People Counting based on Sensor Machine

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Abstract— In this paper, we describe an automatic people counting system based on the light dependent resistor.Several people counting systems have been proposed separately .In the dark the resistance of the LDR is very high , typically around 1M ohm .In bright light it is low ,typically 1K ohm.
In this paper we develop a system which can count the number of visiting people and sense environment information to protect an ecosystem.For people counting our system uses two light beam sensors ,rechargeable power and a calculator.Our people counting method can automatically count only the number of incoming people at a special point in real time.This circuit is satisfactory if the changes in light level to be detected are large and the transition is quick-for Example , a person walking pass a doorway. For the future work we have a plan to improve the system so that it can record both the incoming and outgoing audiences ,so that , at any instant of time the machine can display the actual number of audience present in the house matter of concerned.

Keywords— People counting machine, sensor,IC1,IC2.

I.   INTRODUCTION

People counting is the key to retail analytics.If you don't know how many persons entered the auditorium or shop,you don't know how many left without buying or Conversion Ratio is the key metric:the ratio of the number of purchasers of the total number of people entering the shop.People counters offer accurate and repeatable people counting – the key to the calculation of Conversion Ratio.People counters enable the comparison of store performance across estates and remove the mystery from performance analysis[4]. The solution enables you to gather staff and store management performance ,optimize staffing levels,optimize customer service and implement shared best practices Achieve a first rate return on investment , implement a people counting system with a people counter .People counters set the standard in accurate people counting more than 100000 are in use worldwide.

II.   MOTIVATION

A. Purpose

The purpose of people counter is to count people[2] . The application that I see that it is most suited for and what I had in mind when making it Is to keep track of the people in the room or auditorium .If there is more than one person in the room, then it turns on the light in the room.

B. Specification

Better indicating system less size. It works only one way.This project is developed to reckon the presence on audience who come to stadium and record the overall statistic of audience in database systems[1]. The aim of this project to improve the security level system with more systematic and secure and able to know the total number of audience at one time in the stadium[5]. Beside that the project were look to enhance accuracy of the system process to count and record entry of bystander and also able to compare the differences between the total presence audiences with the total capacity equipped to shun from wreck the stadium structure.

C. Aim of the Poject

The goal of this project is to expand the security stadium with perform the real time counting audience to get know the real total attendance of audience inside the stadium at one time .All the statistic of audience that recorded is stored in a database system within Microsoft access[3]. The system is flexible and dynamic with an equipped infrared sensor which able to distinguish the act of the audience going in or out[11]. In additional the stadium security can evade the destruction of structural stadium.

III.   HARDWARE REQUIREMENTS

A. Hardware Requirements

PART	NAME	VALUE
LDR1	LDR(Sensor)	-
LDR2	LDR(Sensor)	-
IC1	Integrated circuit	IC 555
IC2	Integrated circuit	IC 555
D1	Diod	IN 4001
D2	Diod	IN 4007
C1	Condensor	0.01μf
C2	Capacitor	0.01μf
C3	Capacitor	220μf
C4	Capacitor	100μf
C5	Capacitor	1000μf
R1,R2	Resistance	10kΩ
R3	Resistance	100 kΩ
R4	Resistance	10 kΩ
RL1	Relay	12v ,200Ω

B. Description Of Hardwares

Basically for People Counting system Sensor is very essential. Soo it is the first component which is to be needed. Because,sensor has one character to sense something[6]. So if it can sense every people in the shopping mall or any stadium then it is also easier to count the people number.With the sensors, capacitors, Diods and Registers one integrated circuit is formed.So these are very important elements to form one integrated circuit for this purpose.

IV.   CIRCUIT DIAGRAM

Fig1.Circuit Diagram

V.   CIRCUIT DESCRIPTION

Here Fig1 the both two IC s are operated in monostable operation .During this operation ,when a pulse goes in to Pin 2 of IC 555,the IC output changes its state and appears high. But this is only for a given time duration.Here, the two IC s work the same .IC1 is calibrated to be switched ON , for 3.63 sec when pulse goes to the IC1's output. The 10 k register controls its sensitivity .But IC2 does not consume power from the power supply rail. Instead ,it gets power from IC1's output(pin 3) when pulse from LDR1 goes into IC1 ,it stays on for 3.63 sec.

