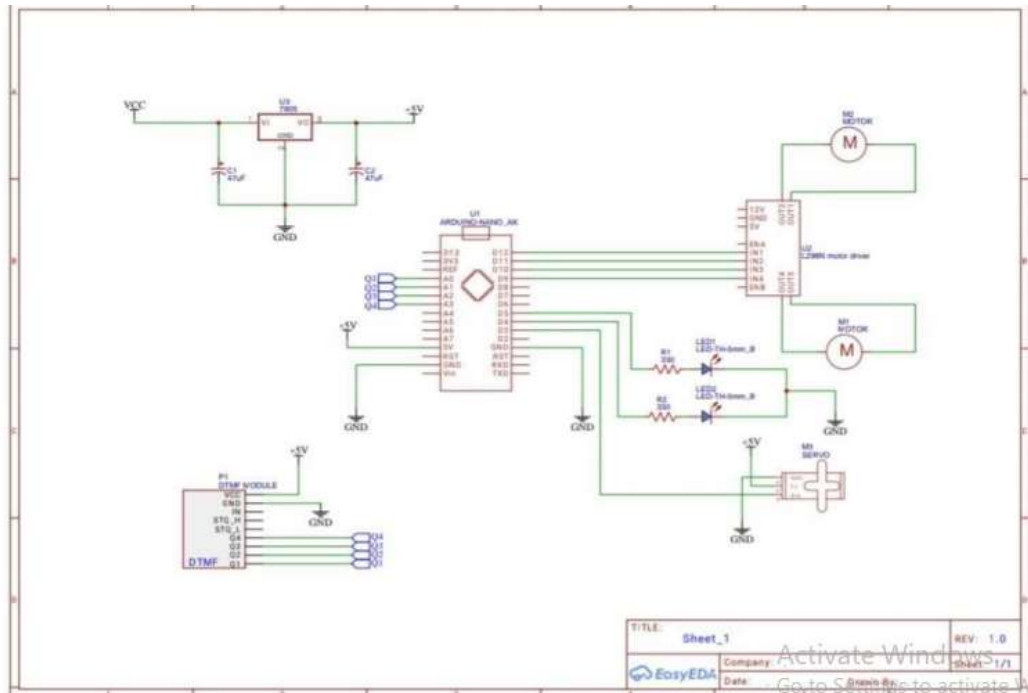A.   Hardware Design:

Fig.4 Hardware simulation

Following components are interfaced to the ARDUINO NANO
:

1)   DTMF MODULE

    Pin A0, A1, A3 of Arduino are connected to Pin Q1, Q2, Q3, Q4 of DTMF module respectively.

2)   L239D Motor driver

    L239D pin IN1: Connected to Pin D12 of Arduino
    L239D pin IN2: Connected to Pin D11 of Arduino
    L239D pin IN3: Connected to Pin D10 of Arduino
    L239D pin IN4: Connected to Pin D09 of Arduino

3)   LED
    It is connected to the Port to D5 and D4 of Arduino.

4)   Servomotor
    Servomotor is connected to port D3 of Arduino.

VI. RESULTS

The spy bot using dual tone multi frequency was successfully created and tested and is working perfectly fine in suitable conditions, with the help of DTMF we were able to marginalize the issue of constraints on range of the device up to which it can be accessed and we were able to access our bot from any range control it according to our commands successfully.
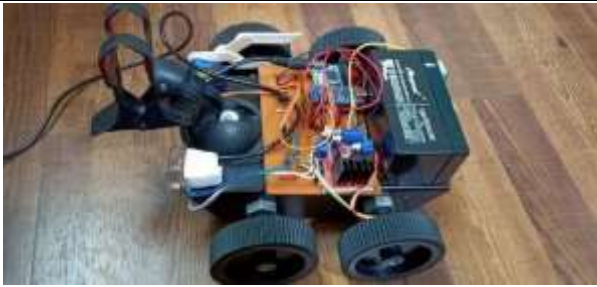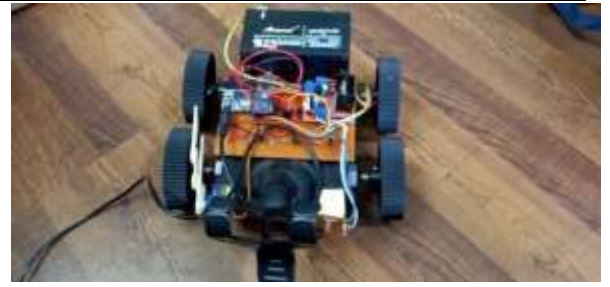
Fig.5 Spy robot using DTMF I

Fig.6 Spy robot using DTMF II

VII) CONCLUSION

Although remote innovation like Bluetooth, Wi-Fi or RF is an incredible jump in method of communication for robots, the reach up to which these remote innovation works effectively in these cases is very
restricted. To conquer this issue of reach constraint of remote communication we brought DTMF innovation into the image. Likewise, with DTMF we had the option to minimize the issue of imperatives on scope of the gadget up to which it very well may be gotten to and we had the option to get to our bot from any reach control it as indicated by our orders effectively

VIII) REFRENCES

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