RESEARCH ARTICLE OPEN ACCESS

Bomb Detection Robotics using Embedded Controller

Gurdas [1], Karan [2]
1,2(Svkm'sNmims UniversityVile Parle, Mumbai)

Abstract:

Now-a-days, robotic systems have less manual operations, flexibility, dependability and accurate. Detect the bomb by transfer the robot to the particular place. A person can work the system from personal computer during wireless RF control. Aims at designing and execute the bomb ,fire and obstacle exposure. The IR sensor is a pair sensors has a beneficiary and a transmitter sensor. In the current scenario of war situations, unmanned systems plays very main role to minimize human losses. This robot is fitted with motors. A micro controller is used to manage all operations. According to the motor operations the robot will operate as individual in program. Whenever any fire is detected, the Buzzer will ON.

Keywords — **Bomb Detection, IR sensor, Robotics, Web server.**

I. Introduction:

A simulation game is collected of three foremost elements: scenery, one or more characters and some rules. The characters can be real or fantastic. A micro controller is an incorporated circuit composed of a CPU,various peripheral devices, and normally memory, all in niches. Using one chip that contains all the needed functions in place of a microprocessor and many peripheral chips has compact the size and the power conservation of control oriented applications. For avoiding this types of problem in the nuclear command plant. The additional facial appearance of this project are that the robot is illegal by web server. A microcontroller not only accepts the data as inputs but also manipulates it, interface the data with various devices, controls the data and thus finally gives the result. A remotely restricted robot is able to enhance the safety of the artificers and,at the same time, to execute successfully the task. Since water cannons and micro charges, typical tools of robots that operate outdoor, cannot be used inside an airplane, any other method that allows to identify potential explosive devices is exceptionally valuable: cameras, X rays, etc. The robots existing on the market can be confidential depending on "what" they are able to handle (mass and size of the object) and "where" they should work (indoor, outdoor, structured environment). The mass and the size of the object are essential for the correct design of the arm and of the grasping device.

II. ARCHITECTURE AT ROBOTIC SIDE

The projected design is illustrated in this part. It also gives the complete information about the interfaced devices to execute this project. It consists of analog to digital converters, multiplexers, potentiometers, metal detector and cell phone jammer. location and direction of hand is obtained by two main parts; data glove and antenna arm cover. Data glove consists of 5 potentiometer as shown in Figure3. Bend of the five fingers can be measured by potentiometer.

Bomb detector is presently act as metal detector which detected any metal in the essential areas. Because the bombs made with metals. The bomb detector is attached in the topside with an antenna. Robot movements are restricted remotely.

III. Basic System Model:

Radio frequency (RF) is a rate of wavering in the variety of about 3 kHz to 300 GHz, which corresponds to the frequency of radio waves, and the alternating currents which bring radio signals. RF regularly refers to electrical rather than mechanical oscillations; however, reflex RF

systems do exist. RF is the wireless communication of data by digital radio signals at a particular rate.

IV.Multiplexer:

The device contains an 8-channel single-ended analogy signal multiplexer. A exacting input channel is chosen by using the attend to decoder. The address is latched into the decoder on the low-to-high evolution of the address latch permit signal.

V. Digital potentiometers Design:

A digital potentiometer is built each from a resistor ranking integrated track or a digital-to-analog converter even though a resistor ladder manufacture is the more regular. Every step on the resistor ladder has its own switch which can hook up this step to the output terminal of the potentiometer. The selected step on the ladder determines the opposition ratio of the digital potentiometer. The number of steps is usually indicated with a bit value e.g. 8 bits equals 256 steps; 8 bits is the most regular, but resolutions between 5 and 10 bits (32 to 1024 steps) are available.

VI.Limitations:

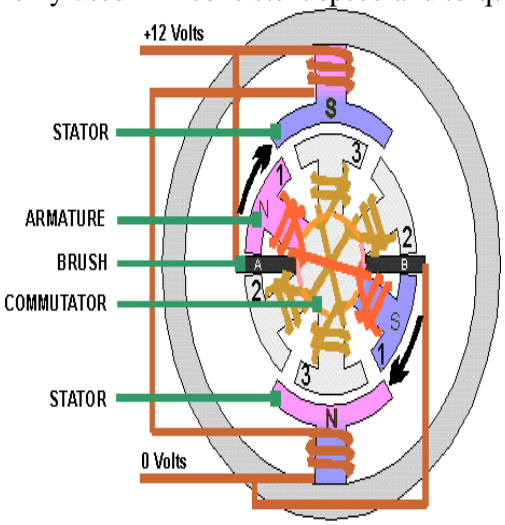
While quite related to normal potentiometers, digital potentiometers are natural by recent limit in the variety of tens of mill amperes. Also, most digital potentiometers maximum value the input voltage range to the digital supply range (0–5 VDC), so additional circuitry is required to replace predictable potentiometer. Further, instead of the seemingly continuous control that can be obtained from a multistory resistive potentiometer, digital potentiometers have discrete steps in résistance. Another constraint is that special logic is often required to check for zero crossing of an analog AC signal to allow the resistance value to be altered without causing an audible click in the output for audio amplifiers.

VII. User interface:

The addict can interact with the recreation through the mouse and the keyboard. The former controls the camera, while the latter guidelines the robot and some parameters of the simulation. A keyboard handler class of OSG manages the keyboard. At every one time step, the keyboard handler class checks for a key press.

