RESEARCH ARTICLE

IMAGE RECOGNITION OF ENGLISH ADDRESS MAIL IMAGE BY USING SVM

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ABSTRACT

With the growth of computer vision, digital image processing is necessary to provide a clear image to the user. In existing technique only conversion between colors of email picture from RGB to GRAY SCALE image. That is not enough for a enhanced image which is not give the properly recognition of an Image. In this work, SVM (SUPPORT VECTOR MACHINE) is use to give the useful result of an image and proper recognition of an image. SVM is a Machine learning technique, which is useful for balance the Pixels, which is very useful from the point of view of digital image processing. It will enhance the image quality and will give the better results. It can also improve the accuracy of an image as well improve the text classification of an email image.

INTRODUCTION

Digital image processing is a famous method in computer vision of image detection and image recognition. When recognize the mail of English semantic there are some problems faced like information distortion and proper recognize the alphabets of the mail image. After recognition sometimes, not all features of image not recognized exactly. For better result first convert the image into gray scale image and then apply the SVM for classification of an image and text categorization. The digital image processing deals with developing a digital system that performs operations on a digital image. An image is nothing more than a two dimensional signal. It is defined by the mathematical function $f(x,y)$ where x and y are the two co-ordinates horizontally and vertically and the amplitude of f at any pair of coordinate (x, y) is called the intensity or gray level of the image at that point. There are two categories of the steps involved in the image processing:

- Methods whose outputs are input are images
- Methods whose outputs are attributes extracted from those images.

Review of Literature: Various authors in the past have done studies related to English translation, SVM and Image

recognition. Few studies reviewed by me concerning my research proposal as follows:

- **Shengfang Wen [2019]** formed the combination of the actual situation of the mail image to set the corresponding image processing algorithm, adopts the conversion from RGB data to gray data to perform image gray processing, and combines the weighted average gray algorithm to improve the image gray definition and softness.

- **Samuel Macedo et al. [2015]** evaluated the impact of these conversion algorithms on tracking and homography calculation results, both being fundamental steps of augmented reality applications. Eighteen color-to-grayscale algorithms investigated. These observations allowed the authors to conclude that the methods can cause significant discrepancies in the overall performance. As a related finding, experiments also showed that pure color channels (R, G, B) yielded more stability and precision when compared to other approaches.

- **TONGTAO ZHANG et al. [2016]** developed an end-to-end system to read a scanned hand-written Nyushu article, segment it into characters, link them to standard characters, and then translate the article into Mandarin Chinese. We propose several novel methods to address the new challenges introduced by noisy input and low

resources, including Nyushu-specific feature selection for character segmentation and linking, and character linking lattice based Machine Translation.

- **Sagar Patil** *et al.* **[2016]** included 4 modules voice recognition, translation and speech synthesis and image translation and gives audio of the translated language. Also the application accepts text written and converts it into the language needed. Application is able to recognize the text present in the image which stored in system or captured using camera and translate the text into the language needed and display the translation result back on to the screen of system.
- **Manoj Jayabalan [2015]** formed an application that allows smart phones to capture an image and extract the text from it to translate into English and speech it out is no longer a dream. In this study, an Android application developed by integrating Tesseract OCR engine, Bing translator and phones' built-in speech out technology. Final deliverable is tested by various type of target end user from a different language background and concluded that the application benefits many users. By using this app, travelers who visit a foreign country able to understand messages portrayed in different language.
- **Gidudu Anthony** *et al.* found a technique for support vector machine (SVM) which is a supervised learning. It used for remote sensing technique. It improves the accuracy and it only useful for small training tuples.
- **Hoang Le** *et al.* **[2012]** found the image classification is problem that can solve with the help of artificial neural network and support vector Machine (SVM) applying for image classification. Firstly, we separate the image into many sub-images based on the features of images. An ANN classifies each sub-image into the responsive class. Finally, SVM has been compiled all the classify result of ANN.
- **Xiaowu Sun** *et al.* [2015] Researched the support vector machine algorithm with neural network found a new algorithm which is useful for rapid growth of image classification. This can solve the optimal hyper plane as a decision surface to solve the problems of during image. It can improve the image classification by using neural network.
- **Qiu Shubo** *et al.* **[2010]** found that SVM (support vector machine) improves the recognition and the accuracy rate of the recognition. It increased the speed of the recognition of the objects.
- **DURGESH [2009]** used novel algorithm of support vector machine algorithm SVM for image classification. But in image classification it can only remove the dimensional complexity. It improved the image dimensions that easily classified [13]
- **Lei Shi [2011]** found that Support vector Machine (SVM) used for agricultural field for data classification. In this paper the researcher found the SVM as a intrture oduced to classify the agriculture data.[14]
- **Simon Tong** *et al.* **[2001]** researched the new algorithm with SVM use for instance request for text. Sometimes requires a number label on text to improve this deficiency researcher used the technique for instance text. However, this technique is not much useful for the data[15]
- **Samuel Macedo** *et al.* **[2015]** evaluated the impact of these conversion algorithms on tracking and homography calculation results, both being fundamental steps of augmented reality applications. Eighteen color-to-grayscale algorithms investigated. These observations allowed the authors to conclude that the methods can cause significant discrepancies.

