

INTELLIGENT POWER MANAGEMENT FOR COLLEGE AUDITORIUM

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ABSTRACT

In the world of technology and automation, power management is one of the important and interesting aspects. This project allows analyzing the person entering the auditorium and that allows the current to consume based on the people count. Intelligent Power Management (IPM) is a combination of hardware and software that optimizes the distribution and use of electrical power in computer systems and data centers. This system is used in the college auditorium for electric charge maintenance.

Keywords: Automation, IR sensors, power management

I. INTRODUCTION

The intelligent power management is essential technology where the energy consumed can also be detected and it also add up the additional features such as the sensors will be placed at the door step and it will count the people entered the room and will also count the people exit from the hall then it will switch on the lights according to that count. For instance, if there is a group of hundred students then for the first ten students when they enter the room the lights on the first row will be automatically switched on. So that the students will occupy the first row naturally. Then for the next ten members the lights on the next row will be automatically switched on. This will be repeated till the last count. This will be repeated for switching the lights off. When the first 10 persons get out of the room the light on the last row will be turned off automatically.

In this project the authority or the management can also see the amount of power consumed in the auditorium instantly using IOT. The main objective of the power management system is to reduce the manual work of the person concerned, who constantly keep on switching on and off the lights. The main objective of the power management system is to reduce the manual work of the person concerned who takes the reading at the end of every month. This will intimate the reading automatically.

KEY BENIFITS:

1. Budget Smarter
2. Get Seriously Easy ROI
3. Identify, Test, and Validate Energy-Saving Scenarios

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4. Fulfill your Demand Response Contract
5. Saves money and time
6. Easy to use

Whenever we enter the room, as a habitual tendency, every one often tends to search for a switch to turn the light on, and if we are new to the room, we regularly think that its hard to find the switch. Most of the time many of us forget to switch off the lights while leaving the room in which we were there. This will lead to unnecessary power wastage, therefore an automated room light controller which turns on the light at the moment when we enter the room and turns off the light when we get out off the room. This automatic controller can be implemented using an IOT device, sensors and an aurdino board.

APPLICATION:

1. Garage Lights
2. Bathroom Lights
3. Hand Dryers
4. Toilet Flushers
5. Security Lights

II. LITERATURE SURVEY

In the proposed system the sensors used to detect the count of the person was Passive Infrared(PIR) sensor. It is the motion detector sensor. All articles with a temperature above outright zero produce warm vitality as radiation. Typically this radiation isn't noticeable to the human eye since it transmits at infrared wavelengths, however it tends to be distinguished by electronic gadgets intended for such a reason. The term uninvolved in this occurrence alludes to the way that PIR gadgets don't create or transmit vitality for location purposes. They work completely by distinguishing infrared radiation (radiant heat) transmitted by or reflected from articles (objects).

The main cons of PIR sensor are that it only receives the Infrared light and it cannot emit it.

Also they are very expensive to purchase, install and also to calibrate.

Then there came an revolution with wireless sensor network. This WSN is spatially distributed autonomous device that uses the sensor to monitor physical environment condition. The main disadvantage of this WSN is that the nodes of the sensor have to be charged ant the regular intervals. Then this wireless sensor will keep distracting by other electrical devices. The communication speed is comparatively low then other sensors. In existing work In electrical utilization power management plays a crucial role in monitoring the power variations in the electrical appliances and providing proper security under faulty conditions. Because of colossal increment in the energy costs there is a prompt need of appropriate vitality the board so In request to give an extraordinary solid and effective stable vitality supply for the electrical loads there is an exceptional need of intensity the board framework of power system.

III. METHODOLOGY

LANGUAGES USED:

To develop an IOT page the languages used are

1. PHP
 2. HTML
 3. CSS
- C Language

HARDWARE USED:

NodeMCU: The hardware used is nodeMCU, which is an arduino based controller. The nodeMCU is an open source IOT platform it includes firmware which runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which is based on the ESP-12 module. The expression "NodeMCU" as a matter of course alludes to the firmware instead of the improvement packs. The firmware uses the Lua scripting language. It is based on the eLua project, and built on the Espressif Non-OS SDK for ESP8266. It utilizes many open source ventures, for example, lua-cjson and SPIFFS.