VIII. DC Motor:

DC motors are configured in lots of types and sizes, including brush less, servo, and gear motor types. A motor consists of a rotor and a eternal attractive field stator. The magnetic field is maintained using either stable magnets or electromagnetic windings. DC motors are most commonly used in inconsistent speed and torque.



BASIC 12 VOLT ELECTRIC MOTOR

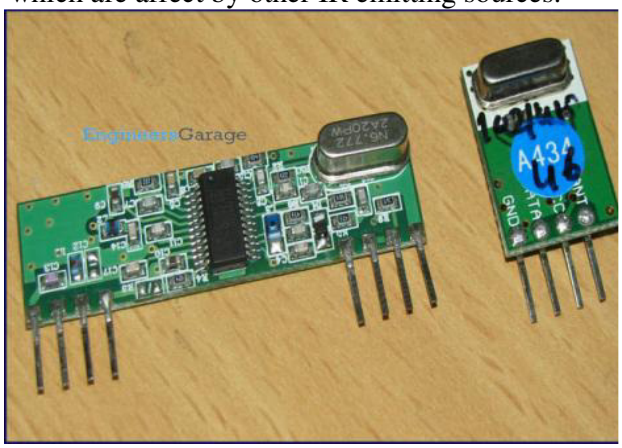
each DC motor has six basic parts -- axle, rotor (a.k.a., armature), stator, commentator, field magnet(s), and brushes. In most general DC motors (and all that Beamers will see), the internal magnetic field is created by high-strength permanent magnets1 . The stator is the stationary part of the motor -- this includes the motor casing, as well as two or more permanent magnet pole pieces.

IX.Metal Detector:

. If the antenna comes near a piece of metal this is indicated by a varying tone in earphones, or a needle moving on an indicator. regularly the device gives some indication of expanse; the closer the metal is, the higher the tone in the earphone or the top the needle goes. The simplest form of a metal detector consists of an oscillator producing an constant recent that passes through a coil producing an sporadic magnetic field. If a piece of electrically conductive metal is close to the coil, eddy current will be stimulated in the metal, and this produces a attractive field of its own. If another coil is used to measure the magnetic field (acting as a magnetometer), the modify in the magnetic field due to the metallic object can be detected.

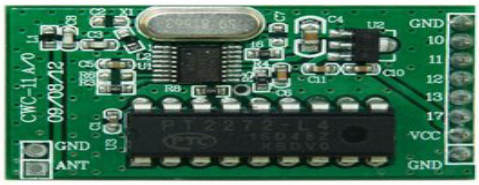
X. RF Transmitter:

Transmission during RF is better than IR (infrared) because of lots of reasons. initially, signals through RF can travel through larger distance making it right for long range application. Also, while IR mostly operates in line-of-sight mode, RF signals can travel even when there is an difficulty between transmitter & receiver. Next, RF transmission is more strong and reliable than IR transmission. RF contact uses a specific frequency unlike IR signals which are affect by other IR emitting sources.



XI.RF Receiver:

The data is expected by the RF receiver from the antenna pin and this data is accessible on the data pins. Two data pins are provided in the recipient module. Thus, this data can be used for further applications.



XII. Automatic Mode

As per figure 15 shows the Robot controls in web server and this usual mode is assure to working the robot faction. In automatic mode the robot is motivated without any check if any obstacle comes in front of this robot, it turns right side way automatically[5,6]. In this mode there is no progress in robotic arm. It is designed only for safety of robot to save it from break [11, 12] . In this mode there is no connection between server and client. Figure 16 shows the robotic movement in automatic mode.

XIII. Conclusion

The project has been profitably intended and tested. It has been residential by integrating facial appearance of all the hardware components used. Presence of every element has been consistent out and placed carefully thus causative to the best functioning of the unit. Secondly, using highly difficult IC's and with the help of growing machinery the project has been profitably implemented. Finally we finish that EMBEDDED SYSTEM is an promising field and there is a huge scope for explore and development.

XIV. Reference

1. T. Ueyama and T. Fukuda. Self-organization of Cellular Robots using random walk with simple rules. In Proc. IEEE Int. Conf. on Robotics and Automation, pages 595{600, 1993.
2. V. Ramya B. Palaniappan T. Akilan 'Embedded System for Robotic Arm Movement Control using Web Server and ZigBee Communication" International Conference on Research Trends in Computer Technologies (ICRTCT - 2013)
3. Bharath Reddy Pannala,DR. R.V.Krishnaiah "Design and Implementation of a Bomb Diffusing Surveillance Robot using RF Technology" semar groups technical society.
4. Prashant Limje,Shailesh N. Khekale "BOMB DETECTION AND DEFUSION IN PLANES BY APPLICATION OF ROBOTICS" International Journal of Application or Innovation in Engineering & Management (IJAIEM).
5. A. Colorni, M. Dorigo, and V. Maniezzo. Distributed optimization by ant colonies. In Proc. 1st European Conf. on Articial Life, pages 134{142, 1992.
6. Bharath Reddy Pannala, DR. R.V.Krishnaiah" Design and Implementation of a Bomb Diffusing Surveillance Robot using RF Technology"- International Journal of VLSI Design and Communication Systems Vol.01,Issue.03,