Human Detection

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Abstract:

The advent of new high-speed technology and the growing computer capacity provided realistic opportunity for new robot controls and realization of new methods of control theory. This technical improvement together with the need for high performance robots created faster, more accurate and more intelligent robots using new robots control devices, new drives and advanced control algorithms.

Keywords: Intelligent robots;

Introduction

The This Project deals with live personal detection robot is based on 8 bit Microcontroller. This Robot follows which is drawn over the surface. Here we are using PIR sensor for detect the which are detect human. The project is mainly used in the DEBRIS for Earth quake rescue.

Internally it consists of IR sensors. The infrared sensors are used to sense the live persons. All the above systems are controlled by the Microcontroller. In our project we are using the popular 8 bit microcontroller.

The Microcontroller is used to control the motors. It gets the signals from the PIR sensors and it drives the motors according to the sensor inputs. Two DC Gare motors are used to drive the robot.

BLOCK DIAGRAM:
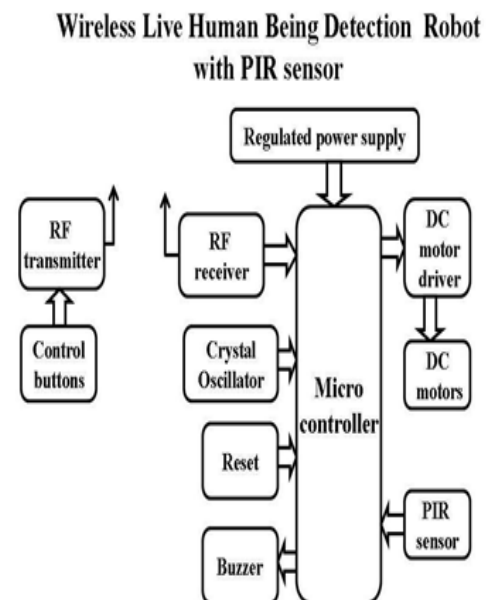
HELICAL GEAR MOTOR:

A unit which creates mechanical energy from electrical energy and which transmits mechanical energy through the gearbox at a reduced speed. A gearhead and motor combination to reduce the speed of the motor to obtain the desired speed or torque.Gearmotors of all types and sizes including single / multiphase, universal, servo, induction and synchronous types. DC gearmotors are configured in many types and sizes, including brushless and servo. A DC gearmotor consists of a rotor and a permanent magnetic field stator and an integral gearbox or gearhead. The magnetic field is maintained using either permanent magnets or electromagnetic windings. DC motors are most commonly used in variable speed

and torque applications. A DC servomotor has an output shaft that can be positioned by sending a coded signal to the motor. As the input to the motor changes, the angular position of the output shaft changes as well. Servomotors are generally small and powerful for their size, and easy to control. Common types of DC servomotors include brushless or gearmotor types. Stepper motors are a class of motors that provide incremental motion, or steps, in response to pulses of current that alternately change the polarity of the stator poles; step motors do not require feedback and are sometimes used in "Open Loop," or no-feedback applications. Important performance specifications to consider when searching for gearmotors include shaft speed, continuous torque, continuous current, and continuous output power. The terminal voltage is the design DC motor voltage. The continuous torque is the output torque capability of the motor under constant running conditions. Continuous current is the maximum rated current that can be supplied to the motor windings without overheating. Continuous output power is the mechanical power provided by the motor output.

Important DC motor specifications to consider include terminal voltage, motor construction and commutation. The terminal voltage is the design DC motor voltage. Motor construction choices include permanent magnet, shunt wound, series wound, compound wound, disc armature, and coreless or slotless. Commutation choices include brush or brushless.

Important gearing specifications to consider for gearmotors and gearheads include the gearing arrangement, gearbox ratio, and gearbox efficiency. Gearing arrangement choices for gearmotors or gearheads include spur, planetary, harmonic, worm, and bevel. Gearbox ratio is the ratio of input speed to output speed. A ratio greater than one, therefore, indicates speed reduction, while a ratio less than one indicates speed increase. Efficiency is the percentage of power or torque that is transferred through the gearbox. Losses occur due to factors such as friction and slippage inside the gearbox.