This nodeMCU contains the inbuilt WI-FI, so that the readings can be calculated immediately and the readings can be displayed on the screen.



Figure.1

FEATURES:

1. WI-FI module
2. USB- micro USB port for programming
3. Power-5V via micro USB port
4. Dimensions-49x 24.5 x 13mm

IR sensor:

It is an electronic device that senses some aspects of the surroundings. This sensor will detect the heat of an object as well as the motion of the object for accurate readings. Usually in infrared spectrum all the objects emit some kind of thermal radiation this radiation will be invisible to human eyes, that can be detected by infrared sensor. The emitter is an IR LED and the detector is a photodiode. At the point when IR light falls on the photodiode, the photodiode and these yield voltages, change in extent to the size of the IR light got. There are two IR sensors used in sequence to identify in an out count of the person



Figure.2

IV. SUB METHODOLOGY

In this method the infrared (IR) sensor will be placed at the door step. This contains IR dual sensor. The two IR sensors are kept in a sequence so that it can identify the person who ever comes in and go out. The sensors will detect the count and then the light on the first row will be turned on based on the specific count. If a count of few people enters the room the sensor will detect the count and he turns the light on the first row so that the group has to be seated on that particular row by nature. The device used is nodeMCU. It is an Arduino based controller with inbuilt Wi-Fi, so that the readings of the energy consumed will be directly intimated to the person concerned. One of the sensors will detect the count of the person who gets in and the other will count the number of person who comes out. The same will be implemented to turn the lights off when the persons come out of the auditorium. When the group of several counts of persons come out the lights on the last row will be turned off automatically. Even when the person tries to switch on the lights it won't work out. Then the person on the last row must be shifted to the front row. This will make the students to fill up the front row and then proceed to the following rows. This will help the speaker to get an enthusiasm. The lights will be controlled automatically without any manual intervention. There cannot be made any changes in the readings there is a separate IOT page developed for automated reading of the electric meter so that the readings need not to have any manual calculation. The IOT page will be connected to the database to maintain the readings. This system will be helpful for the person who keeps on forgetting the lights to turn off when they move out of the room.

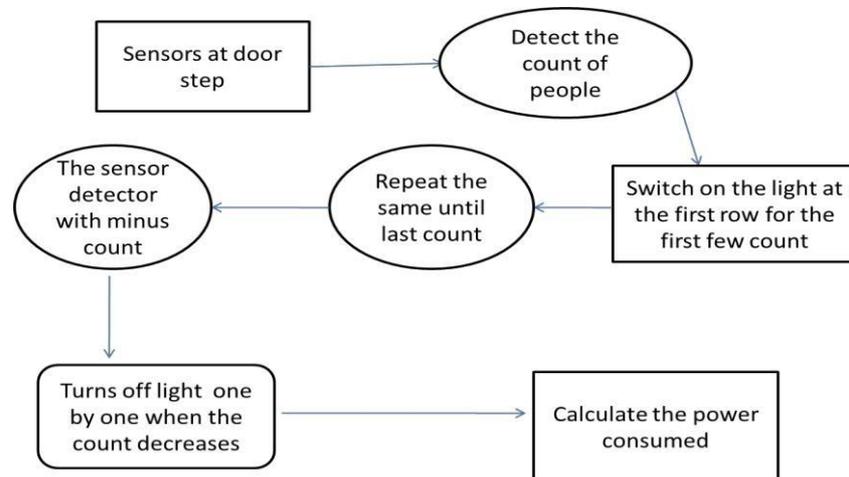


Figure.3

V. CONCLUSION AND FUTURE SCOPE

This system is very efficient to use and will be automated without any manual intervention. The consumption of energy in few electric bulbs will have high consumption due to their display effect. To reduce this technology will be very useful and an effective one too.

This can also be implemented in the living rooms with some additional features like monitoring the weather condition and if the weather is sunny and the room is bright the lights will be turned off even if the person is inside the room. This can be an additional feature to this project. this can be implemented in the fan system also. That is when the weather is so cold enough for the body temperature the sensors sense it and the automatically switches the fan off or on or it will regulate the fane or air conditioning temperature.

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