PROJECT REPORT

Problem Statement: FAKE CURRENCY DETECTION

Objectives:

The main objective of this project is fake currency detection using the image processing. Fake currency detection is a process of finding the forgery currency**.** This method gives a faster and more accurate output when compared to the other techniques.
The currency will be checked out by using image processing techniques. The approach consists of several elements including processing of image, detection of edge, image segmentation, drawing out characteristic, comparing both images. The image processing approach is discussed with MATLAB to verify the parameters of note. Image processing involves changing the nature of an image in order to improve its visual information for human interpretation. The result will be whether note is real or fake.

Description:

Image of paper currency will be acquired by simple scanner or digital camera. The image acquired is RGB image and then it will be converted into gray scale.
Edge detection of the whole gray scale image will be performed.
After detecting edges, the four characteristics of the paper currency will be cropped and segmented.
After segmentation, the characteristics of the paper currency will be extracted.The characteristics of test image are compared with the original pre-stored image in the system.
If it matches then the currency is genuine otherwise counterfeit.

PRE-PROCESSING:

The main goal of the pre-processing to enhance the visual appearance of images, improve the manipulation of datasets ,are normally required prior to the main data analysis and extraction of information.

GRAY SCALE CONVERSION:

The image acquired is in RGB color. It is converted into gray scale because it carries only the intensity information which is easy to process instead of processing three components R (Red), G(Green), B(Blue).

EDGE DETECTION:

The points at which image brightness changes sharply are typically organized into a set of curved line segments termed edges.

BINARY MASK:

It defines a region of interest(ROI) of the original image.Mask pixel values of 1 indicate the image pixel belongs to the ROI, with pixel of 0 indicate image pixel is part of the background

IMAGE SEGMENTATION:

Image segmentation is the process of partitioning a digital image into multiple segments (sets of pixels, also known as superpixels)

FEATURE EXTRACTION:

Feature extraction is a special form of dimensional reduction. When the input data to an algorithm is too large to be processed and it is suspected to be very redundant then the input data will be transformed into a reduced representation set of features. Transforming the input data into the set of features is called feature extraction.

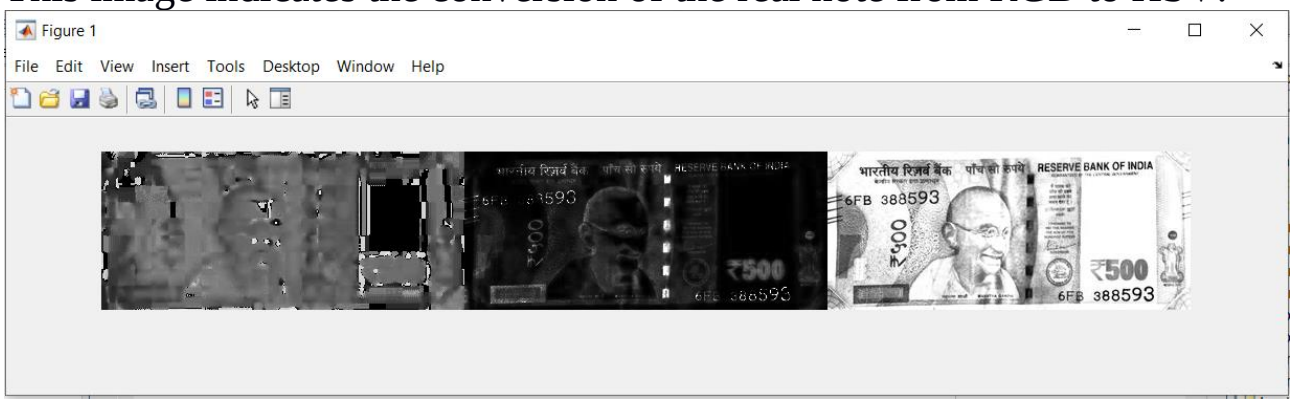
Learning Outcome:

In depth knowledge and applications of various topics **:** processing of image, detection of edge, image segmentation, drawing out characteristic. Usage of various features of matlab and its importance

Output Screenshots

FIGURE 1:

This image indicates the conversion of the real note from RGB to HSV.



