Color Based Object Detection Matlabgui

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Abstract— Object Detection is based on Objective and Subjective dimensions where the objectivity is guided by the parameters like color, texture, shape, size and scale whereas the subjectivity is guided by the perception and cognition of the image interpreters. I aim to implement an object detection MATLAB GUI that can detect objects in variety of challenging real world scenarios. This paper deals with object detection using red color parameter both for still image and real time Images. The results of this processing can be used in numerous security applications such as intrusion detection and in Spy robots.

Index Terms—: *Object Detection, MATLAB GUI, Image Acquisition* ,foreground subtraction

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1 INTRODUCTION

Nowadays, it is seen that surveillance cameras are already prevalent in commercial establishments, with camera output being recorded to tapes that are either rewritten periodically or stored in video archives. To extract the maximum benefit from this recorded digital data, detection of any moving object from the scene is needed without engaging any human eye to monitor things all the time. Real-time motion detection and Color Recognition of moving image is a fundamental step in many vision systems.

Color plays an important role in image processing. Each image is composed of an array of M*N pixels with M rows and N columns of pixels. Each pixel contains a certain value for red, green and blue. Varying these values for red, green, blue (RGB) we can get almost any color. The basic objective is to implement color based object detection both for still image and real images and sub objective is to implement this concept in GUI MatlabR2012a and to detect the object based on red color.

2 PLAT FORM (MAT LAB)

MATLAB is a high-performance language for technical computing. It integrates computation, visualization, and programming in an easy-to-use environment where problems and solutions are expressed in familiar mathematical notation. A MATLABGUI (Graphical User Interface) is useful for presenting your final software. It also makes it easier to adjust parameters and visualize your programs .To get started, type "guide" in Mat lab. Let's start with a blank GUI .You get a

blank form that you can place controls on.
 Basic Controls

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axes: something to draw upon
static text: text that is stuck on the screen, the user can't edit it

 edit box: a white box that the user can type into
 button: performs an action when user clicks on it.
If you press the green arrow at the top of the GUI editor, it will save your current version and run the program. We have to define a call back for the button so it will plot the function when we press it. [5]
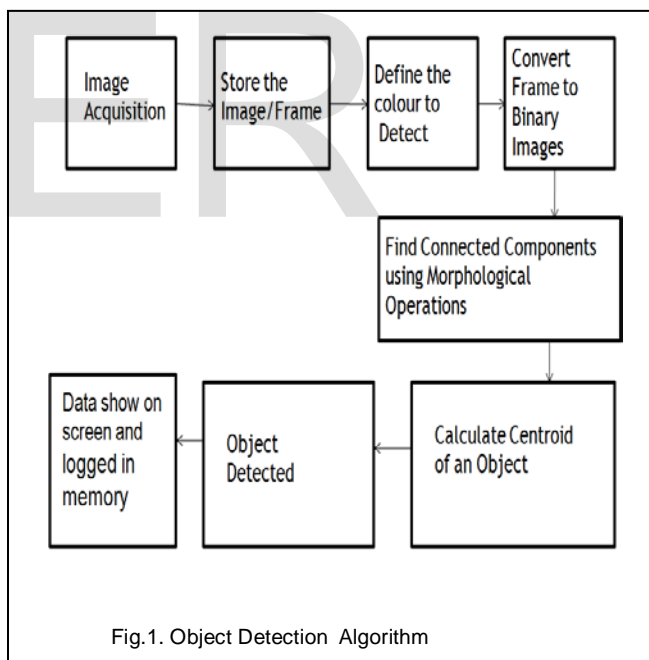
3 FLOW CHART

Fig.1. Object Detection Algorithm

4 IMPLEMENTATION

The first stage of any vision system is the image acquisition stage. After the image has been obtained, various methods of processing can be applied to the image to perform the many different vision tasks required today. Once we have acquired the video from an image acquisition device interfaced with the

system, controlled by MATLAB coding we go for foreground extraction which provides the segmented video of the moving object in the foreground image. Done with all this next task is the process of identifying any kind of motion automatically with respect to the standard image or the stagnated section of the video. This module thus deals with the detection motion by implementing the algorithm for motion detection.

Fig.2. GUI Object Detection of Still Image

Click on Web cam button of GUI in Fig 2 to detect object from a video.

1. We consider the standard background image or the first frame of the video as the reference image for comparing the other frames of the video in order to detect any kind of motion.

2. Reference (or background) to foreground subtraction to identify any sufficient change in the pixel values. If the change is performed in the pixel value is sufficient enough such that the change can be marked as an indicator of motion.

3. The difference between reference image and the current frame of the video. First video is converted to binary and then the total number of 1"s will identify the change whether it is good enough value to declare motion detected or the change is too small to be considered as a motion of insignificant amount.

4. If some motion is detected, then the next few consecutive frames will be analysed. If the difference comes out to be zero or equal for the next frames, it will indicate that the object has stopped. And hence it is this frame which will be considered as the new reference frame for detecting any kind of motion after that.

