FAKE CURRENCY DETECTION USING MATLAB

ABSTRACT:

The number of counterfeit cash notes is growing daily. A system based on image processing is suggested as a way to identify these counterfeit coins. The system is implemented and the note's features are extracted using MATLAB software. The outcome will determine if the money note is authentic or not.

Keywords: Fake currency, Color thresholding, Gray-Level Co-Occurrence Matrix (GLCM) Technique, SVM classification.

LITERATURE REVIEW:

Over the past few years, a lot of research has been done in the field of Fake currency detection.

In [1] classification using support vector machine is studied. The images of currency processed using a variety of preprocessing techniques and different features of the image extracted using local binary pattern technique, once the features are extracted it is important to recognize the currency using effective classifier called Support vector machine and finally a prototype able to recognize Indian paper currency.

In [2] GLCM technique-based texture feature extraction is studied in this literature. The proposed method feature extraction is based on the characteristics of Indian paper currencies. The first order and second order statistical features are extracted initially from the input. The effective feature vectors are given to the SVM classifier unit for classification. This method produced classification accuracy of 95.8%.

In [3] The dimensions, types and features of Indian Currency notes are studied.

INTRODUCTION:

Due to technical improvements, it is now possible to copy money in ways that make them unrecognizable. Counterfeit currency is produced using new editing software and sophisticated printers. The way counterfeit money is typically distributed in the market is by simply slipping it into bundles of real money.

A technique based on machine learning and texture feature extraction is put forth. Since the GLCM Technique is applied, the suggested technique feature extraction is predicated on the features of Indian paper currency. The input is first processed to obtain the first and second order statistical features.

The SVM classifier unit receives the effective feature vectors for classification. A message box displays the output. SVM is one of the classifiers which are used effectively for various image processing applications such as segmentation, scene understanding, classification.

METHADOLOGY:

1. Image acquisition: The practice of taking pictures of banknotes in order to improve their quality and preprocess them for use in subsequent processing methods is known as image acquisition.

2. ROI cropping: This process uses a color thresholder program to threshold RGB images and binary masks those that contain cash. An RGB composite image is called a segmented image.

3. Preprocessing: The acquired image is now scaled and transformed to a grayscale image.

4. Feature set extraction: ROI cropped images are used to extract texture characteristics, which are further transformed into feature vectors. The classifier uses these feature vectors to identify target output units and input units. Second-order statistical features are extracted using the GLCM approach.

5. Training Support Vector Machine: The system is trained using the feature vectors that were extracted. Learning the patterns of the training banknotes is the first step in the training process, and the support vector classifier is the final product.

6. Support Vector Machine Classification: Following the collection of banknote feature vectors, the pattern of the banknotes must be identified using these extracted features. This classification model's output forecasts whether or not cash is counterfeit.

SIMULATION RESULTS:

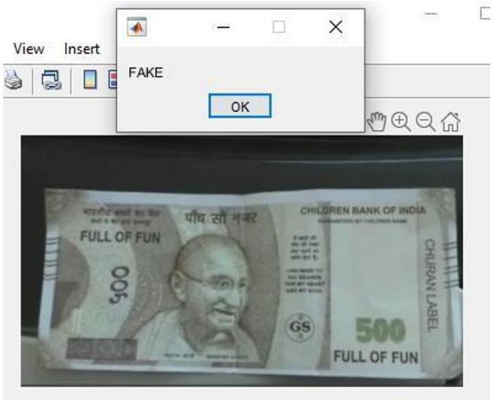

Fig.1. Fake currency detected.

Fig.2. Real currency detected.

- **Figure 1** shows input image and result in a message box after processing. The currency was found to be fake and a 'FAKE' message is displayed.

- **Figure 2** shows input image of the currency which was found to be genuine and a 'GENUINE' message is displayed.

CONCLUSION AND FUTURE SCOPE:

The suggested method uses a machine learning methodology after an image processing technique. Counterfeit notes are identified with the application of Support Vector Machines. By adding more features to the extraction step, the suggested approach can be used for real-world applications.

To fully verify the suggested approach, however, extensive testing in a range of monetary scenarios is required; this will be the focus of future research. Additionally, there is room to identify counterfeiting and provide support for a

variety of national currency types. For improved predictions, Deep Learning methods with a lot of training data may also be used.

REFERENCES:

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