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DESIGN AND IMPLEMENTS OF AUTOMATIC POWER SAVING THROUGH IMAGE PROCESSING

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Abstract: One of the major problems in the most populated and developing countries like India, is Energy or Power crisis. Hence, there is a pressing need to conserve power. There are many simple ways to save electricity, like using the electric and electronic gadgets whenever and wherever needed and switching them off, while not in use. But in places such as large auditoriums and meeting halls, there will be a fan or an Air-conditioner keeps running in unmanned area too, even before the people arrive. This contributes to a considerable amount of electricity wastage. There are many ways to prevent this wastage, like, installing IR sensors to detect people etc. These methods are quite costlier and complex for larger areas. Hence, here we propose a new method of controlling the power supply of auditoriums using, Image Processing. Here first we take a reference image of an empty auditorium and any change in that reference image is detected and then according to that change respective equipment's alone are turned on. Thus power wastage is controlled. This is dual usage system in which a camera is used for detecting people as well as surveillance purposes. This is very simple, efficient and cheaper technique to save energy. Another big advantage is, we can extend this up to applications like home automation etc.

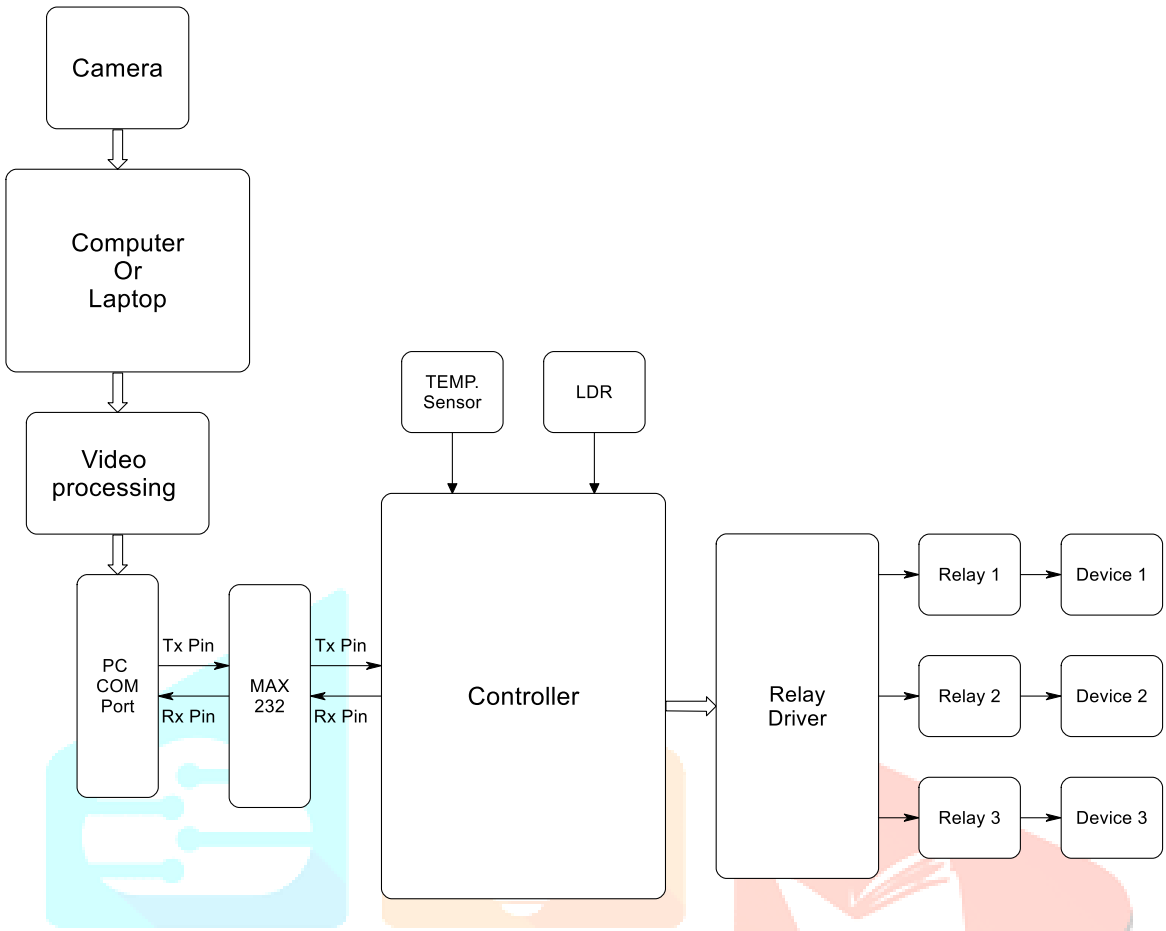
Index Terms **- Image Processing, conserve power, camera and automation**.