Proposed Work: In this, we discussed the implementation of new algorithm of privacy preservation of combination of K-MEAN and BIRCH algorithm
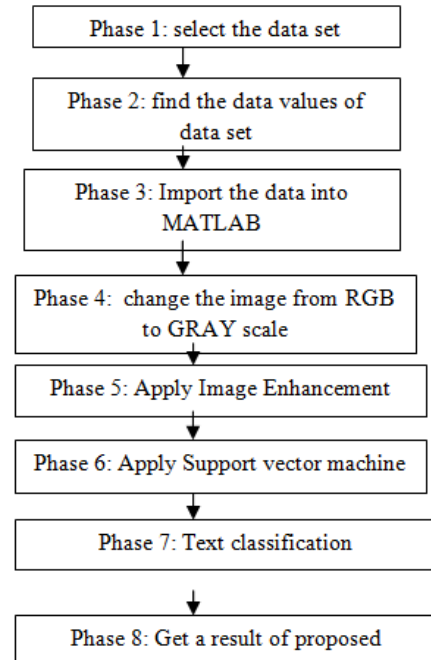

Figure 3.1 steps of current research

Image recognition: Image recognition, in the context of machine vision, is the ability of software to identify objects, places, people, writing and actions in images. Computers can use machine vision perform a large number of machine-based visual tasks, such as labeling the content of images with meta-tags, performing image content search and guiding autonomous robots, self-driving cars and accident avoidance systems. While human and animal brains recognize objects with ease, computers have difficulty with the task. Software for image recognition requires **Deep Machine Learning.**

Deep Machine Learning: Deep machine Learning is a method in which features are not important to define first that what type of features is required to recognize and detection of which feature of an objects. Deep Learning based on convolutional neural network (CNN).

CNN (Convolutional Neural Network: Convolutional Neural Network is Deep Learning based method. Convolutional neural network is different from the neural network [4]. In Neural Network input transform through hidden layer while CNN input depends upon the three dimensions:

- Height of the object
- Width of the object
- Depth of the object

SVM: (Support Vector Machine): A support vector machine (SVM) is machine-learning algorithm that analyzes data for classification and regression analysis. SVM is a supervised learning method that looks at data and sorts it into one of two categories.
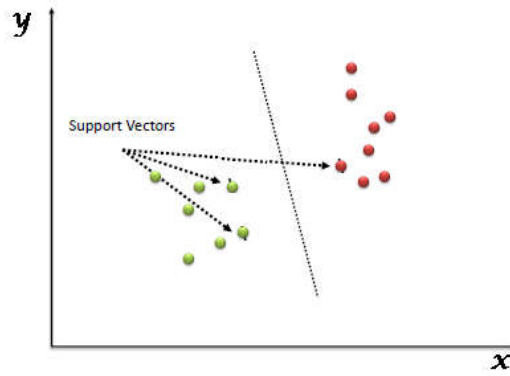
Figure 1.3. SVM

