

## IOT BASED VISITOR'S COUNTER

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### ABSTRACT

*In all vital areas of life such as home appliances, automated machine control, medical diagnostic instruments, transportation etc. usage of digital electronics are widely used. The human counting system is designed to monitor the entrance of a building to ensure any movement made within the protected area. The human detection stages are implemented using sensors through the use of LASER light with the LDR (Light Dependent Resistor). This system can be used as a human counting machine to limit the accommodation of people in a closed area.*

**KEYWORDS:** *Obstruction detection, Human counting, Laser, LDR.*

### I. INTRODUCTION

Nowadays, the places such as bank, shopping mall and cinema hall etc where the security is the most prior and also in some vehicle and auditorium where the sitting capacity is very less, there it is needed to monitor over the people entering & exiting from that place or the moving system. In this project work the LASER technology is utilized whose path is invisible. A laser is a device emitting light through optical amplification based on the stimulated emission of electromagnetic radiation[1]. The term "laser" originated as "light amplification by stimulated emission of radiation".

The primary wavelengths of laser radiation for current applications include the ultraviolet, visible, and infrared regions of the spectrum. Ultraviolet radiation for lasers consists of 180 and 400 nm wavelength. The visible region lies between 400 and 700 nm wavelength. The infrared region of the spectrum consists of radiation with 700 nm and 1 mm wavelength. When the intensity of the radiation is sufficiently high, damage to the absorbing tissue may happen[2]. System security is very much essential which can be done with motion sensing[3].

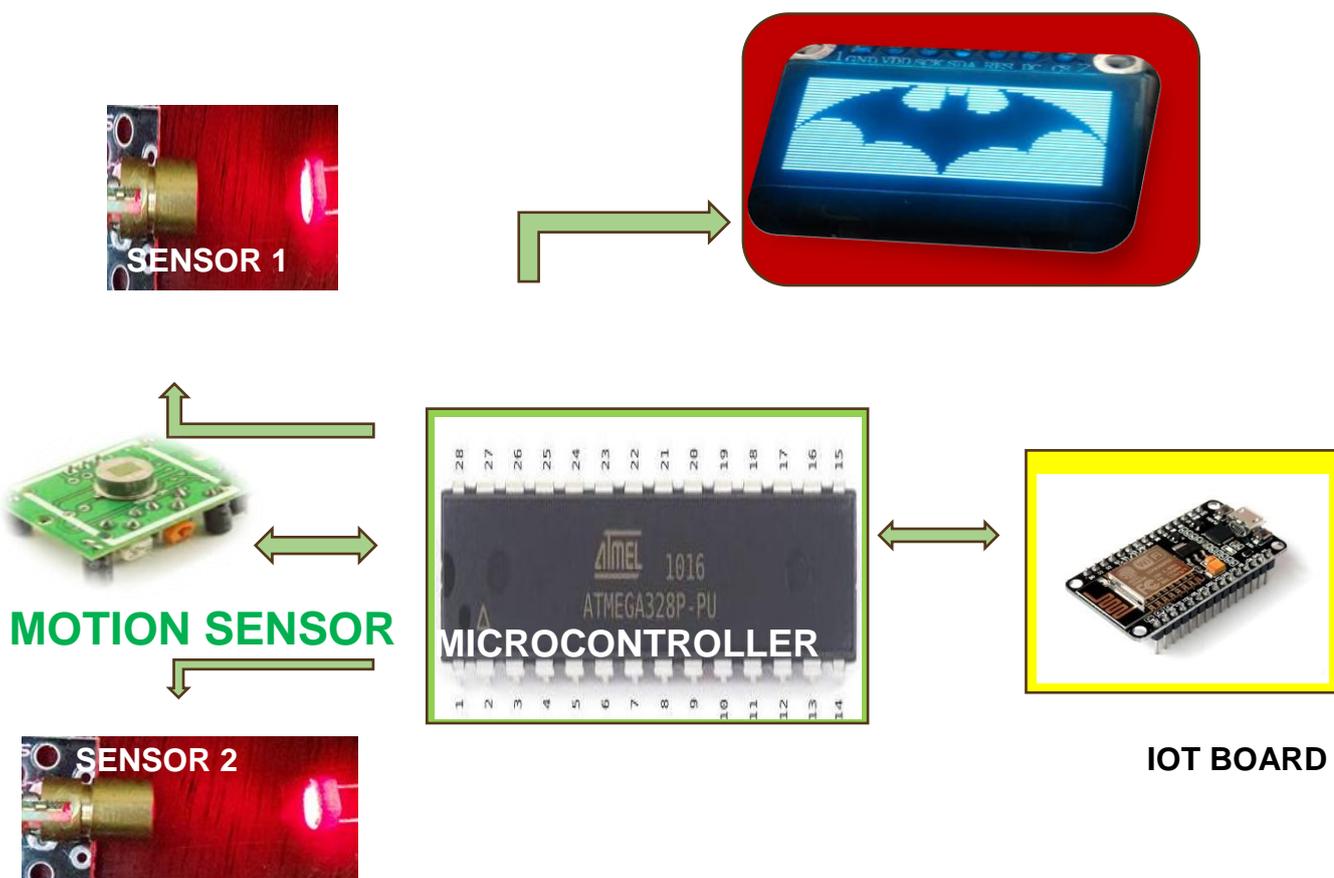
The counting starts when there is a discontinuity in the laser beam falling on the sensor. The discontinuity is detected at the entrance of the door of the selected place at the instant of time where the laser beam is not being fall on the sensor. This happens when someone passes by crossing the beam. This system helps to monitor the number of people entering and leaving that area. This helps to maintain the sitting or staying arrangement in that type of places and also helps to maintain security.