I. INTRODUCTION

Video surveillance systems are widespread and common in many environments. Video surveillance has been a key component in ensuring security at airports, banks, casinos, and correctional institutions. More recently, governments' agencies, businesses, and even schools are turning toward video surveillance as a means to increase public security. With the proliferation of inexpensive cameras and the availability of high-speed, broad-band wireless networks, deploying a large number of cameras for security surveillance has become economically and technically feasible. Several important research questions remain to be addressed before we can rely upon video surveillance as an effective tool for crime prevention, crime resolution, and crime protection .

Much of the current research in video surveillance focuses on algorithms to analyze video and other media from multiple sources to automatically detect significant events . Example applications include intrusion detection, activity monitoring, and pedestrian counting. The capability of extracting moving objects from a video sequence is a fundamental and crucial problem of these vision systems. For systems using static cameras, background subtraction is the method typically used to segment moving regions in the image sequences, by comparing each frame to a model of the scene background.

II. BLOCK DIA



III. LITERATURE REVIEW

Literature survey is used to acquire knowledge and skill to complete this project. The main source for gaining the knowledge for this project is latest papers related on this topic. But there are some drawbacks of the previous research, to overcome that drawback and making the project more accurate we are doing several changes for making it more powerful algorithm.
By doing study on the previous research .the following conclusions are taken under consideration.

Accordingly to "Anisha Gupta/ Punit Gupta2,jasmeet Chhabra" [3] they proposed intelligent automated system for an efficient power management is being deployed and tested over institutional building in which the lights of the classrooms are automatically controlled by the IOT device. That sense the real time occupancy based on the schedule uploaded on the database server, and takes intelligent action of controlling the lights of classrooms using electromagnet relay switch. The IOT device used here is Intel Galileo board and the sensor used for sensing the real time occupancy in motion detector sensor. The proposed system architectureis explained which include server connected to Intel Galileo board that automatically controls the lights of the class by realizing the real time occupancy of detecting the class using motion sensor[3]. With respect to "N. Sribhagat Verma, Ganesh Taduri "[4] the need to automate the whole process of power management is very much there and this need is only going to escalate in the future with rising prices and scarcity of resources. Automated power management system is an effort in this direction and a small attempt to solve one of the biggest problems of mankind. With respect to our objective and scope, we have implemented and tested our system to the best possible. thus they conclude that automated power management system provides a practical and feasible approach to the problem of power management.[4]

"Kavya P. Walad, Jyoti Shetty "[5] they discussed about existing traffic control system and their drawback, to overcome from those drawback can build a flexible traffic light control system based on traffic density. To find traffic density edge detection technique can be used. the edge detection is a well known technique in image processing from identifying an image object, image segmentation, image enhancement. Each edge detection technique have its own advantages and disadvantages in various fields. Gradients based or first order edge detection and Laplace based or second order edge detection operators are discussed in this paper can be implemented in MATLAB. There are so many drawbacks with Gaussian based edge detection is sensitive to noise. This is because of using static dimension of kernel filer and its coefficients. The canny edge detection gives the best performance even in noise condition compared to the first order edge detection. This is more costly compared to the Sobel. Prewitt and Robert's operator. The main disadvantage with canny is that it has high computational time and responsible for weak edges. The best edge detection technique is necessary to provide an errorless solution. In future rather than using existing edge detection technique can use fuzzy logic and morphological based edge detection technique for regulating traffic control system based on traffic density to save the time and reduce operating cost.

