

# Automation Based Energy Saving System

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## ABSTRACT

This working paper examines the potential linkages between home automation systems and the promotion of energy efficiency in the home. There has been relatively little interest in the relationship between information technologies and environmental policy. It is often assumed that it is environmental benign and can easily be applied to promote improvements in environmental conditions. This paper briefly reviews the development of home automation technologies and competing systems available in the US, Europe and more specifically the UK. It argues that there are serious difficulties assuming that home automation technologies have a significant role in the development of domestic energy efficiency. simple energy conservation and efficiency measures such as insulation and appliances are likely to generate more cost effective energy savings that expensive automation systems

**Keywords:** PIR sensor, ATMEGA 16, detection of body.

## I. INTRODUCTION

In the world of modern century automation is making its own place to make the industrial production with improved quality and less error. It also reduces human errors and efforts and leads to less wastage of raw material, money and important thing i.e. energy. So a new concept is introduced to world i.e. college automation.

In addition to this system one idea is to save electricity. Energy consumption in college is increased to great extent due to unnecessary glowing light and rolling fans. So if we can add some intelligence in our college and control fans and light, lamps automatically and save average energy in every college.

College automation (also called domestics) designates an emerging practice of increased automation of college appliances and features in electronic equipments, particularly through electronic means

that allow for things impracticable, overly expensive or simply not possible in recent past decades.

The techniques employed in College automation include those in building automation as well as the control of College entertainment systems, changing the ambiance "scenes" for different events.

In educational buildings a significant component of the energy used is spent in illuminating the interior of the building. As the energy costs rise, increasing effort has gone into minimizing the energy consumption of lighting installations. This effort could follow three basic directions: new more efficient equipment (lamps, rolling fans etc.), utilization of improved lighting design practices (localised task lighting systems), and improvements in lighting control systems to avoid energy waste for unoccupied and daylight hours. By controlling the lighting in such a way that the lighting level is always accurately matched to the actual need allows to save on the energy costs and to improve the human comfort and efficiency.

## II. LITERATURE SURVEY

There are no. of Energy Saving System but, now a day's automation is basic need of all human being, so using automation we try to develop a product which are less expensive than other system.

Here we are going to present the system which will control the electrical appliances such as light, fan with the help of IR sensors. The Thermal Sensor Base Classroom Electricity Saving System consists of processor, IR sensors, LCD display, power supply and electrical appliances Hassanin M. Al-Barham toshy, Abdul rahman H. Altalhi and Abdul fattah S. Mashat," Automation of Attendances in Classrooms using RFID", This paper automates the design and implementation of students' attendance management

system, taken into consideration easy access and time saving. The system will be used in faculty of computing and information system (FCIT) at King Abdul aziz University (KAU).

