

Home Automation System Using IOT

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Abstract - The waste of electricity is one of the main problems we face today. In our home, school, university or industry, we see that the lights remain on even if there is no one in the room or area. This happens through negligence or because we forget to turn off the lights or when we are in a hurry. In this system, Human Sensing is proposed to save energy in intelligent rooms. we develop a lighting control to reduce electrical usage. On the basis of Internet of Things (IoT) technology, many solutions can be made to control the lighting of smart rooms without the need to access electrical outlets or plugs. Our research idea focuses on measuring the number of people entering any room such as the seminar room, the conference room and the classroom using a pair of infrared sensors and the chip. When a person enters the room, the counter will increase when the room is illuminated and the light will continue to light, while people will respond more than zero. When a person leaves the room, the counter is reduced by one. If the person counter reaches zero, the lights inside the room will be turned off using a relay interface. This system provides a real model of energy conservation that could be used in daily life.

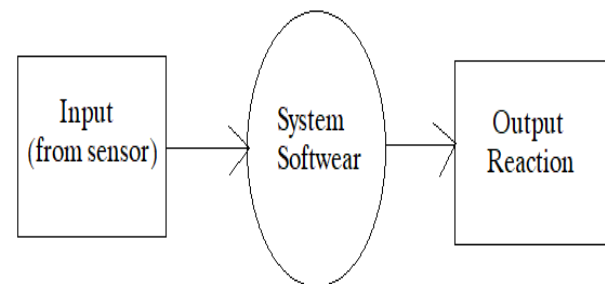
Key Words: Smart home, IOT, Home automation, Sensors, Arduino, android app

1.INTRODUCTION

The Internet of Things represents a general concept of the ability of network devices to detect and collect data from the world around us and then share that data on the Internet, where it can be processed for various purposes.

The Internet of Things is the interconnection of the various integrated computing devices on the Internet, which allows them to communicate with each other. This improves the quality of life of the end user. The increase in the popularity of IOT has extended in the domestic applications and the daily tasks. This concept of IOT in homes is intended to monitor and save energy while reaching and maintaining a certain level of comfort.

Home automation systems using IOT consists of three major aspects as shown in fig.



1. The first part is the sensing things. This is done by placing sensors at several locations throughout the home to measure and gather desired information such as temperature, humidity, presence of object.

2. The second part is system processes data. Sensors provide data in raw form. These data are sent to the processor through a mode of transmission, wired connection or wireless. The processor then translates the data into comprehensible values. These values are transmitted to a device to be controlled automatically or manually to a user interface.

3. The last part of automation is action performing. By automatically executing several commands, automation systems can help to save time, provide a better quality of life in homes, and save energy.

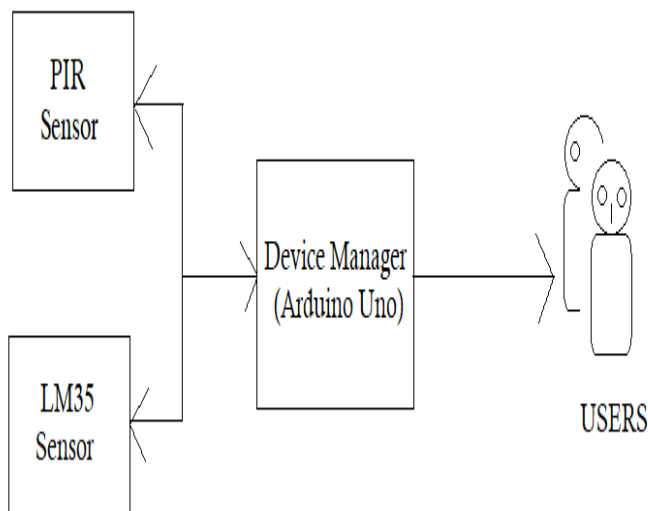
2. MOTIVATION

Today, the waste of electricity is one of the main problems we face today. In our house, school, school or industry, we see that the lights remain on even if there is no one in the room or area. This happens through negligence or because we forget to turn off the lights or when we are in a hurry. Saving energy has become one of the most difficult issues these days. The greatest loss of energy comes from the inefficient use of electrical energy consumed by artificial light devices (lamps or bulbs). A novel system has been proposed to control room lighting and conserve energy with low cost and low power consumption through the wireless sensor network. It is called human detection. Fundamentally, the proposed system operates an intelligent solution for the problem of lighting control in the smart home room. Automatically turn on the room when the person enters the room, then keep the light on while there are people in this room. In addition, it is expected that the proposed system architecture will optimize the use of energy in the home and result in a saving of energy costs in the home, because the

lights in the room after the last person left the corresponding room.

3. PROPOSED SYSTEM

Each user who has experience in the existing system can think of a system that can add more flexibility and execute with some common applications. This work is designed in such a way that the disadvantages of the existing system are avoided. The proposed system supports more elasticity, comfort capacity and safety. The main objective is to design and implement an open source and cost effective home automation system that is capable of directing most of the home and maintaining the home automation system. The predictable system contains great elasticity when using reliable wireless technology to interconnect several modules to the server of the home automation system. This, in turn, reduces the cost of implementation, which will increase the flexibility of the progress and the system reconfiguration. The projected system can make use of wireless connections between various sensors, hardware modules and several communication protocols between users and servers. The architecture of the proposed system is shown in Fig.



3.1 PIR sensor : A passive infrared (PIR) sensor is an electronic sensor that measures infrared (IR) light emitted by objects in its field of view. They are most commonly used in PIR-based motion detectors. When the sensor is idle, both slots detect the same amount of infrared radiation, the amount of space radiated from space, walls, or outdoors. When a warm body like a human or an animal passes by, it first intercepts half of the PIR sensor, causing a positive difference change between the two halves.

3.2 LM35 Sensor: LM35 is an integrated analogue temperature sensor whose electrical output is proportional to degrees Celsius. The LM35 sensor does not require external calibration or trim to provide typical accuracy. The

LM35 temperature sensor is used to acquire an accurate Celsius temperature. The output of this sensor describes the linearity. The O / P voltage of this IC sensor is linearly comparable to the Celsius temperature. The operating voltage range of this LM35 ranges from -55 ° to + 150 ° C and has a low self-heating.

3.3 Arduino Uno: The Arduino UNO is an open-source microcontroller board based on the Microchip ATmega328P microcontroller developed by Arduino.cc. The board is equipped with sets of digital and analog I / O pins that can be connected to various expansion cards (shields) and other circuits. The card has 14 digital pins and 6 analog pins that can be programmed with the Arduino Integrated Development Environment (IDE) via a Type B USB cable.

4. CONCLUSIONS

A novel system has been proposed to control room lighting and conserve energy with low cost and low power consumption through the wireless sensor network. It is called human detection. Fundamentally, the proposed system operates an intelligent solution for the problem of lighting control in the smart home room. Automatically turn on the room when the person enters the room, then keep the light on while there are people in this room. In addition, it is expected that the proposed system architecture will optimize the use of energy in the home and result in a saving of energy costs in the home, because the lights in the room after the last person left the corresponding room.

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