Accordingly "Manoj Kumar Asst. Professor, Dept of CSE"[6] they calculated all the various steps done and various results are compared with test cases. Students can be at corner or they can be at in front in a group etc. Test case I display two students are sitting and their subtracted image is another image also test case II display two students are sitting and their subtracted image is shown in another image. The study shows that this method is helpful in saving electricity. This method is very cheap, efficient and can reduce wastage of power. This will consistently detect that is there any person in a classroom and auditorium and hence saves electricity.

[6] Accordingly "Vankatesh K and Sarath Kumar P "they conclude that image processing is better technique to control the power supply in the auditorium. It shows that it can reduce the wastage of electricity and avoids the free running of those electrical equipments. It is also more consistent in detecting presence of people because it uses real time images. Overall, the system is goog but it still needs improvement to achieve a hundred percent accuracy. If achieved, then we can extend this application to many places like theatres and even for home automation Also they proposed a scope for face detection. With respect to "Shraddha Dhirde, Priyanka Ghuge, Sneha Khulape " they conclude that monitoring and controlling is done using parameter like temperature and human count by using Rasberry pi3. MB-LBP algorithm is implemented on the attributes of faces of people. This is one of the effective method to control the electric equipment and to reduce power consumption. Kiiruthika G, Meenatchi R, Mohan raj[9] proposed a system that image processing is one of the useful technique to control the power supply in large areas like malls and auditorium. Also this prevents the free running of electrical application thereby reducing the power wastage. Also it proves to be a consistent and efficient technique to detect the presence of people since it uses real time image.

Patteri Sooraj, Faizankhan Pathan, Gohil Vishal[2] conclude that a classroom can be visualized where all the appliances can be controlled automatically without further human assistance. This makes the camera smart enough to monitor the electrical equipment and thus brings the whole idea of automation into classroom. Hence a lot of efforts and resources can be conserved which can be utilized for different purpose. Vankatesh K developed a system in that image processing is main keyword to monitor the classroom and control power supply. The drawback with this system is that, it can be used only for the places whose orientation or arrangement is fixed. But they overcome it by resetting the reference images whenever the arrangement is altered. The main program needs not to be altered. Another way of overcoming this limitation is using face detection technique. That is expected to give much flexibility to the overall system.

For overcoming the previous problems related to the work, Here in this recent work we are using same technique of image processing with the temperature sensor and light sensor to sense the atmospheric temperature and light for calculating the need of appliances and making the system more accurate and convenient. In the alternation of face detection we are calculating the centered of object and on the basis of results, the operation will perform through microcontroller programming. In that we firstly take a reference image of empty classroom. This reference image compared to real time image after every 10 seconds. And with respect to changes, the operation will perform. There are many steps and parameter involves in this project that make it better and accurate than before.

IV. IMPLEMENTATION

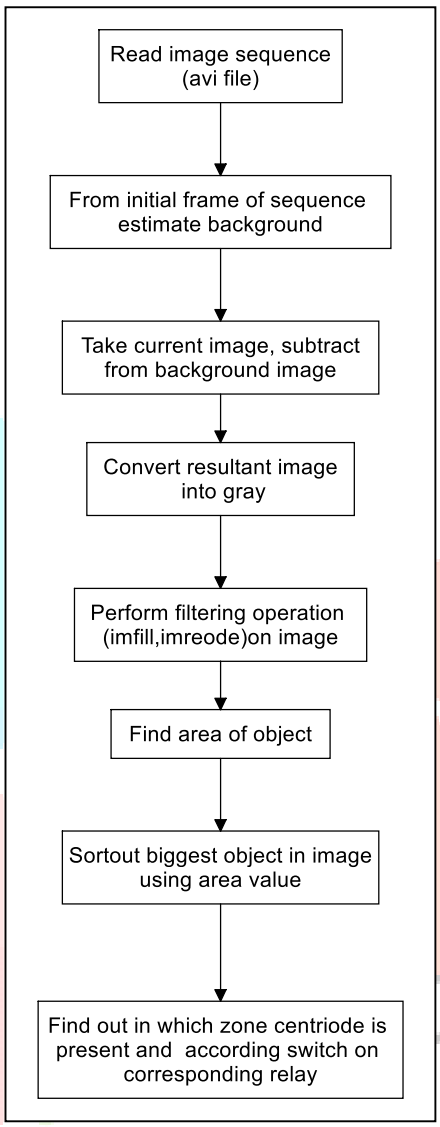
Detection: The main difficulties of such approach lie in the fact that, even in controlled environments, the background undergoes a continual change, mostly use to the existence of lighting variations and distracters (example: clouds passing by, braches of trees moving with the wind). The robustness towards lighting variation of the scene is achieved using adaptive background models and adaptive per-pixel thresholds. Detection is done on the basis of centroid of object is present.