These above steps are coded in MATLAB and executed to detect any kind of motion with respect to the input video. The motion tracking continues throughout the video with respect to the standard background which changes as per the motion of the moving red color object in the captured video.[1]
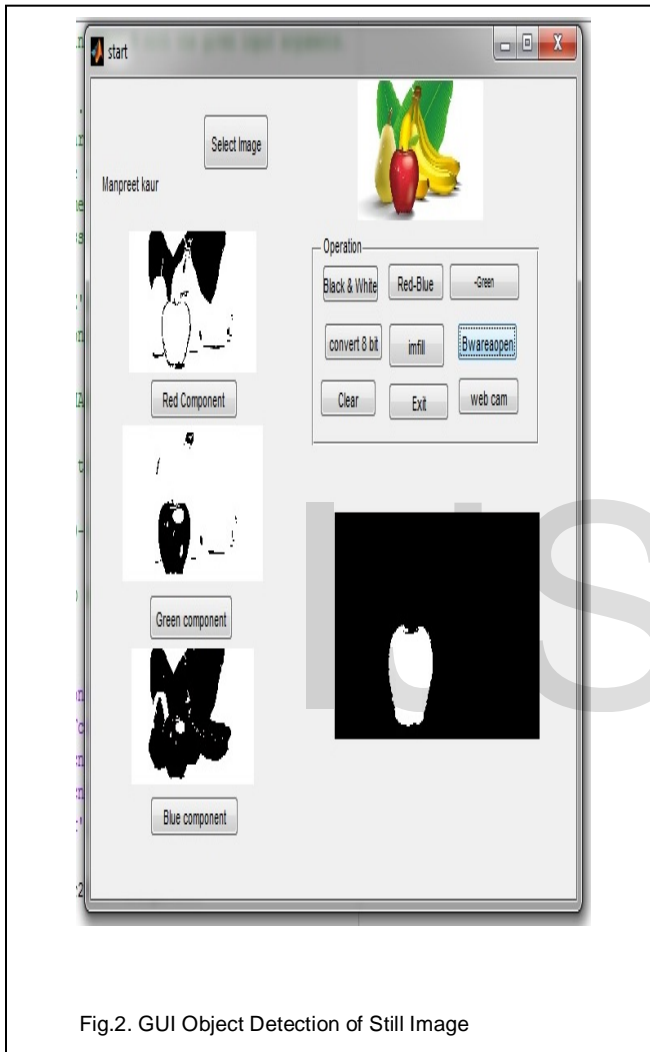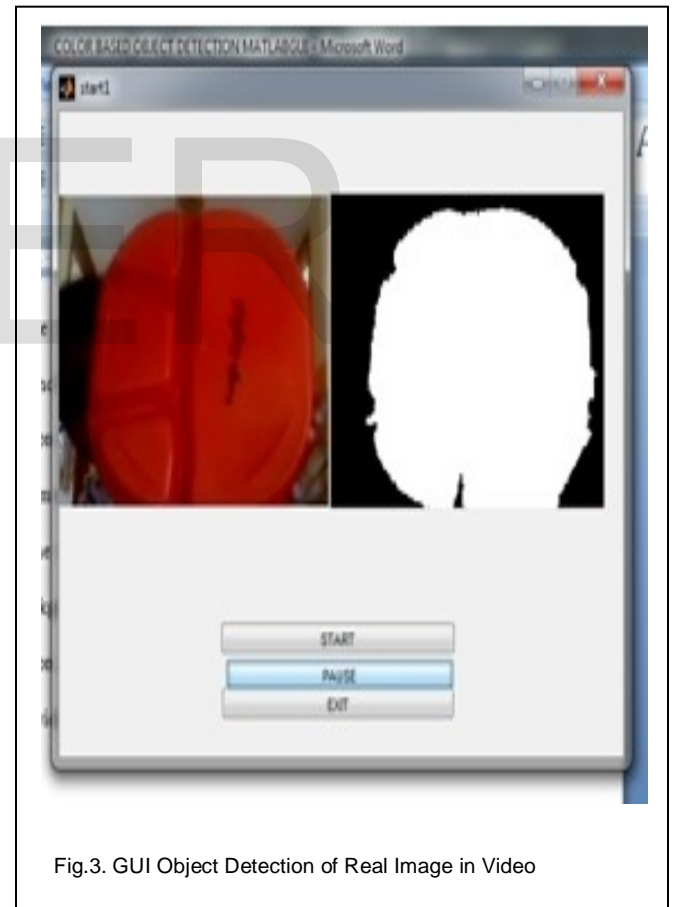

Fig.3. GUI Object Detection of Real Image in Video

5 FUTURE SCOPE & CONCULSION

I have create a GUI software which can interface with web camera which will be able to grab the video and the further processing of the video will take place with the help of the developed GUI . The schema is useful for object recognition

applications where no constraints on the imaging process can be imposed as well as for applications where one or more parameters of the imaging process can be controlled such as for robots and industrial inspection (e.g. controlled object positioning and lightning). Since this is color based object detection it will be difficult to detect the object with similar color background needs to work on another objective parameters for further work .

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