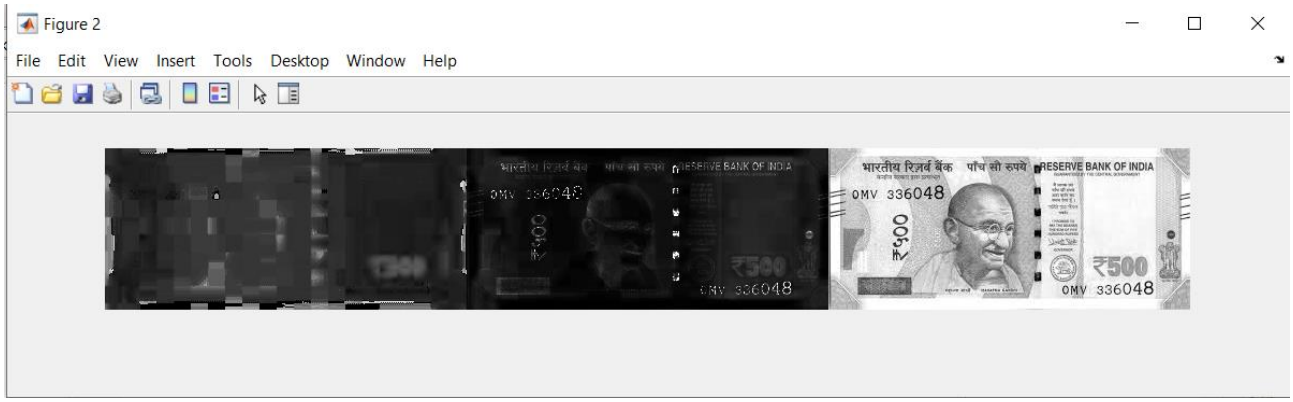


FIGURE 2:

This image indicates the conversion of the fake note from RGB to HSV.

FIGURE 3:

This image depicts the cropped image of the currency with certain saturation threshold and value threshold.

