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CLASSROOM AUTOMATION USING WIRELESS SENSOR NETWORK

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ABSTRACT-This paper tells about the power wastage in the classroom. To reduce this we are implementing automatic classroom in which the devices in classroom will function automatically. In this method, we are implementing projector screen automation. Some methods are existing using Infrared remotes and due to this and human negligence power wastage occurs and we are reducing it using this Wireless Sensor Network method.

I. CATEGORIES OF SUBJECT DESCRIPTORS

Wireless sensor network -computing, communicating and responding.

II. KEYWORDS

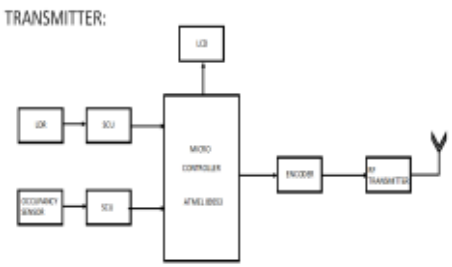
Power wastage,automating, smart class room, sensor node.

III. INTRODUCTION:

Here we are considering and executing a module 1.) Projector screen automation and its security.2.)Fan and Light control.

In the existing method,projector screens are operated using Infrared remotes.By using WSN projector screen will function automatically without using remotes and power wastage is also reduced and projector is also secured.

IV.METHODOLOGY:



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In the Transmitter side, the projector is ON ,LDR is used in the projector device and it will trigger the signal

to SCU and the signal is amplified here and is send to the microcontroller(ATMEL 89S52).And the operation is carried out by using the instructions from the microcontroller.

Then the output from microcontroller is encoded for security purpose and is given to RF Transmitter .Occupancy sensor is used to sense occupancy of space in the classroom and the signal is given to Microcontroller using SCU.

V.LDR:

LDR is a passive device working with the principle of photo-conductivity. The resistance of the photo resistor decreases with increasing light intensity. When the projector is ON, LDR senses the light like our eye and the signal is given to the Signal Conditioning Unit.

VI.SIGNAL CONDITIONING UNIT:

Signal conditioning means manipulating an analogue signal in such a way that it meets the requirement of the next stage for further processing. Here the output from the LDR is fed to is amplified and send to the processing stage (i.e.) to ATMEL 89S52 microcontroller.

VII.RF TRANSMITTER:

The communicating medium used in this project is RF transceiver through which the data from the microcontroller is transmitted at 430MHZ frequency range. The antenna used in the RF communication devices are omni directional antenna.

VIII.OCCUPANCY SENSOR:

Occupancy sensor is a lighting control device that detects occupancy of a space by people and turns the light or fan ON or OFF state.

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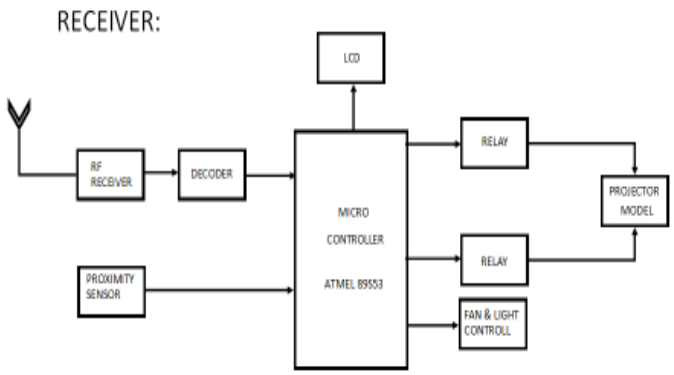
Here the computed data of the occupancy sensor is given to the SCU as well as for the further processing at microcontroller. The processed signals from the microcontroller is transmitted through the RF transmitter.

IX.RF RECEIVER:



In the Receiver side, the signal from the transmitter is received by using RF Receiver and the received signal is decoded by using decoder. The decoded signal is given to Microcontroller (ATMEL 89S52).

Processed signal is given to relays and here we are using two relays. One for the forward rotation of motor and another isfor the reverse rotation of the motor.The relays are connected to the projector model.

X.RELAY:

A Relay is a circuit which uses the electromagnet to mechanically operate a switch. In this project it is used to control the working of the motor in which the projector screen is attached. Here we are using two relays for forward and reverse operation of the motor.

XI.PROXIMITY SENSOR:

Proximity sensor used in this screen down and screen up. A pair of proximity sensor is fixed at the upper and lower edge of the projector screen.

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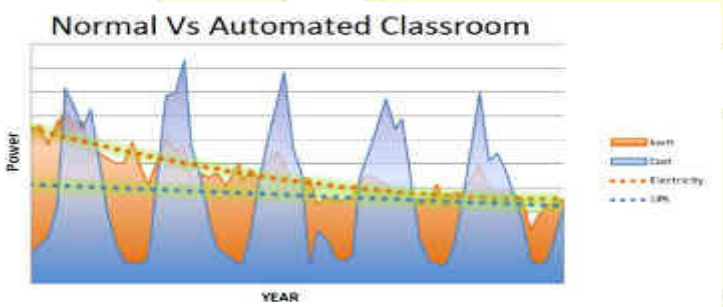
XII. RELATED WORK

Conventional method use infrared remote controls to operate the projector screen, windows screen & etc. This kind of approach usually needs as separate device which is to be carried all the time along with us. Consequently natural human negligence may lead to the unwanted power loss, due to powering up the electrical devices like fan, light, etc.,. Even though when person are not present in that particular place.

To address this problem we planned to automatic the operation of the above mention device using wireless sensor networks. Where for computing we are using some sensors like LDR proximity sensor, occupancy sensor and for communication RF Transceiver is used in our project.



Graph 1.*Power consumption*

XII.CONCLUSION:

In this paper, we instantly infers the power wastage in the class rooms. The knowledge derived from our estimation can enable many variable applications for social good such as effective utilization of the available power and we consider our project as a contribution for developing smart city. Thus we address the problem by establishing a smart class room.

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