Modern Multipupose Security And Power Management System

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Abstract — The Automatic power saving system for a home/office/shopping mall with security system is a method for automatic control of devices (lights, fans, or AC s) throughout home or in a shopping mall. A unique architecture of occupancy sensors include entry/exit sensors for detecting movement through doorways that separate rooms in the home, room motion sensors for detecting room occupancy, spot sensors to detect occupancy of specific locations within the rooms. A central embedded controller communicates with the sensors and controlled objects over a communication network, where the sensors and controlled objects can be added to the system in   a 'plug and play' manner. According to the proposed system, the number of visitors entering into and exiting from the shopping mall is calculated and is displayed. Apart from this, the appliances are made ON and OFF according to the number of persons present in the shopping mall by which power can be utilized with great efficiency and also implemented with security provision by which if unauthorized person enter to room means the dc siren gives alarm sound.

INTRODUCTION

The design and development of a smart monitoring and controlling system for household electrical appliances in real time has been reported. The system principally monitors electrical parameters of household appliances such as voltage and current and subsequently calculates the power consumed. The novelty of this system is the implementation of the controlling mechanism of appliances in different ways. The developed system is a low-cost and flexible in operation and thus can save electricity expense of the consumers. The prototype has been extensively tested in real-life situations and experimental results are very encouraging. Task scheduling on single or multiple processing elements is considered as one of the most common methods to achieve lower power consumption. In particular, in light-weight embedded systems, scheduling saves power by shutting down devices when they are not operating. Processing elements in embedded systems usually serve different requests at different times. Ordering task execution adjusts the lengths of idle periods and exploits the opportunities for power management several approaches have been proposed for task scheduling on low-power embedded systems that consider highly constrained energy source and environmental sources. The automatic standby power cut off outlet is composed of an AC/DC conversion, one two port relay, a power monitoring circuit and a microcontroller. The AC input is connected to the two port relay. One output port of the relay is connected directly to the AC output outlet and the other. Remote-Controllable and Energy-Saving Room Architecture based output port is connected to it via the power monitoring circuit. The power monitoring circuit consists of a transformer, rectifying diodes and additional components. It converts the measured power consumption into a voltage. The microcontroller digitizes the voltage and calculates the consumed power.

Now-a-days it is need to avoid wastage of power in home. As more and more consumer electronics and home appliances are power consumption in home area tends to grow. Moreover, useless power consumption occurs during day time and also when the human being is not present in the room. Energy saving can be achieved by using sensors like Passive Infrared sensor, light dependent resistor sensor, level sensor, temperature sensor, power monitoring circuit to trip off the home appliance which draws more power than the normal power consumption.

EXISTING SYSTEM

People flow rate means the number of people passing a specific location during a selected time interval. It is measured using a visitor counting sensor triggered by physical signals caused by the passing person such as visual appearance, heat emission, reflections of the body surface, or pressure against the floor. Building maintenance applications of visitor counting include monitoring

customer circulation patterns in commercial facilities and determining the number of people occupying a certain zone. The zone population information can be further used in automatic control of environmental settings, such as demand-controlled ventilation (DCV) that responds to changes in the generation rate of indoor pollutant by adjusting ventilation rate Ventilation recommendations are usually given in outdoor airflow rates per person, and during unoccupied periods the system can be turned to minimum flow settings or totally shut off. Thus   a DCV can provide an acceptable indoor air quality and energy savings. The most notable benefits are achieved in over ventilated facilities and in rooms with high and varying populations, and where the occupants are the main source of indoor air contaminants. While a DCV that operates by monitoring the room's carbon dioxide (CO_2) level or temperature is always more or less retrospective, the use of visitor counting sensors enables a real-time response to changing occupancies. For statistical counting of visitors the direction in sensitive sensors are also applicable, but in zone population detection bidirectional counting is practically always needed. Previous research on sensor-based DCV has focused on CO_2 sensor-controlled solutions.

To enhance security, GSM is used to give an alert message to the mobile. The system has been designed for measurement of electrical parameters of household appliances. Important functions to the system are the ease of modeling, setup, and use. From the consumer point of view, electrical power consumption of various appliances in a house along with supply voltage and current is the key parameter. The functional description of the developed system to monitor electrical parameters and control appliances based on the consumer requirements. The use of advanced lighting controls can determine significant energy savings, but its quantification is not always clear. The standard offers the directives to be pursued and also reference values for a preliminary evaluation that are to be better specified in order to obtain more accurate previsions for an advanced evaluation. All visitor counting sensors are suitable for all installation environments or all volumes of people flow. Instead, choosing a sensor should be based on the physical dimensions and the estimated overall people flow rate of the monitored passage. Based units good performance the triangulation proximity switch seems to be the most suitable one for the directional counting needed in as long as the visitor flow rates are moderate and people proceed mostly in a single file.

