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EDGE DETECTION IN A LIVE VIDEO

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***Abstract*— Edge detection is a necessary step in medical [1] image processing by parts also for products, and the use of differential operators to detect edge is one of the most common and effective methods. Now days cases like human brain tumor or Dental Cyst Surgery is a common word & for that, Magnetic Resonance Imaging(MRI) is the only option to detect Cyst or we have to perform Edge detection in still image. In surgical rum there is no time for waist. In this, approach a live video in surgical rum or any other industrial purposes detection of nano object through edge detection tannic. In this approach, a modern procedure is open to our practical field, which is not only use in Dental Cyst Surgery but also use in pipe leakage detector and many other application.**

***Index Terms*—Matlab Software, Computer Vision System Toolbox, Image Acquisition Toolbox, Image Processing Toolbox.**

I. INTRODUCTION

MATLAB is widely used in all areas of applied mathematics, in education and research at universities, and in the industry. MATLAB stands for Matrix Laboratory and the software is built up around vectors and matrices. This makes the software particularly useful for linear algebra but MATLAB is also a great tool for solving algebraic and differential equations and for numerical integration. MATLAB has powerful graphic tools and can produce nice pictures in both 2D and 3D. It is also a programming language, and is one of the easiest programming languages for writing mathematical programs. MATLAB also has some toolboxes useful for signal processing, image processing, optimization, etc. Edge detection is an image processing technique for finding the boundaries of objects within images. It works by detecting discontinuities in brightness. Edge detection is use for image segmentation and data extraction in areas such as image processing, computer vision, and machine vision. A *region of interest* (ROI) is a portion of an image that you want to filter or perform some other operation on. You define a ROI by creating a *binary mask[2]*, which is a binary image that is in same size as the image you want to process. In the mask image, the pixels that define the ROI are set to "one" and all other pixels set to "ZERO". You can define more than one ROI in an image. The regions can be geographic in nature, such as polygons that encompass contiguous pixels, or defined by a range of intensities. In the latter case, the pixels are not necessarily contiguous. By proper way and emollition this is a kind of programme by whole process this could been a way of more instinct.

II. EDGE DETECTION ALGORITHM

An edge detection algorithm to an image may significantly reduce the amount of data to be processed and may therefore filter out information that may be regarded as less relevant, while preserving the important structural properties of an image. If the edge detection step is successful, the subsequent task of interpreting the information contents in the original image may therefore be substantially simplified. However, it is not always possible to obtain such ideal edges from real life images of moderate complexity. Fragmentation, meaning that the edge curves are not connected, missing edge segments as well as false edges not corresponding to interesting phenomena in the image – thus complicating the subsequent task of interpreting the image data often hamper edges extracted from non-trivial images. Edge detection is one of the fundamental steps in image processing, image analysis, image pattern recognition, and computer vision techniques. The edges extracted from a two-dimensional image of a three-dimensional scene can be classified as either viewpoint dependent or viewpoint independent. Also by a proper way of speaking a edge detection which is a necessary as well as very identical way to produce an ethical manners of a element/product. A viewpoint independent edge typically reflects inherent properties of the three-dimensional objects; such as surface markings and surface shape. A viewpoint dependent edge may change as the viewpoint changes, and typically reflects the geometry of the scene; such as objects occluding one another. A typical edge might for instance be the border between a block of red color and a block of yellow. In contrast a line (as can be extracted by a ridge detector) can be a small number of pixels of a different color on an otherwise unchanging background. For a line, there may therefore usually be one edge on each side of the line.

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III. CANNY EDGE DETECTION

John Canny considered the mathematical problem of deriving an optimal smoothing filter given the criteria of detection, localization and minimizing multiple responses to a single edge. He showed that the optimal filter given these assumptions is a sum of four exponential terms. He also showed that this filter could be well approximated by first-order derivatives of Gaussians. Canny also introduced the notion of non-maximum suppression, which means that given the presmoothing filters, edge points are defined as points where the gradient magnitude assumes a local maximum in the gradient direction. Looking for the zero crossing of the 2nd derivative along the gradient direction was first proposed by Haralick. It took less than two decades to find a modern geometric variational meaning for that operator that links it to the Marr–Hildreth (zero crossing of the Laplacian) edge detector. That observation was presented by Ron Kimmel and Alfred Bruckstein. Although his work was done in the early days of computer vision, the Canny edge detector (including its variations) is still a state-of-the-art edge detector. Unless the preconditions are particularly suitable, it is hard to find an edge detector that performs significantly better than the Canny edge detector.The Canny-Deriche detector was derived from similar mathematical criteria as the Canny edge detector, although starting from a discrete viewpoint and then leading to a set of recursive filters for image smoothing instead of exponential filters or Gaussian filters. The differential edge detector described below can be seen as a reformulation of Canny's method from the viewpoint of differential invariants computed from a scale space representation leading to a number of advantages in terms of both theoretical analysis and sub-pixel implementation. In that aspect, Log Gabor filter have been shown to be a good choice to extract boundaries in natural scenes