### II. MATERIAL REVIEW

The implementation of this project will involve the construction of a sensor which will be activated when the laser light is interrupted[4]. According to Ahmed M. S, Mohammed A. S. & Agbo G. A. (2008) the amplifier stage was built around an LM386 CMOS operational amplifier to amplify an input signal up to 200 times its

original value[5]. Detection of any intruder automatically with alarming system is presented in the paper and the idea is given by A. Oludele et al. A method of security system design is depicted in this paper. The main objective of the work is the segmentation of groups of people into individuals and tracking them over time. Gathering of data based on the number of people and their existence within the measured area is kept with noise minimization idea is given in this paper.

### III.BLOCK DIAGRAM



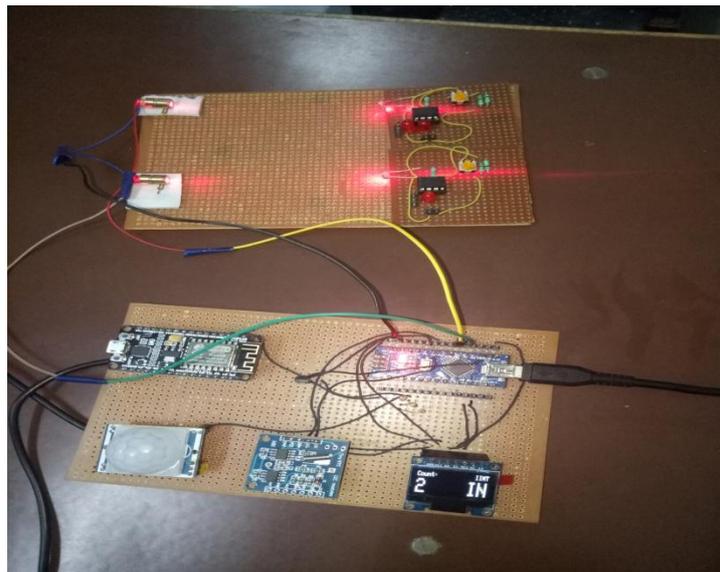
### IV.TECHNOLOGY USED

In this system a laser beam is used to count the persons entering the detection system .The laser is advantageous because laser doesn't scatter & invisible. In the transmitter section the laser is used and the receiver that is Light dependent Resistor (LDR). The counter counts the number of people entering by crossing the system. When a person enters by crossing the laser beam there is a discontinuity in the beam falling on the receiver (LDR). When the incident beam is stopped then the resistance fall upon the LDR. At the same time counter counts and it is shown on the 7 segment LED display. Thus the monitoring on the people entering a particular place is done which can be implemented in different industrial applications. We have also used IOT for sending the data to an

online storage. And data can be retrieved from anywhere in the world. For this we have used Node MCU board. We have used real time module and temperature monitoring system for calculating date, time and temperature

## V. RESULTS AND CONCLUSION

When the LASER light is not falling on the LDR that means there is an obstruction. When the LASER light is falling on the LDR that means there is no obstruction. A set of same counter arrangement using laser will be applied at the Exit gate counter which will count the number of people leaving that place. Difference between the counting system of entrance and exit is that it counts the reverse of the entrance counting system in case of exit. Accept this all other configurations are same and also works on same principle. A Counter called "Total counter" will be there at the center will keep counting for the number of people present on that place. This will be done by taking the data from both the counters which are present at the Entrance and at the Exit gate too. A simple human counting system has been designed, constructed and tested. It is useful for indoor security especially in small rooms, museums, jewelry stores and art galleries. For the advancement of the system it can be modified as a sound tracking system also for better protection.



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