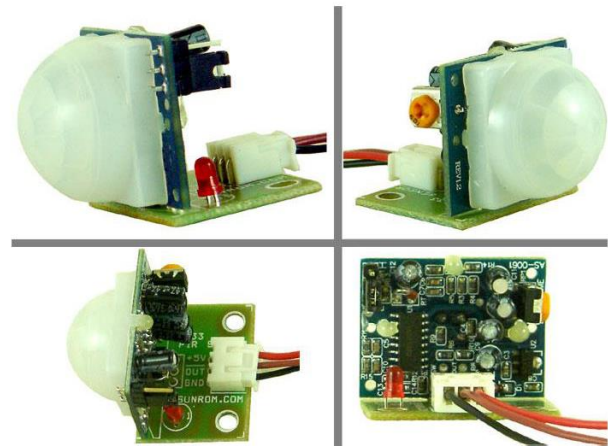


Figure 1

## III. BLOCK DIAGRAM

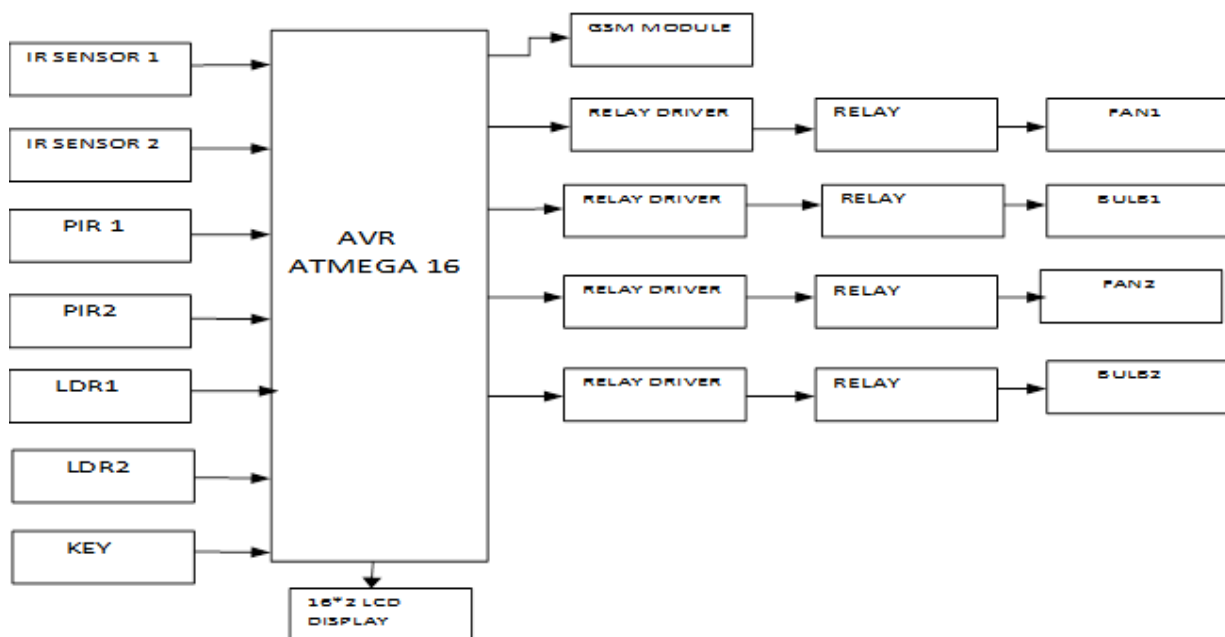


Figure 2. Block diagram

The hardware consists of a LDR sensor. Sensor is a variable resistor whose value depends on Light concentration in air. The sensor is easy to use and can be easily incorporated in a small portable unit. The analog output of LDR sensor would be given to ADC, which is internally in microcontroller. The

advantage of using ADC internally is that hardware becomes more compact. The PIR sensor would be used to sense the person. When the PIR sense the person the LDR will trigger and will sense the light. When there is no person the light will be off. Compact and complete, easy to use Pyroelectric

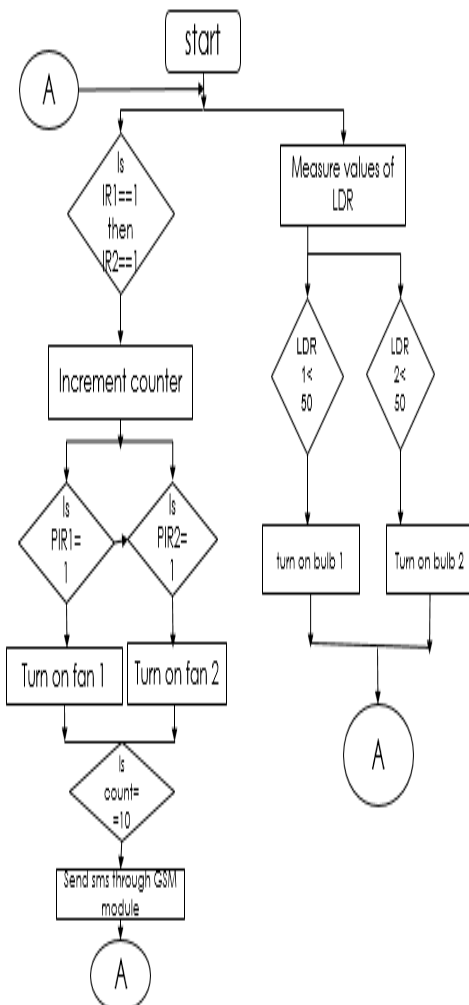
Infrared (PIR) Sensor Module for human body detection. Incorporating a Fresnel lens and motion detection circuit. High sensitivity and low noise Output is a standard 5V active low output signal. Module provides an optimized circuit that will detect motion up to 6 meters away and can be used in burglar alarms and access control systems.



Figure 4

#### IV. FLOWCHART AND ALGORITHM

##### 4.1 Flowchart



##### 4.2. Algorithm

STEP 1: Start.

- STEP 2: Person cross IR1 and IR2, person in count 1.
- STEP 3: Detection of PIR sensor in the classroom.
- STEP 4: If PIR1=1 and PIR2=1 then turning on the Fan1 and Fan2.
- STEP 5: Detection of light intensity in room.
- STEP 6: If LDR1<50 and LDR2<50 then Bulb1 and Bulb2 ON.
- STEP 7: When count==10 Sending SMS to GSM Module.
- STEP 8: Sending SMS to HOD Office.
- STEP 9: Displaying SMS on LCD display in HOD Office.
- STEP 10: Else when count<10.
- STEP 11: Pressing key manually to send SMS to HOD office.
- STEP 12: STOP

#### V. FUTURE SCOPE

- 1) With the use of harmonic analyzer, harmonic study can be carried out. Study different losses, harmonic distortion factor etc can be carried out.
- 2) Using photo sensors if the atomization in the lighting system is implemented, then considerable energy saving can be achieved.
- 3) Diming of the lights in the room can be done for saving more light.
- 4) This ideology may be extended to be integrated with other application systems like Radio Frequency Identification (RFID) attendance system. Instead of person counting supporting system, RFID tags may be used to control lights and fans in the classroom in the same way as in present proposed system. The same system can be more effective by attaching fan speed regulating feature and by sensing temperature of different regions by overhead temperature sensors and checking occupancy of the region in the classroom.

#### VI. CONCLUSIONS

This paper introduced the design and implementation of automation in classrooms using indoor localization of the IR,PIR and LDR sensor network in faculty of computing. Although, a generic middleware component is created, and it can be easily installed in other classrooms within the same faculty or in other institutes. Such paper presented a pilot system. It was found that it reduces wasted time, human effort as man power, minimizes cost, and procedures. Consequently, the system has low cost, flexible design, easy to install, control and monitor. The system can be used for other domains such as conference hall, auditorium, offices, hotels etc.

## **VII. REFERENCES**

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