PIR SENSOR

More advanced security systems include **passive infrared** (PIR) motion detectors. The "motion sensing" feature on most lights (and security systems) is a **passive** system that detects **infrared energy**. These sensors are therefore known as **PIR** (passive infrared) detectors or **pyro electric** sensors. These sensors "see" the infrared energy emitted by an intruder's body heat. When an intruder walks into the field of view of the detector, the sensor detects a sharp increase in infrared energy.

In order to make a sensor that can detect a human being, you need to make the sensor sensitive to the temperature of a human body. Humans, having a skin temperature of about 93 degrees F, radiate infra red energy with a wavelength between 9 and 10 micrometers. Therefore, the sensors are typically sensitive in the range of 8 to 12 micrometers. The devices themselves are simple electronic components not unlike aphoto sensor. The infrared light bumps electrons off a substrate, and these electrons can be detected and amplified into a signal.

If you have a burglar alarm with motion sensors, you may have noticed that the motion sensors cannot "see" you when you are outside looking through a window. That is because glass is not very transparent to infrared energy. This, by the way, is the basis of a greenhouse. Light passes through the glass into the greenhouse and heats things up inside the greenhouse. The glass is then opaque to the infrared energy these heated things are emitting, so the heat is trapped inside the greenhouse. It makes sense that a motion detector sensitive to infrared energy cannot see through glass windows.

CIRCUIT DIAGRAM
RECEIVER
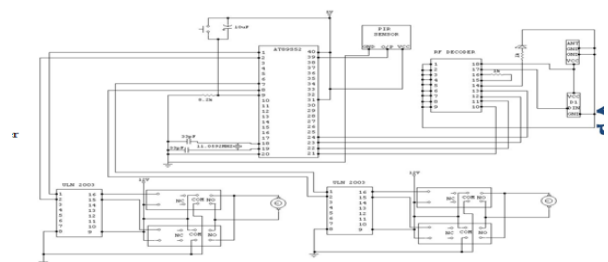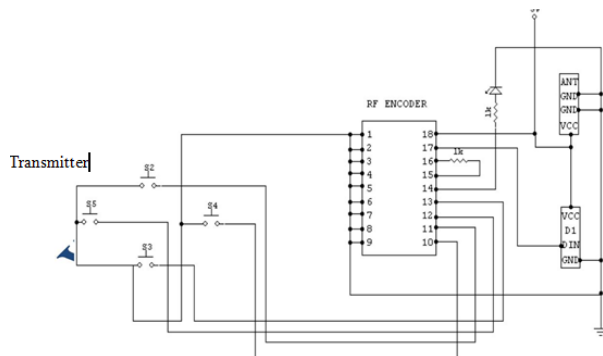
SOFTWARE DEVELOPMENT AND CODING:

Introduction:

In this chapter the software used and the language in which the program code is defined is mentioned and the program code dumping tools are explained. The chapter also documents the development of the program for the application. This program has been termed as "Source code". Before we look at the source code we define the two header files that we have used in the code.

Keil development tools for the 8051 Microcontroller Architecture support every level of software developer from the professional applications

C51 Compiler & A51 Macro Assembler:

Source files are created by the μVision IDE and are passed to the C51 Compiler or A51 Macro Assembler. The compiler and assembler process source files and create replaceable object files.

The Keil C51 Compiler is a full ANSI implementation of the C programming language that supports all standard features of the C language. In addition, numerous features for direct support of the 8051 architecture have been added.

Conclusion

The project "HUMAN DETECTION ROBOT" has been successfully designed and tested. Integrating features of all the hardware components used have developed it. Presence of all reasoned out and placed carefully thus contributing to the best working. The controller makes use of a PIR based input sensor to sense the human

being and give us an alert indication. Also use of a remote which is used to control the robot.

Hence this project provides best solution for the human to detect terrorist/thief inside the building.

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