

# IMPLEMENTATION OF A SECURITY ALGORITHM FOR IDENTIFICATION OF TARGET IN MOTION

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## ABSTRACT

Now-a-day's security issue is very complicated. It is very complicated to detect the intruders. For that purpose we are designing the project to detect the change in the position of the obstacle. It is very useful for the application of detecting the motion. This is also very applicable in the field like video compression. In video compression we can easily reduce the size by comparing the adjacent frames in video. Whenever there is no change between the frames then we can easily reduce the size by deleting one of the frame from the video. It is used for the motion detection. Whenever we are decompressing the video we add the adjacent frames where ever we deleted the frame. By using Mat lab we can calculate the changes between the two adjacent frames.

**Keywords:** MATLAB, Digital Image Processing, Adjacent Frame Comparison.

## I INTRODUCTION

Now a days Image processing is very popular when compared to the remaining fields. By using image processing we can achieve complex tasks like face recognition, traffic density calculation etc. Mat Lab is mostly useful for the image processing. With the help of the Mat Lab we can easily compare the images pixel by pixel. Mat lab is used for the converting the red, blue, green color image into gray color image, or to the black and white image. We can extract the individual color images like red, blue or green images individually. For calculation of image require steps are frame separation, binary operation, gray enhancement and filter operation.

## II MOVING OBJECT DETECTING

We can detect the variable obstacle detection using three ways which are optical flow method, back ground difference method and adjacent frame difference method. Optical flow shows the image verification which is caused due to the change in the motion in a definite time interval. Buy when coming to the optical flow which needs the large amount of calculations. It is time taking when compared to other process.

The other technique is the back ground comparison. In this process we are taking the current frame and the background image. The principle of back ground comparison is; if there is any object moved or something it can be detected when we compared with the back ground, but back ground comparison is noise sensitive. There is chance of getting black dots on image.

When coming to adjacent frame comparison we are considering the two frames in a sequel by leaving the one between them. In this process if there is any movement in the surroundings than it defiantly caught on the image. When we subtract both the images we can easily detect the object variation.

### III REALIZATION OF MOVING OBJECT DETECTING ALGORITHM

The main interface which is used for the image processing we must prefer MATLAB. MATLAB is user interface for editing and handling digital images like RGB images, Gray images and black & white images etc and it can handle multiple image farmers like .jpeg, .bmp, .gif, .had, .pcx, .png, .tiff, .xwd, which is used for the image processing. In MATLAB we are having more sophisticated commands like image displaying, image editing, image comparison, addition, subtraction etc.

In video recording format we have many encoding and decoding techniques like While we are using camera output video format is of different type's like .mp4, .avi etc. Now a day's pixel quality is up to 720p and 1080p. The principle of the video is to play the sequential photo frames with high speed. For continues video we have to play 25frames/sec.

The main principle of the digital image is combining of the three images of mainly three primary colors Red, Blue, Green. The resolution of the each color is 256 and the total color resolution of pixel is 256x256x256. In which three co-ordinates two are height and width of the frame and the third one is RGB combination of the pixel.

We can detect the object variation when we subtract two adjacent images. We can see the difference if there is any object moved. When we subtract current frame from the previous frame, the resulted image is converted to the gray image. In gray image we are having the quality of image resolution of 256. MATLAB is very useful for the conversion from the RGB image to gray or gray image to the black and white image. While converting the RGB image into Gray we have to consider the red, blue and green color and average value is considered for every pixel and gray color image is generated. After image is converted starting from the top left corner we are going to divide the image into blocks of 5\*5 matrixes with each pixel has a center.

Here we can see the two different images of a video which taken while the video is recording.



**Fig.1 Previous Frame**



**Fig.2 Current Frame**

Here we see that the object is moved from one place to other place. When we subtract one image from other image we can see the difference. If the there is no change in object position then we can identify by seeing

resulting image. If the resulting image contains any other color instead of full black color image, we can see the resultant image after the subtraction.

We can see the resultant image which is shown on above is in the RGB combination and which must be converted into the gray color which is easy for the processing for further calculations.



**Fig-3 Result After Subtraction**



**Fig.4 Gray color image converted from fig.3**

Above image which we can see is the gray color combination which was converted from the color rgb image which is subtracted from the two images. For further processing we need to convert the gray color image to the black and white image and we have to consider the threshold of the image.

The gray color image contains the resolution of 256 values which is stored in the one byte register. While converting the gray color image to the black and white we can adjust the sensitivity from the 0 to 255. If the sensitivity is 128 then the resultant image contains the black for those who have less than 128 and it have white for those who have more than 128 values. This 128 value is known as threshold. We can set threshold from 0 to 256 value before we are converting. While converting the above image to the black and white we are setting the threshold value of 55. The resultant image can be displayed below.



