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Power Saving by Using Image Processing

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***Abstract*—** This Paper Proposes Power Saving by using Image Processing. In India major problems of Energy and Power crisis because of it is developing country. We have many ways to save Electricity using Electric and Electronic Gadgets whenever and wherever is need and we can also switching them off, while not in use. But in many places such as large auditoriums and meeting halls, there will be a fan or an Air-conditioner keep running. Due to this, a large amount of electricity is wastage. We can prevent this wastage by using installing IR sensors to detect people. But these methods are quite costlier and required large areas. Therefore, we propose a new method of controlling the power supply by using Image Processing. In this paper, we have to take reference image and if any change in that reference image it will detected and change their status according to that and equipment will be turned on. In this way power wastage is controlled. We can use this system for dual purpose in which a camera is used for detecting people as well as surveillance. The main advantage of this system is a very simple, efficient and cheaper technique to save energy. Second big advantage is we extend this up to application like home automation etc.

Index Terms*: Image processing, Web Cam Camera, IR Sensor, Control Signal, Edge Detection, Real Time Image, Reference Image, Image acquisition, Image partitioning, Edge detection and Image Comparison.*

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I. INTRODUCTION

In this Paper give a short overview of Power Saving by using Image Processing. Many times in some places such as large auditorium or halls, electric equipment's like fan, light or air conditioner are running even if there is no people. They all are operated manually Some times in some are electric equipment's are running meaningless. It is an uncomfortable task to turning on and off the fan, light, etc. To avoid this, Infrared Sensor controlling technique is used to detect people. But everyone knows, IR is harmful for human beings and also installation cost and complexity increases. This paper presents a possible solution to encounter the problem of Electricity Misuse. The technology used here is implementing occupancy sensing using Face detection. In this paper, a solution implements Face detection to detect a human presence and accordingly turn on/off the power supply of the place under consideration. The proposed concept could also be used for monitoring and surveillance purpose. The paper describes a possible solution to conserve electricity by implementing occupancy sensor that is based on image processing, face detection to be precise.Type Style and Fonts

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II. PROPOSED CONTROL DESIGN

In this Paper Proposed System introduce Image Processing. Here first stage is the image acquisition. Digital Image creating by Image acquisition and it is a process of processing the data, compressing the data, storing the data, print the data and accordingly display that image. Here, we take the images by using digital camera. Camera should be place to perfect place so that it covers the entire auditorium or Hall. In this paper real time images are captured some intervals of time and reference image is taken only once in a time for setting. The Captured images are fed as input to the main program through certain algorithms. The real time image captured is a color image. But Grayscale images are comfortable for processing. A Grayscale image contains each pixel as a single sample. These images are also known as black-and-white images.

Figure. 1. (a) Reference Image

Figure. 1. (b) Real Time Image

In image partition user can interact with the underlying partition's that represent the image. After partitioning the features are the region can be parallel processed. In this we have to split the image into many cells, with each cell is simply the area is covered. Both the reference and real time images are pastationed in a same manner.

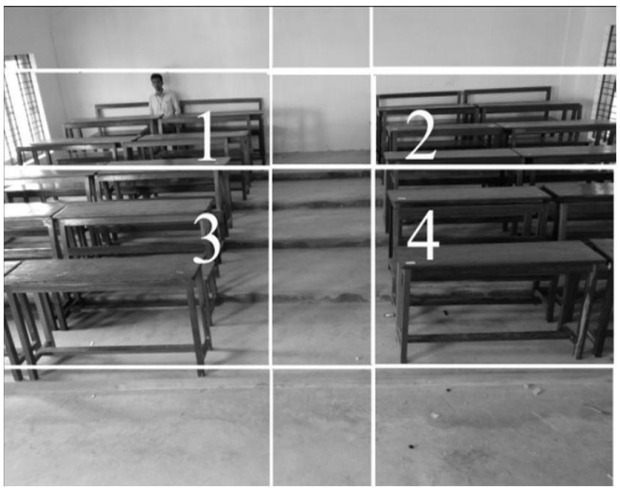

Figure.2. Image Partitioning Illustration

Edge detection is a basic tool in image processing used for features detection and attributes extraction. The main objective of edge detection is to find out the variation in the real time captured image from the reference image. Here we used canny edge detector. It used one of the most widely algorithms. Firstly smoothens the image and detects the image gradient to highlight region with high spatial derivatives. Then the two edge detected images are compared by merely subtracting and the intensity values for the entire new images is calculated. The webcam continously stream the video. In this paper frames are in image format. This is denoted by webcam. In this all body parts are calculated. On the human face, these parts are located at a particular relative distance with each other. The unique parameter facilitates the human face dectection. Once it is detected then program may send a signal to trip the corresponding relay.

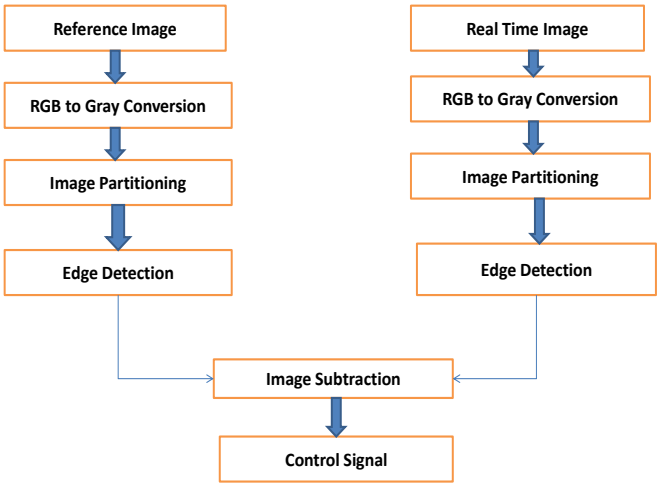

Figure. 3. Block Diagram of General Framwork

III. IMPLEMENTATION AND TESTING

In this paper, various results are compared with some test cases are the respective edge detected subtracted images. The probability of seating arrangement people is very vast in edge detected subtracted images. They can either occupy the area which are closer the camera or the areas that are far from the camera. In this, if people occupy the cells at the bottom of image matrix the threshold value will be more. And if the people occupy the cells in the top of image matrix then the threshold level will be lesser. This is because when a person occupies a seat is far from the camera, his size will be smaller in the captured image. Similarly, if he occupies a seat nearer to the camera, his size will be larger in the Image. If a person occupies a place near the frontiers of two cells, then his presence is detected in two cells, then electric equipment may get turned on, with the summation exceeding the threshold value.

IV. CONCLUSION

The Image Processing is a better technique to control the power supply in the auditorium or Hall. It reduced wastage of electricity. It is also more consistent in detecting presence of people because it uses real time images. Here, no need to check manually, webcam is continuously monitoring the entrance and exits of the auditorium. Therefore we conclude that this system we can also extend to many places like theaters and even for home automation because it has lot of advantages such as simple structure, small in size, low power consumption, low cost and stable.

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