

# Comparison of Edge Detection and Texture Analysis of Image using Matlab

Kirti Masown<sup>1</sup> and Rajesh Mehra<sup>2</sup>

<sup>1</sup>M.E. Scholar, Electronics & Communication Engineering Department,  
National Institute of Technical Teachers Training & Research,  
Chandigarh (India)  
*kirti.masown11@yahoo.com*

<sup>2</sup>Associate Professor, Electronics & Communication Engineering Department,  
National Institute of Technical Teachers Training & Research,  
Chandigarh (India)

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## Abstract

The increase in the number of product and quality is due to the use of technological innovation in production. In this paper, we try to improve the quality for the recognition of the image by using different techniques. We will operate the function on the same image, for more clarity about the difference in two functions. In this paper, taking two images and apply edge detection and texture analyses on both. Finger has been chosen for scanning purposes, while face is for face recognition. Both the applications are widely used. Result says that the texture analysis is much better than edge detection.

**Keywords:** *Edge Detection Tool, Texture Analyses Tool, Image Analysis, Gray-Scale, Images, Matlab.*

## 1. Introduction

For performing object recognition and scene interpretation, the edge detection and image segmentation play an important role. According to the research and process work in the area of image analyses, the robustness and generality of the algorithms have been established. For example, as we have an application as finger scanning, for that we have compared the results of edge detection using canny filter and on the same image texture analysis has also been done. We will able to recognize that clearly, even by looking at the output that which one would be better for the application like finger scanning. As there are a lot of other tools also we can be used for the finger scanning application, like prewitt

edge detection and even image segmentation could also be done. A wide range of biometric system is there and for that we need a high resolution images for the analysis.

## 2. Application usage

As discussed earlier, the main purpose of the paper is the comparison between the finishing of the image using edge detection and texture analyses. The applications which are correlated with this is finger scanning and face recognition. Nowadays, we are so much depend upon the recognition, like from phone operating till making the attendance, we use these system. So, it is very important to have a clear detection of the image and no imposter will be there or if any than it would be catch immediately. Similarly with the face recognition. It's not like we can use it for single application, we have just taken two examples, it could be plethora of application which could be done, just our main purpose is the image should be clear.

### 2.1 Edge Detection

In edge detection, there are many methods to find the edges of the image. The filters which can be used are sober, prewitt, canny, Roberts. From these four, canny filter gives the best results, so we will consider canny filter for the comparison. In the following figure, we have shown the output result of all four filters of edge

detection in fig.1. The output so formed has been shown below for both finger and face recognition. Now, we will consider the following images for our research.

Similarly, we applied this operation on our own image. In below figure we use different operations of edge detection like sobel, canny, prewitt, roberts in fig. 2.

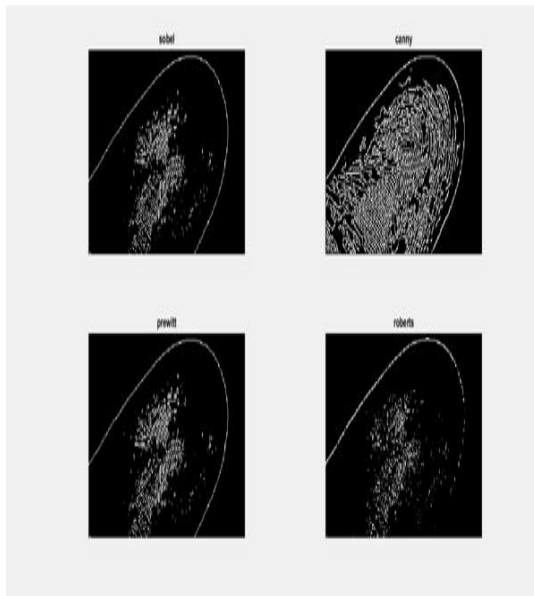
### 2.2 Texture Analyses

In texture analyses, we basically get a clear and textured image of the object. Specially used in biomedical systems for checking internal parts of body. Apart from that it is used for the accuracy of the image and to find imposters from that.