Tracking: The purpose of tracking is to determine the spatial temporal information of each target present in the scene. Since the visual motion of targets is always small in comparison to their spatial extends, no position prediction is necessary to construct the strokes. The association of regions and their classification is based on a binary association matrix computed by testing the overlap of regions in consecutive frames. Whenever there is a match, the stroke is updated. Tracking also interacts with the detection.

V. SIMPLIFIED OVERVIEW

First take a reference image through web camera and read image sequence. From initial frame of sequence estimate background. Now take a current image and subtract that image from background image. Then apply further processing that is converting the resultant image into the gray scale image.

Flow chart:



On that gray scale image perform the filtering operation on image and find area of object. Now for calculating centriode sort-out the biggest object in image using area value. Then at the last find out the zone in which centriode is present and accordance with that switch on corresponding relay.

CONCLUSION

Efficient Power saving of electrical devices is developed using parameter like temperature and light sensors by using Image processing. Human detection is carried out by comparing both the reference image and real time image together and by calculating centroid for each detected gray scale image. Also adding temperature sensor and LDR we can calculate atmospheric need of fan and light. This is one of the method which is effective to control the electrical equipment and reduce power consumption. The study showed that image processing is better technique to control the power supply in the classroom. That it can minimize the wastage of electricity and avoid the free running of equipment's. Also by using real time image we make it more consistent in detecting presence of people. By adding temperature and light sensor we make this system more accurate and convenient to use.

REFERENCES

[1] Vankatesh K1 and Sarath Kumar P2. "Automatic Real Time Auditorium Power Supply Control Using Image Processing". DOI:03.LSCS.2013.
[2] Patteri Sooraj1, Faizankhan Pthan2, Gohil Vishal3, Pritesh Kukadia4,"Automatic Controlling Of Electrical Appliancesin Classroom Using Image Processing".IJERD:April2016.
[3] Anisha Gupta/Punit Gupta2, Jasmeet Chhabra3."IoT based Power Efficient System Design Using Automation For Classroom". IEEE 2015.
[4] N. SribhagatVarma, Ganesh Taduri, N. Bhagirath Sai."Automatic Electrical Appliances control Based on Image Processing". IJERT September2013.
[5] Kavya PWalad, Jyothi Shetty" Traffic Light Control System Using Image Processing". IJIRCCE Octomber2014.
[6] Manoj Kumar."Power Saving in Electrical Devices Using Image Processing". In IJEAST May2016.
[7] Omkar Ramdas Gaikwad, Anil Vishwasrao, Prof. Kanchan Pujari, Tejas Talathi "Image Processing Based Traffic Control" in IJSETR April2014.
[8]ShraddhaDhirde1,PriyankaGhuge2,Sneha Khulape3"Monitoring and Controlling of an Auditorium " in IJEST2017.
[9] Kiruthika G1, MeenatchiR1,Mohan Raj V1, Pradeepa S1."Device Power Consumption avoidance using Image Processing" in IJARMET March2017.
[10]Sunil Kumar Matangi and, Sateesh Prathapani, "Design of Smart Power Controlling and Saving System in Auditorium by using MCS51
[11]Vikramadity Dangi, AmolParab, Kshitij Pawar, S.SRathod,"Image Processing Based Intelligent Traffic Controller", Undergraduate