Vehicle Remote Control System Using Cell Phone

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ABSTRACT:

Path Finder was sent to Mars in 1998. This project deals with DTMF controlled robot. This robot is prototype for the "Path Finder". This robot is a DTMF controlled robot. This can be moved forward and reverse direction using geared motors of 60RPM. Also this robot can take 14EM16 bp.docx turnings towards left and right directions. This project uses l293D as its motor controller. To control the vehicle from remote place we are using a DTMF technique. DTMF (Dual Tone Multi Frequency) is used which converts the desired frequency in to analog signals which is received by DTMF receiver and given to controller. Here we are using LPC2148 as our controller which is the heart of the entire system.Not only the vehicles we can also operate loads from remote place using these techniquesThe controller is used for moving the vehicle according to the frequency received by the DTMF receiver by using a L293D is used for controlling the direction of robot.

Block diagram:
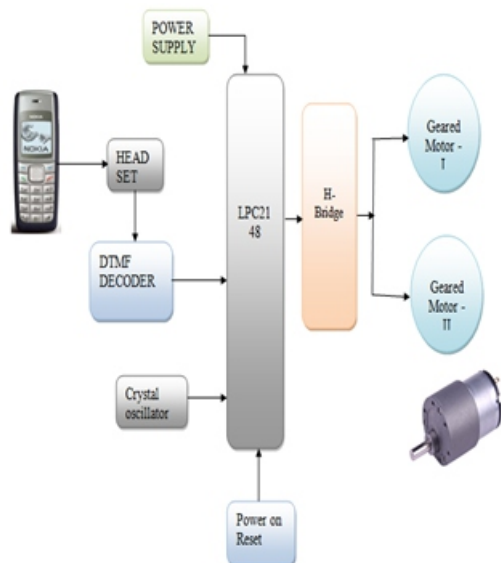
The LPC2148 are based on a 16/32 bit ARM7TDMI-S™ CPU with real-time emulation and embedded trace support, together with 128/512 kilobytes of embedded high speed flash memory.

A 128-bit wide memory interface and unique accelerator architecture enable 32-bit code execution at maximum clock rate. For critical code size applications, the alternative 16-bit Thumb Mode reduces code by more than 30% with minimal performance penalty. With their compact 64 pin package, low power consumption, various 32-bit timers, 4- channel 10-bit ADC, USB PORT,PWM channels and 46 GPIO lines with up to 9 external interrupt pins these microcontrollers are particularly suitable for industrial control, medical systems, access control and point-of-sale. With a wide range of serial communications interfaces, they are also very well suited for communication gateways, protocol converters and embedded soft modems as well as many other general-purpose applications.
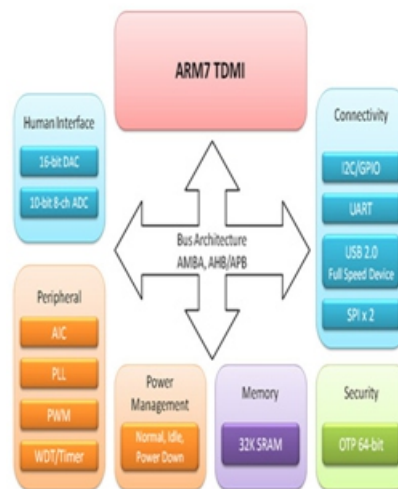
This project uses regulated 3.3V, 500mA power supply. Unregulated 12V DC is used for relay. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac out put of secondary of 230/12V step down transformer.

ARM PROCESSOR:
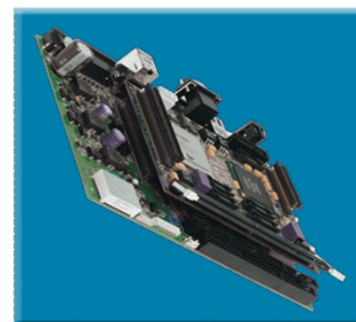
ARM7TDMI Processor Core:

•Current low-end ARM core for applications like digital mobile phones

•TDMI

oT: Thumb, 16-bit compressed instruction set

oD: on-chip Debug support, enabling the processor to halt in response to a debug request

oM: enhanced Multiplier, yield a full 64-bit result, high performance

oI: Embedded ICE hardware

•Von Neumann architecture

DTMF:

Dual-tone multi-frequency signaling (DTMF) 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 that is used in push-button telephones for tone dialing is known as Touch-Tone. It was first used by AT&T in commerce as a registered trademark, 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 internal signaling within the telephone network.The Touch-Tone system, using the telephone keypad, gradually replaced the use of rotary dial starting in 1963, and since then DTMF or Touch-Tone became the industry standard for both cell phones and landline service. The DTMF keypad is laid out in a 4×4 matrix, with each row representing a low frequency, and each column representing a high frequency. Pressing a single key (such as '1') will send a sinusoidal tone for each of the two frequencies (697 and 1209 hertz (Hz)). The 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.
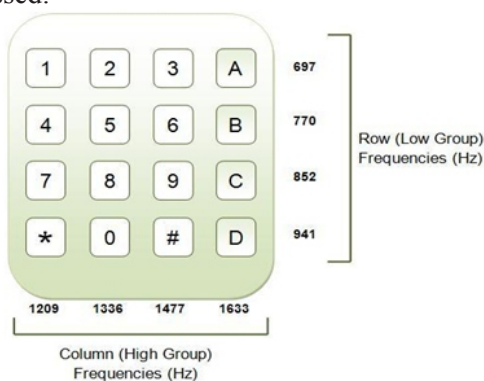