**Fig.5 Converted to black and white from gray**

Then we have to divide the resultant black and white image into the blocks of  $5 \times 5$  starting from top left corner and having each pixel has center. Then we have to compare each pixel in every window. If we detect any difference then we can get the pixel value is more than the 128 value and we can detect easily. When there is noise we can detect the noise. If only small values are detected or very few no of windows detected than we can say that there is some noise and if there are more no of the windows detected than we can say that there is some obstacle is moving and there is no noise. We can detect how many objects are moving at the same time.

#### IV FLOW CHART

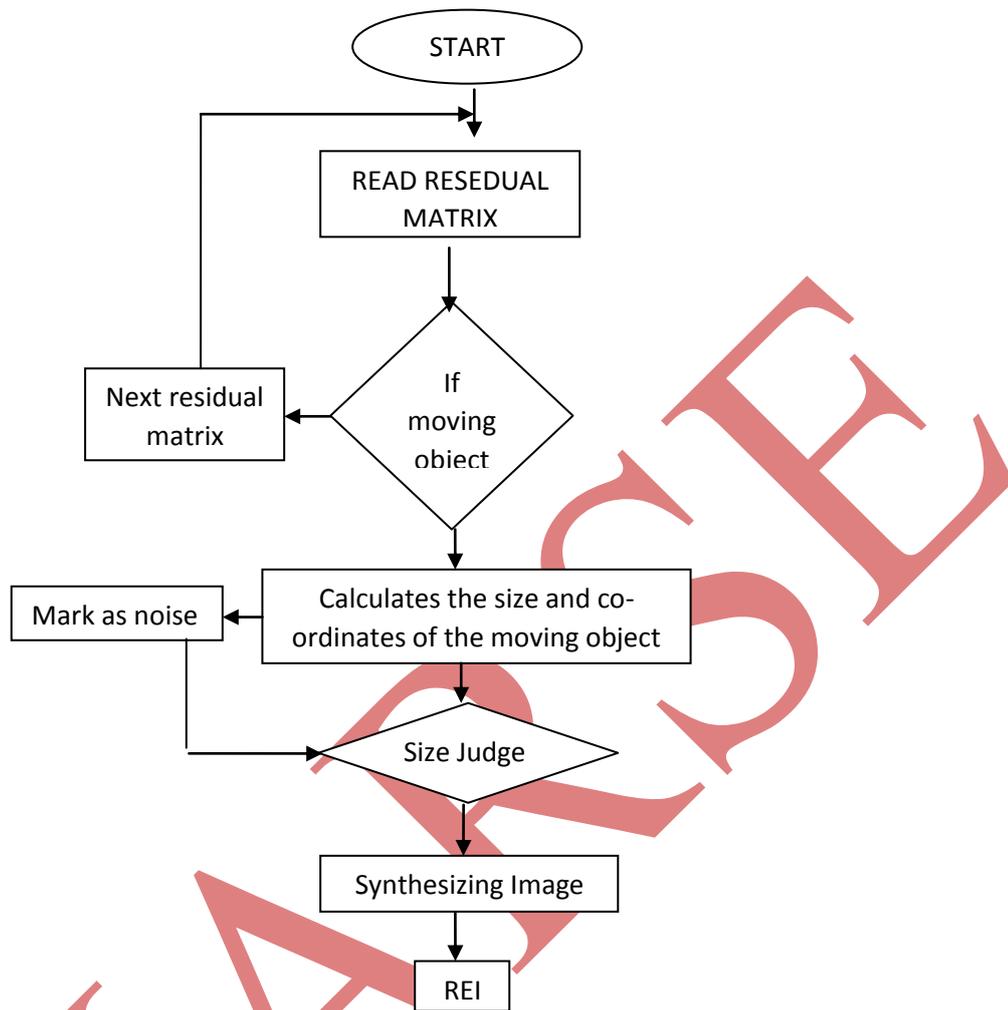


Fig: 6 Flow chart

#### V RESULT

When video is started recording we are able to access the two from the video clip example like first and fifth frames of one second and we are able to subtract the two video frames. After the subtraction we are successfully eliminated the noise. Then we are able to convert to gray color and then to black and white with successfully setting the threshold successfully. By setting the exact threshold value we are able to eliminate the maximum noise. Then we compared the each window of 5\*5 size and we spotted the variable object successfully.

#### VI CONCLUSION

We can say now a day's security is very problematic and it is risky to use old types of techniques like laser security system etc. With the help of our project we can reduce the security risks. Since we are using the cameras for the obstacle detection and the algorithm is simple we can detect the minor variation in front of the camera. This technology is very useful in the application like security at the outside the house or monitoring the security places like lockers etc.

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