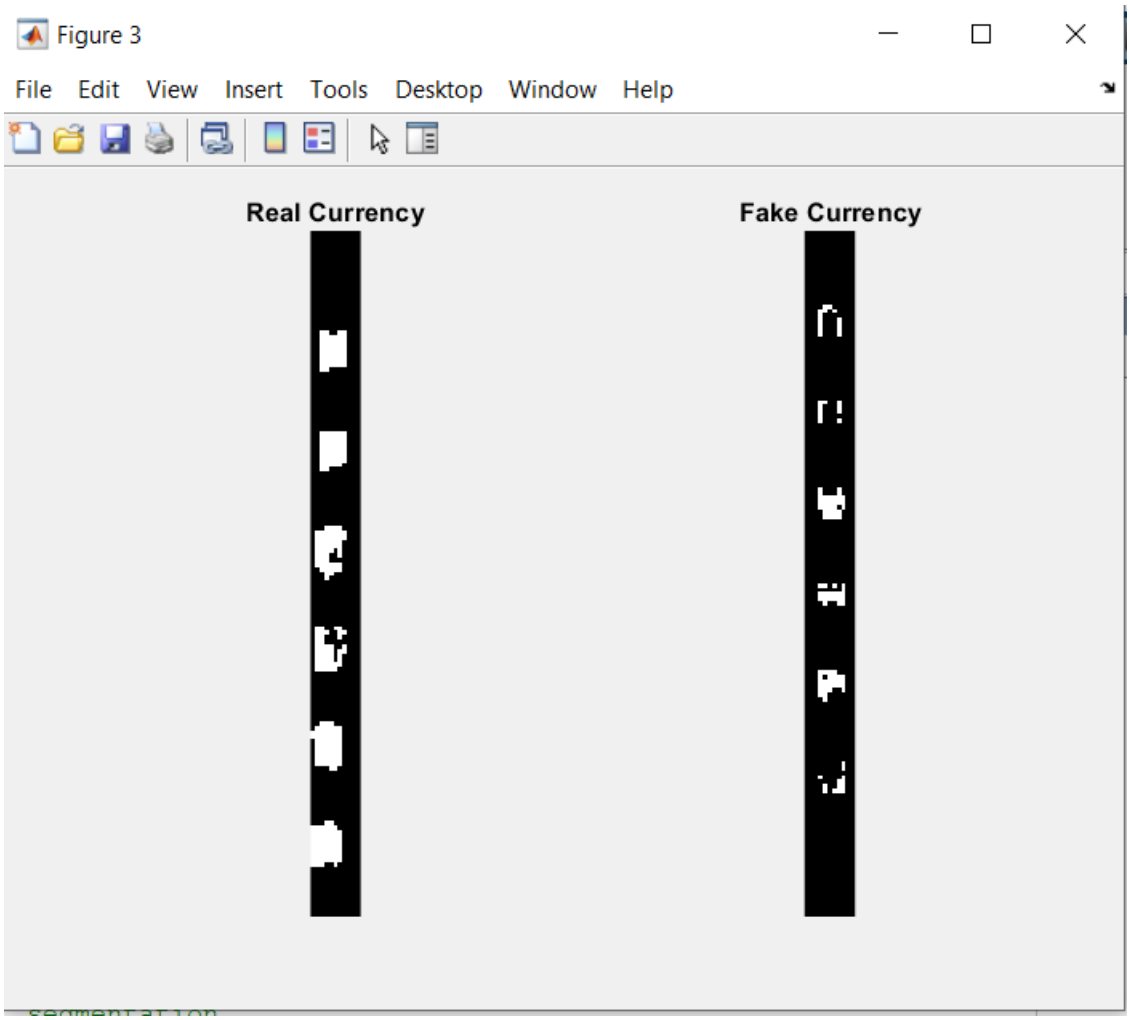


FIGURE 4:
This image is the depiction of cropped currency in binary format to find out the difference between notes.

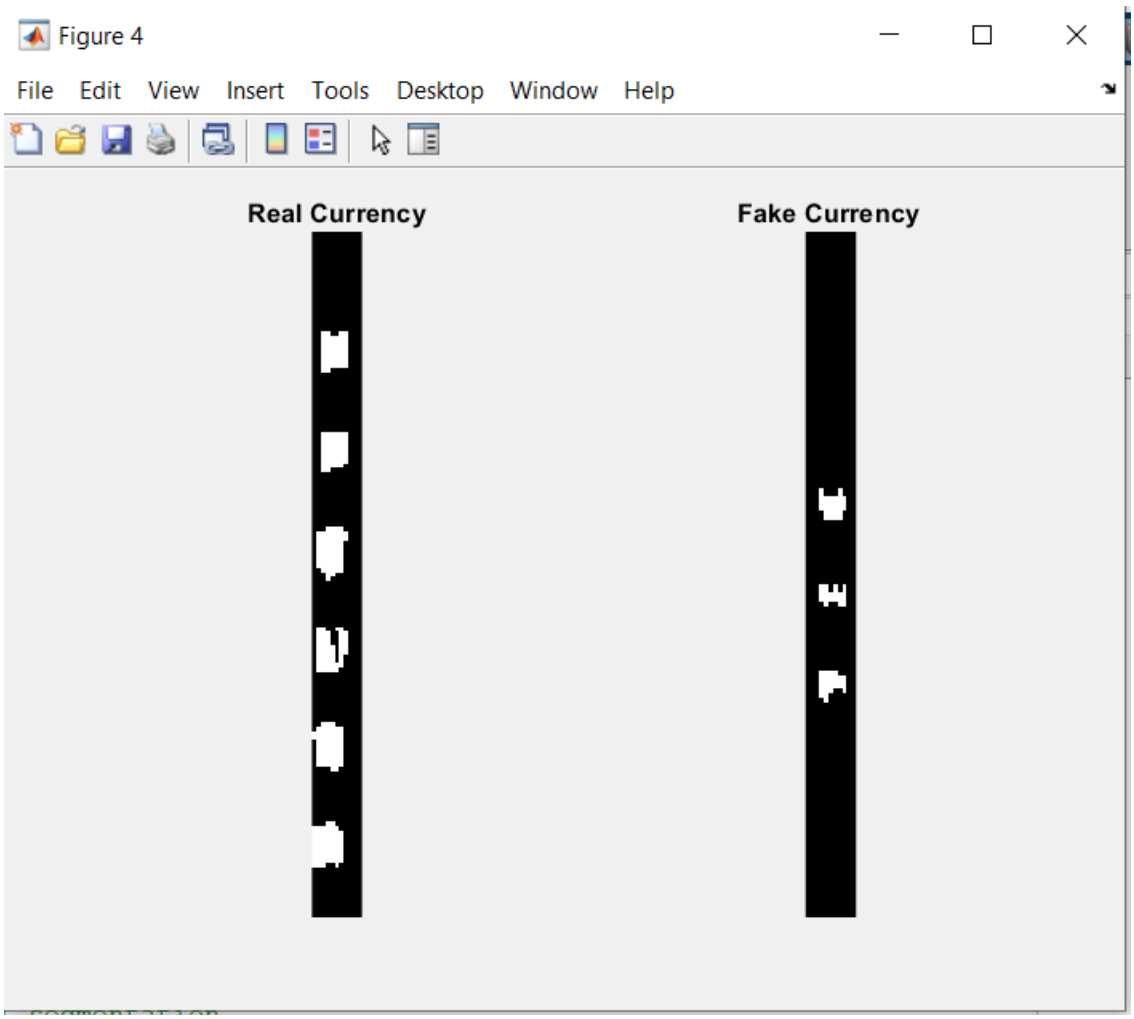


Figure 4
File Edit View Insert Tools Desktop Window Help
Real Currency
Fake Currency

FIGURE 5:
This image depicts the cropped black strip that is differentiated into fake and real currency after the processing is done.