PROPOSED SYSTEM

The Automatic power saving system for a home/office/shopping mall with security system is a method for automatic control of devices (lights, fans, or AC s) throughout home or in a shopping mall. A unique architecture of occupancy sensors include entry/exit sensors for detecting movement through doorways that separate rooms in the home, room motion sensors for detecting room occupancy, spot sensors to detect occupancy of specific locations within the rooms. A central embedded controller communicates with the sensors and controlled objects over a communication network, where the sensors and controlled objects can be added to the system in a plug and play manner.

 According to the proposed system, the no. of visitors entering into and exiting from the shopping mall is calculated and is displayed. Apart from this, the appliances are made ON and OFF according to the numbers of persons present in the shopping mall by which power can be utilized with great efficiency and also implemented with security provision by which if an unauthorized person enter to room means the dc siren gives alarm sound.

The proposed system split in to two ways. First one is power saving system. Second one is security system. The power saving system having the blocks is IR sensor, power supply, LCD display and light and fan control. The security system having the blocks is panic switch, dc siren and auto door lock. Now a day's power consumption is a challenging task in each and every place .One such example is shopping mall, so much of power is wasted here even though no customer available in particular shop by use of lights and AC waste. The light and AC will work according to customer density in the shops. For example, Consider 4 shops. Shop 1&2 à light and AC ON because density high Shop 3 à no customer hence light and OFF Shop 4 à density low hence light glows dim For the project 5V power supply is needed.

In this circuit first the 230V is applied to the step down transformer. Then the 230V is converted into 15V. The rectifier converts this AC voltage into DC voltage. The panic switch is used for emergency. It is similar to the ordinary switch. The IR sensor senses the visitors and also counts. The LCD display displays the light on or off in simulation result. In hardware dimming of light control is shown. Similarly the fan and AC working based on the visitors present in room. The fan and AC speed is increase or decrease based on density of visitors. If unauthorized persons enter means the panic switch is pressed the siren indicates alarm sound, the door is automatically lock. It provides voice communication to the nearest police station. GSM provides short messaging service with telephone connection. The developed system is a low-cost and flexible in operation and thus can save electricity expense of the consumers. A unique architecture of occupancy sensors include entry/exit sensors for detecting movement through doorways that

separate rooms in the home, room motion sensors for detecting room occupancy, spot sensors to detect occupancy of specific locations within the rooms.
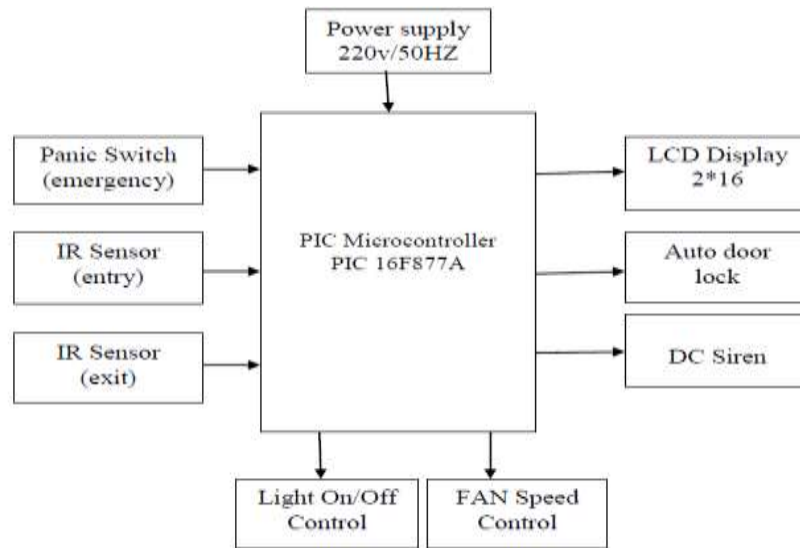

Fig .1. Block diagram of proposed system

ALGORITHM

The algorithm of proposed system is given below.

Step1: Start the program.

Step2: Initiate microcontrollers.

Step 3: Check for IR interrupt signal. Then increment count.

Step4: When count >0 do the following:

      1. If Count>10 then send a command to receiver to switch ON fan else send a command to receiver to switch OFF fan

      2. If Count<50 then send a command to receiver to switch ON Light but Produces Dim light

      3. If Count>50 then send a command to receiver to switch ON Light with full brightness

Step5: If room intensity is dark then send a command to receiver to switch ON light else send a command to receiver to switch OFF light.

Step6: When count<0 send command to receiver to switch OFF fan and light.