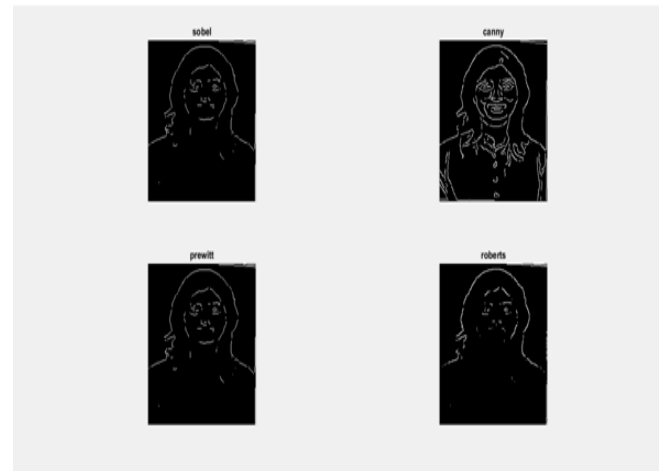
Following will be the output results so formed after applying texture analyses tool on the same images. We will get the output as in fig. 3.

### 3. Figures

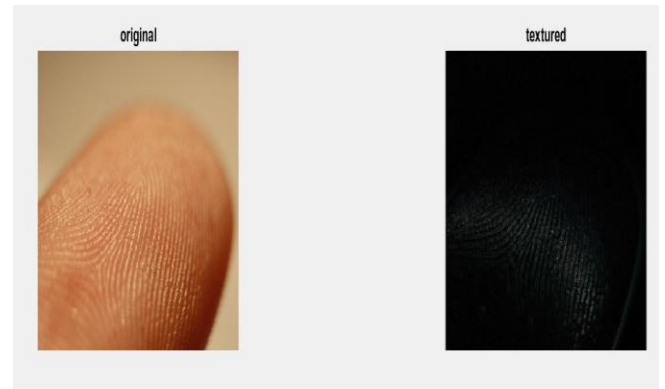
Followings are the figures regarding above text.



**Figure 1: Different filters of edge detection**



**Figure 2: Face recognition using edge detection**



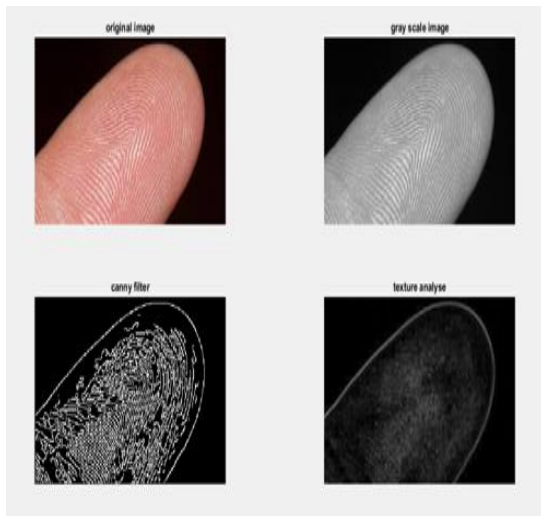
**Figure 3: Texture analyses on finger**



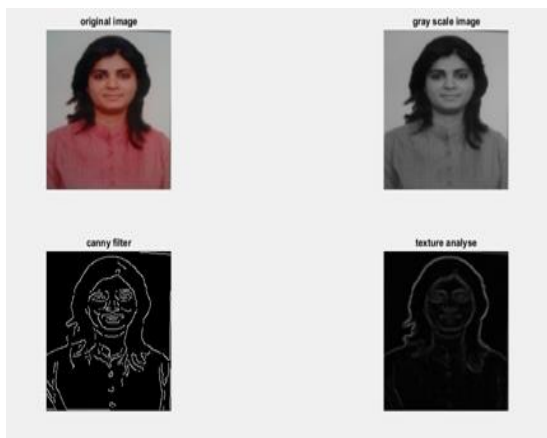
**Figure 4: Texture analyses on face**

#### 4. Comparison

Now will compare both the techniques which one will be more useful and good for analyses. So we have compare in one window only, which is showing original image , gray scale, then canny filter for edge detection and texture analyses. We have chosen canny edge detection as it is the best out of all, so we will compare all the results by taking canny edge detection only. We will compare the results of canny edge detection and texture analysis . Following are the results so formed.



**Figure 5: Comparison of finger image**



**Figure 6: Comparison of face image**

#### 5. Result

Finally, the outcome so formed by comparing edge detection and texture analysis with respect to some parameters like area, PSNR, visualization, computing time is as follow. We will take canny edge detection as it is better edge detector from all other.

Parameter	Original gray image	Canny edge detection	Texture analysis
Area	57600	3.4818e+03	5.7574e+04
PSNR(dB)	30.3943	10.6584	15.26
Visual analyses	Normal	Not Better	Better

#### 6. Conclusion

Though we have considered two different techniques, but we just want to compare that which one is better for which application. We decide whether we want to use edge detection or texture analysis according to a particular application. From results, we can say that texture analyses is good , as its PSNR is less and MSE is more and even visibility is also better.

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