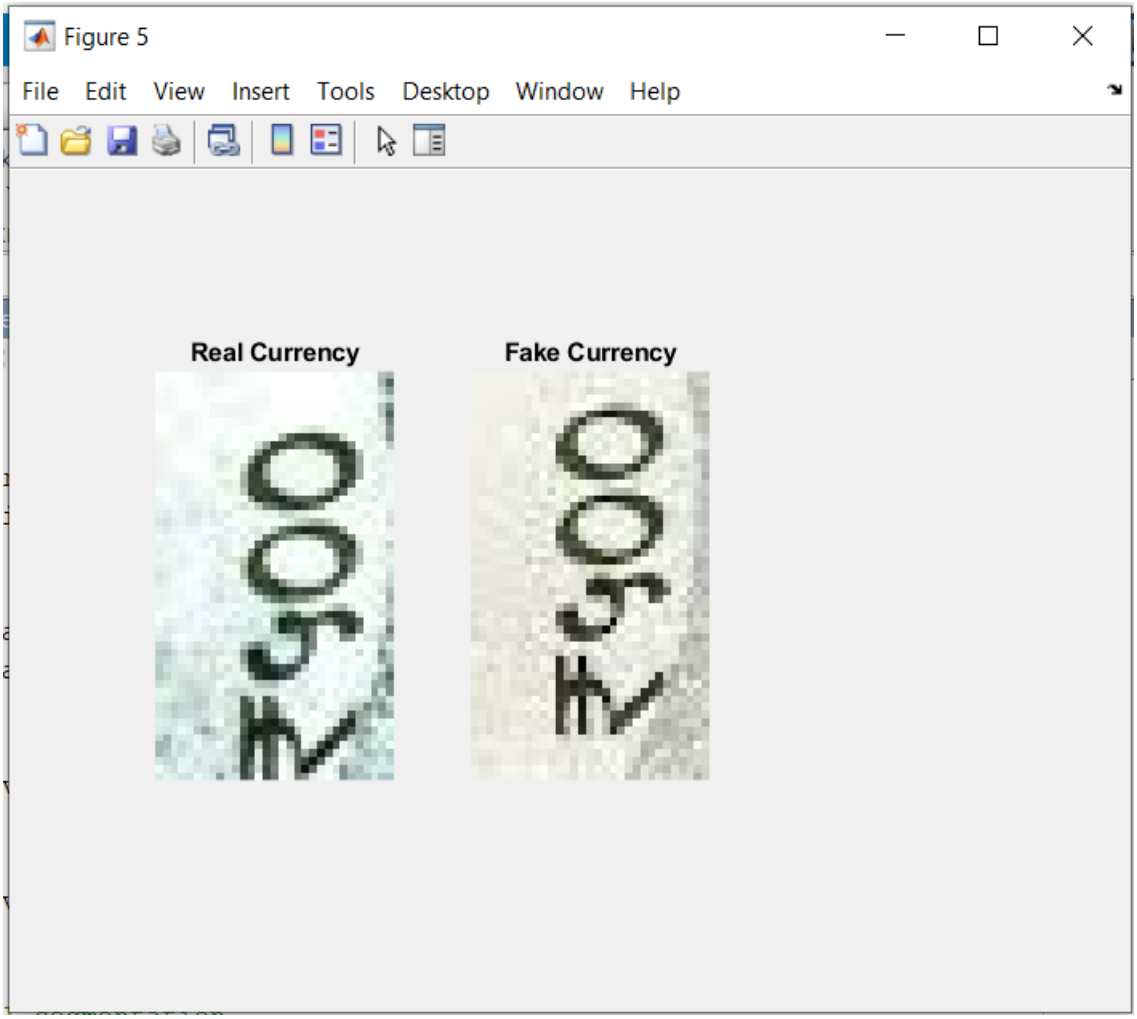


FIGURE 6:
This image depicts the final real and fake currency with conversion of the currency from RGB to greyscale.