IV. ALGORITHM

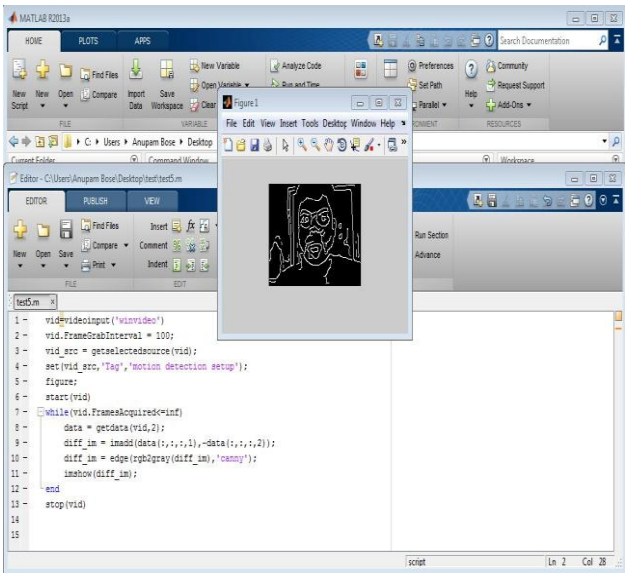
1) Initialize the external camera from the code
2) Set the Frame Grab Interval according to our requirement
3) Get the selected source to the temporary source file
4) Set the motion detection setup in to the source file
5) Start the original video
6) Start the while loop
7) Set the video Frames Acquired rate to infinite
8) Transfer the original data in to the rgb to gray format
9) Start the canny operator to detect edge
10) Show the output of detected edge image
11) End the while loop
12) Stop the video

V. PROGRAM

Matlab .m file

```
vid=videoinput('winvideo')
vid.FrameGrabInterval = 100;
vid_src = getselectedsource(vid);
set(vid_src,'Tag','motion detection setup');
figure;
start(vid)
while(vid.FramesAcquired<=inf)
   data = getdata(vid,2);
   diff_im = imadd(data(:,:,:,1),-data(:,:,:,2));
   diff_im = edge(rgb2gray(diff_im),'canny');
   imshow(diff_im);
end
stop(vid)
```

VI. OUTPUT



VII. WORKING PRINCIPAL

Initialize the external camera from the MATLAB code for taking as video input then after Set the frame grab interval according to our requirement we set it 100. It is the rate of frame to be initialized with respect to the time. Get the original source to the temporary source file for the edge detection operator has to be used, after that set the motion detection setup in to the source file and start the original video to perform the detected edge output video start the while loop and set the video frames acquired rate to infinite times for infinite time capture the video and give the detected

edge output video. Transfer the original data in to the RBG to gray format because edge detection operator is only performing in to the gray scale image only. Start the canny operator to detected edge. Show the output, which is detected edge image. End the while loop and start the detected edge output video.

VIII. HELPING HINTS

The operation of edge detections on any live video stream is to be performing only one external peripheral like video camera with 2.0 USB cords, which is belt in microphone and manual adjustable focus. The belt in microphone is not very much use full in our project could Edge Detection of any object in a live video but if I need clear detected edge picture then manual focus is also needed for Nano particle edge along with motion in to a video stream with a camera on live. This program can be performing in desktop, laptop (where camera was installed) or all any other devices by which Matlab can be pre-installed. The Toolbox like Computer Vision System Toolbox, Image Acquisition Toolbox and Image Processing Toolbox are pre-installed with MATLAB Software.

IX. CONCLUSION

In today's world, video processing is truly needed because of modern age crime as well as documentation. In addition, there is software called MATLAB is performing not only to capture video but also the processing of video in a close circuit television or a webcam. This program performs to detect edge of any object in a live video, so it is truly helpful to modern age advanced video operation and detections of any object.

X. APPENDIX

The program or embedded system is developed not only in educational structure of study but also applied in commercial approach, industrial prepays, reaches field and our Daly uses.

XI. ACKNOWLEDGMENT

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XII. REFERENCES

[1] Mariana S. C. Almeida and Luís B. Almeida, "Blind and Semi-Blind Deblurring of Natural Images," *IEEE Transactions on Image Processing, vol. 19.No. 1, January 2010.*

[2] *Dimitrios Charalampidis, Member, IEEE,* "*Steerable Weighted Median Filters*," *IEEE Transactions on Image Processing, vol. 19, No. 4, April 2010.*

Biography

Mr. Anupam Bose received B-Tech degree in 2012 from Maulana Abul Kalam Azad University of Technology, West Bengal.