

# DEVELOPMENT OF AUTOMATIC PERSON DETECTION SYSTEM TO CONTROL AC FAN & ROOM LIGHTS

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**Abstract:** The work on “Development of automatic person detection system to control electrical fan and lights” using Microcontroller is a reliable circuit that takes over the task of controlling the room lights in museums very accurately. When somebody enters into the Museum then the light in the museum will be switched ON and count also incremented by one when any one leaves the room then count will be decremented by one. If the total count will be zero, the light will be automatically switched OFF. The microcontroller does the above job. It receives the signals from the sensors, and this signal is operated under the control of software which is stored in ROM. Pic Microcontroller 16F887A continuously monitor the sensors, A IR Sensor is which controls the switching on/off of the light when it detects the any person entered into the museum. The implementation is made simpler by using sensor to detect person. The system includes IR sensor, microcontroller, LCD display and a 5v power is supplied to run the system. The system uses a compact circuitry built around pic microcontroller programs are developed in Embedded C. Flash magic is used for loading programs into Microcontroller.

**Keywords:** Temperature sensors LM35, pic Microcontroller 16F887A, Optocoupler, Infra red (IR sensor)

## I.INTRODUCTION

In recent years, the home environment has seen a rapid introduction of network enabled digital technology. This technology offers new and exciting opportunities to increase the connectivity of devices within the home for the purpose of home automation. However, the adoption of home automation systems has been slow. So, This work is a standard automatic fan speed controller that controls the speed of an electric fan according to our requirement. Use of embedded technology makes this closed loop feedback control system efficient and reliable. Micro controller allows dynamic and faster control. Liquid crystal display (LCD) makes the system user-friendly. The sensed temperature and fan speed level values are simultaneously displayed on the LCD panel. Micro controller is the heart of the circuit as it controls all the functions. Visitor counting is simply a measurement of the visitor traffic entering and exiting offices, malls, sports venues, etc. Counting the visitors help to maximize the efficiency and effectiveness of employees, floor area and sales potential of an organization. Here is a low-cost microcontroller-based visitor counter that can be used to know the number of person at a place. All the components required are readily available in the market and the circuit is easy to build. A buzzer is provided for audio indication of fan speed variation.

Whenever the fan speed is increased / decreased, the system acknowledges by a short beep. The relays are used to operate the electrical fan or for operating any other electrical device. Normally the relays remain off. As soon as pin of the micro controller goes high, the relays operate. The system uses a compact circuitry built around 16F887A microcontroller. Programs are developed in Embedded C. Flash magic is used for loading programs into Microcontroller.

## II.COMPONENTS USED

A system is constructed with a certain components that every component has it own function integrated to each others for completing the hole system to functioning. The components should have the input, controller and the output. In this system, the input is a temperature sensor, the controller is a microcontroller and the output is a AC motor and also LCD for status monitoring. IR sensor sensing the input signal give information to microcontroller to control the room light according to the human occupancy.

**III. PROPOSED METHODOLOGY**

In this paper we are proposing to save the power consumption in electrical equipment like fan and light. It can be also use for the security system in auditorium and ATM gate. This work is in two parts room light control and automatic fan regulation with temperature.

**Room light control-**

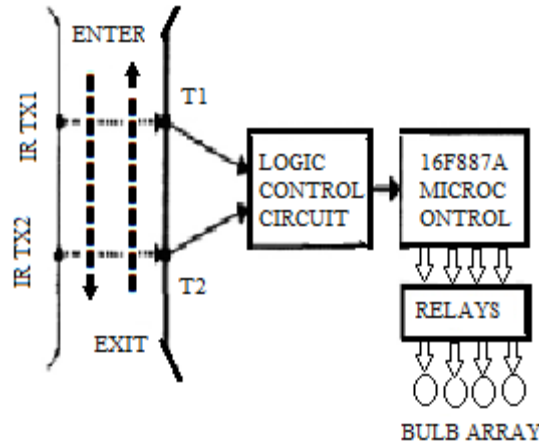


fig-1 Room Light Control Circuit

The circuit of the microcontroller-based room light controller, where in the transmitter and the receiver from the IR detection circuit. Control logic is built around transistors, operational amplifier LM324 (IC1) and flip-flop (IC2).

When nobody is passing through the entry/exit point, the IR beam continuously falls on phototransistor T1. Phototransistor T1 conducts and the high voltage at its emitter drives transistor T3 into saturation, which makes pin 3 of comparator N1 low and finally output pin 1 of comparator N1 is high.

**IV. AUTOMATIC FAN REGULATOR WITH TEMPERATURE-**

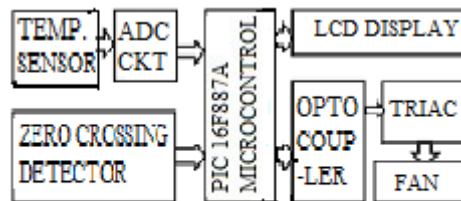


fig-2 Automatic fan regulator circuit

The block diagram contains 16F887A pic microcontroller, power supply and reset circuit, temperature sensor LM35, motor driver L293D, and AC motor drive, sensor, op-amp circuit for generating interrupt (to enable or disable entire operation), input switches for manual operation and display devices (LCD).

The flow of program is as power supply is provided to motor driver, 89C52 switches and ADC. The measured temperature is given to pic microcontroller and converted digital data from ADC which is inbuilt in pic microcontroller is given for further operation, display and speed variation, motor is driven by driver circuit.

**V. EXPECTED OUTCOME**

The main aim of this paper is to save energy through the proposed method. This method Not only save the valuable energy but for security reason it can be use in many auditorium. Where the requirement to check the total person to be entered or exit. First part of this work is to control the room light by pic microcontroller and relay. The second part of

this work is based on pic microcontroller .It contain temperature sensor that can sense the temperature & gives the control commands for microcontroller .Then microcontroller increases as well as decreases the speed of the fan.

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