For this time duration IC2 gets power[7] .During this time when another pulse from LDR2 goes to into K2 input , it changes its state and turns on the relay.So IC1 must be turned on first to Switched on the second IC. The circuitry around IC1 can be told at stage 2. Here I have used an indication system to indicate the state of the stages. Now it is clear that the relay can't be turned on when IC2 gets pulse first[8]. So , LDR1 must be get dark and LDR2 then. When the vice versa happens ,the relay does not turned on.

LDR (Light Dependency Register)
↓
Give signal (When light fall on it ,its R value high and then low)
↓
To the IC 555(Its power light on and applications)
↓
Flip Flop (Logic high or low)and the relay on and off then calculator count the digits.

VI.   APPLICATIONS

A. Applications of People Counter

Real time counting audience system is one of application detector system consumption . This project was headed for reckon the presence of an audience at the entrance and perform the basic calculation to get the exact number spectator with considering the circumstances with out them[12]. Nowadays the technology of detector system becomes sophisticated and blooming.One of branch system detectors is a motion detector. The creation of the motion detector system was an interesting project since it combines both usage software and hardware components.On the hardware part there are motion detector ,PC and controller board circuit interfacing ,and on software part,there is data encoding and intelligent counting data[10] .The main purpose of this project is able to invent the control system with an equipped detector system for upgrade the existing security stadium. Nevertheless, this system can be also embezzled in everywhere as enumerate presence such laboratories ,library,office ,main hall and classes[9].This in accordance with development of the sophistication engineering world which have entered the millennium epoch replace the transition of technology era. The entire manual work field is going to change to automatic system with equipped high standard electronic system.

B.Objectives

i. To explore how different motion detectors operate.
ii. To gain the knowledge how to construct transmitter and receiver detector circuit.
iii.To develop real time counting audience system.
iv. To improve security system procedure for entrance football stadium .
v. To solve the sale of fake tickets from bloom and deceptive the buyer

VII.   FUTURE IMPROVEMENT

After designing the people counter circuit,the testing results gives and accuracy rate of 98%.This is a high accuracy rate. Form this result I realized that the circuit only counts the one way in incoming mode . But there is a probability that I can improve the circuit by calculating the people going outside from rooms or auditorium .That is I can design the circuit by two way mode incoming as well as out going.

VII.   CONCLUSION

Every thing ended up working just fine. But I did have some problems with bouncing but the Schmitt trigger clear all that up. Other uses for this circuit could be to measure velocity of things that pass through the beams and the length of the objective in one direction .One of the biggest problems was liming up the beams of light to get the right voltage levels. Once I got that right ,it went very well.

REFERENCES

[1]   Pravein Govindan Kannanand ,Seshadri Padmanabha Venkatagiri,Mun Choon Chan ,*Low Cost Crowd Counting Using Audio Tones.*
[2]   Robert Andres,Tiziano Modotti,*Passenger Counting Applications.*
[3]   Traf-sys   *people counting systems*
[4]   Junliang Xing,Haizhou Ai,Liwei Liu Shihong Lao, *Robust Crowd Counting Using Detection Flow*.
[5]   C.Qian, H.Ngan and Y.Liu ,*Cardinality Estimation for large scale rfid systems .In PerCom '08 ,2008.*
[6]   R.K.Rana,C.T.Chou,S.S.Kanhere,N.Bulusu and W.Hu. *Earphone :an end to end participatory urban noise mapping system .In IPSN 10,2010.*
[7]   Automated people counting by using low resolution *Loughborough University Institutional Repository*
[8]   P.Mohan,V.N Padmanavan,and R.Ramjee,*Nericell:rich monitoring of road traffic conditions using mobile smartphones.In SenSys '08,2008.*
[9]   T.Nakakura,Y.Sumi and T.Nisidha,*Neary:Conversation field detection based on similarity of auditory situation .InHotmobile. '09,2009.*
[10]   Y.Guo and M.Hazas,*Acoustic source localization of everyday sounds using wireless sensor networks,In Ubicomp '10,2010.*
[11]   B.Antic,D.Letic,D.Chulibrk,and V.Crnojevic,*K- means based segmentation for real time Zenithal people counting.*
[12]   Patrick Sentri, Distributed People Counting Using Wireless Sensor Network.