H-BRIDGE:

An H-bridge is an electronic circuit which enables DC electric motors to be run forwards or backwards. These circuits are often used in robotics. H-bridges are available as integrated circuits, or can be built from discrete components.
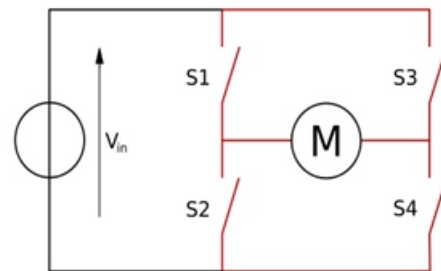
The two basic states of a H-bridge. The term "H-bridge" is derived from the typical graphical representation of such a circuit. An H-bridge is built with four switches (solid-state or mechanical). When the switches S1 and S4 (according to the first figure) are closed (and S2 and S3 are open) a positive voltage will be applied across the motor. By opening S1 and S4 switches and closing S2 and S3 switches, this voltage is reversed, allowing reverse operation of the motor. Using the nomenclature above, the switches S1 and S2 should never be closed at the same time, as this would cause a short circuit on the input voltage source. The same applies to the switches S3 and S4. This condition is known as shoot-through.

DC MOTOR:

An electric motor is a machine which converts electrical energy into mechanical energy.
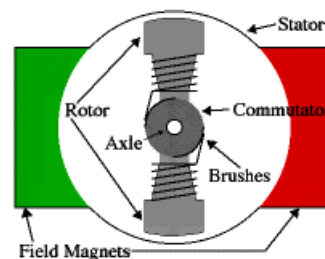
Principles of operation:

In any electric motor, operation is based on simple electromagnetism. A current-carrying conductor generates a magnetic field; when this is then placed in an external magnetic field, it will experience a force proportional to the current in the conductor, and to the strength of the external magnetic field.

As you are well aware of from playing with magnets as a kid, opposite (North and South) polarities attract, while like polarities (North and North, South and South) repel. The internal configuration of a DC motor is designed to harness the magnetic interaction between a current-carrying conductor and an external magnetic field to generate rotational motion.Let's start by looking at a simple 2-pole DC electric motor (here red represents a magnet or winding with a "North" polarization, while green represents a magnet or winding with a "South" polarization).

Working of the project:

•DTMF technique is used to move the vehicle.
•Firstly, one need to call to the mobile number interfaced to the vehicle.
•So that there is a facility of auto answering and then one need to press the numbers of keypad to move vehicle in required direction.
•Vehicle moves with the help of motors fixed to the controller with the help of H-bridge.

Result:

Hence our project is implemented to run the vehicle without driver using DTMF technique.

References:

[1] A.Z. Alkar, U. Buhur, "AnInternet Based Wireless Home Automation System for Multifunctional Devices," IEEE Consumer Electronics, vol. 51, no. 4, pp. 1169-1174, 2005.

[2] A.S.M. A. Ahmed, L. Alamgir, A. Nayeem, D. Sharma and B. B. Pathik, "Devising a Solar Powered Standalone Vehicle using GSM Communication Network", Proceedings of the IEEE International Conference on Electrical Information and Communication Technology (EICT), Khulna, Bangladesh, 13-15 February, 2014, pp. 66.

[3] D. He C. Rohrig. "Remote Controlling Technical Systems Using Mobile Devices", IEEE International Workshop on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications, Rende (Cosenza), Italy 21-23 September 2009.

[4] C. K. Das, M. Sanaullah, H. M. G. Sarower and M. M. Hassan, "Development of a cell phone based remote control system: an effective switching system for controlling home and office appliances", International Journal of Electrical & Computer Sciences IJECS, vol. 9 No: 10 pp3743, 2010.

[5] Enam, F. M. T., Osmani, M. S. U., Rafi, P. M., Rahman, S. and Pathik, B. B., "Empirical Investigation of Powering a Campus with Nonconventional Energy Resources", Proceedings of the International Conference on Electrical, (ICECTE), Rajshahi University of Engineering and Technology (RUET), Rajshahi, Bangladesh, Dec. 2012, pp. 13-16. ISBN: 978-984-33-5879-0.

[6] H. HaldunGoKTAS, Nihat, "A Cellular Phone Based Home / Office Controller & Alarm System" DALDAL Gazi University Technical Education Faculty, 06500, Besevler, Ankara, TURKEY .

[7] K. Reddy, F. Althobeti, Dr. Md A. Hussain and R. Reddy, "GSMControllable Power Switch System for Industrial Power Management", International Journal of Engineering Trends and Technology, August 2011 .

[8] Khan, M.T, Sarkar, S., Hossain, S. and Ahmed, A. U. and Pathik, B. B., "The Feasibility Study of Solar Irrigation: Economical Comparison between Diesel and Photovoltaic Water Pumping Systems for Different Crops", IEEE International Conference on Electrical Information and Communication Technology (EICT), Khulna, Bangladesh, 13-15 February, 2014.

[9] Lagura, J. L. R., Pascual, M. C. G., Rabadan, R. J. R., &Tabac, A. G. (2004) "Microcontroller-based aid for the blind in reading mobile phonemessages using braille system", Undergraduate Thesis. De La Salle University Manila.

[10] M. Callahan Jr, "Integrated DTMF Receiver," IEEE Transactions on communications, vol. 27, pp. 343-348, February, 1979.