Step7: Repeat the steps 3, 4 5 and 6 in parallel.

EXPERIMENTAL RESULT

The system specifications include the software requirements for the simulation of the project. The project is simulated with the help of a desktop computer or laptop. The development tool used for the simulation of this project is MATLAB 9.0. The light control mainly based on the principle mass detection if no one present in the class then the light automatically OFF with the help of matrix sensor.
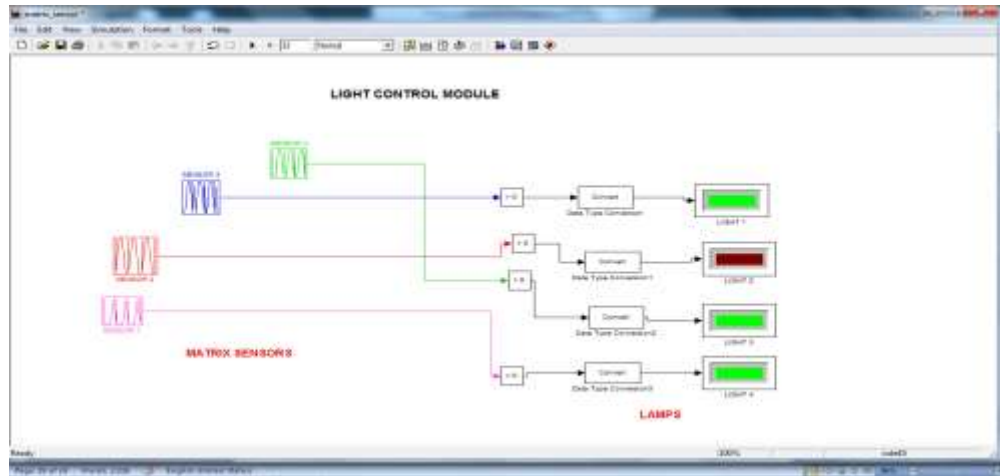

Figure.2. Light Control Module

The timing values same for every sensor if the time value range is between 10 to 20 then the sensor 1, 2,and 4 in same ON condition the sensor 3 will be OFF. Based on the timing value and output values of all sensors, the load is on or off.

Table.1. Matrix sensor output

TIME VALUES	OUTPUT VALUES			
	SENSOR 1	SENSOR 2	SENSOR 3	SENSOR 4
0	0	1	1	0
10	1	1	0	1
20	1	1	1	1
30	1	0	0	0
40	1	1	1	0

The fan control mainly based on the principle mass detection and temperature variation if no one is present then the fan automatically OFF if the persons are less than 10 and based on the condition the fan speed is also decreased.
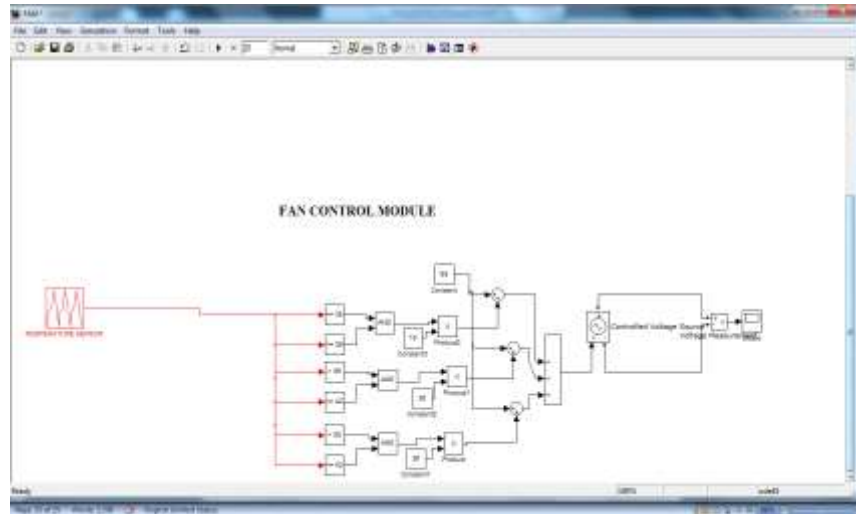
Figure 3. Fan Control Module

The graphs show the decrease in speed of the fan and automatically switch OFF it, because no one is present.

Figure 4. Fan control output

CONCLUSION

It proposes automatic detection of human and Energy saving room architecture to reduce standby power consumption and to make the room easily controllable with an IR remote control of a home appliance, shopping malls, industry. The proposed system divided into two parts as power saving system and security system. The power saving system gives controlling of appliances. The security system gives alarm sound, if unauthorized person enters in room. It gives only alarm intimation. It can extend with voice communication.

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