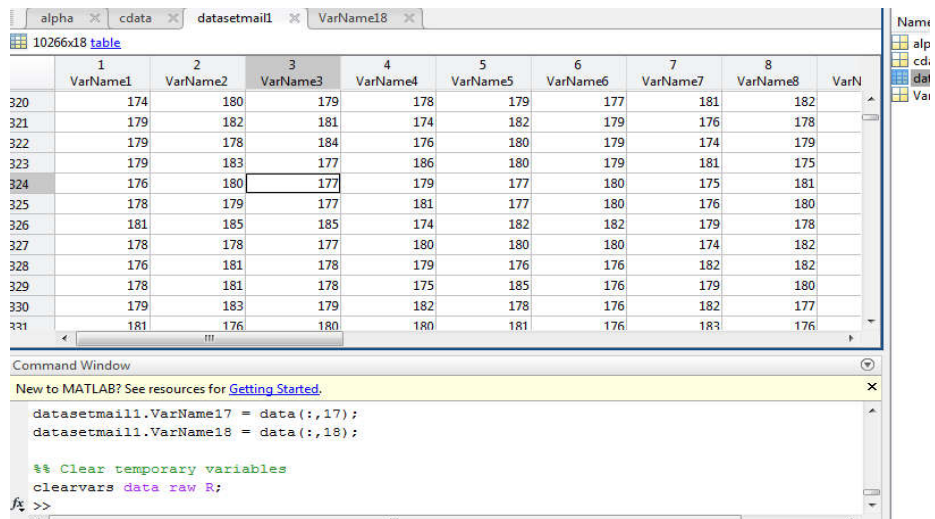

Figure 6.1. Convert RGB image to gray level image

	1 VarName1	2 VarName2	3 VarName3	4 VarName4	5 VarName5	6 VarName6	7 VarName7	8 VarName8	VarN
320	174	180	179	178	179	177	181	182	
321	179	182	181	174	182	179	176	178	
322	179	178	184	176	180	179	174	179	
323	179	183	177	186	180	179	181	175	
324	176	180	177	179	177	180	175	181	
325	178	179	177	181	177	180	176	180	
326	181	185	185	174	182	182	179	178	
327	178	178	177	180	180	180	174	182	
328	176	181	178	179	176	176	182	182	
329	178	181	178	175	185	176	179	180	
330	179	183	179	182	178	176	182	177	
331	181	176	180	180	181	176	183	176	

```
datasetmail1.VarName17 = data(:,17);
datasetmail1.VarName18 = data(:,18);

%% Clear temporary variables
clearvars data raw R;
>>
```
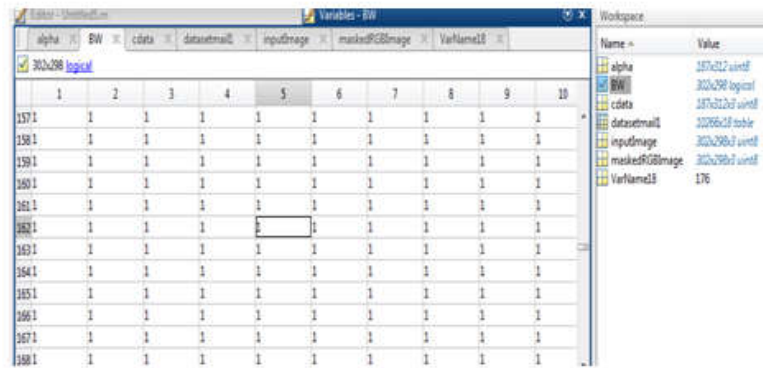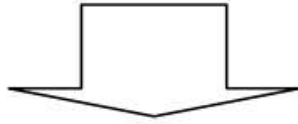
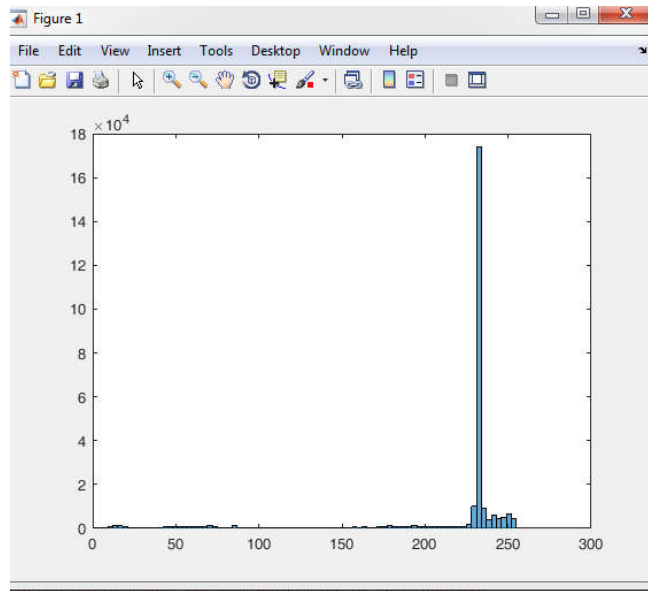**Figure 6.3. Variable of RGB**

Fig 6.4 variable of gray level image

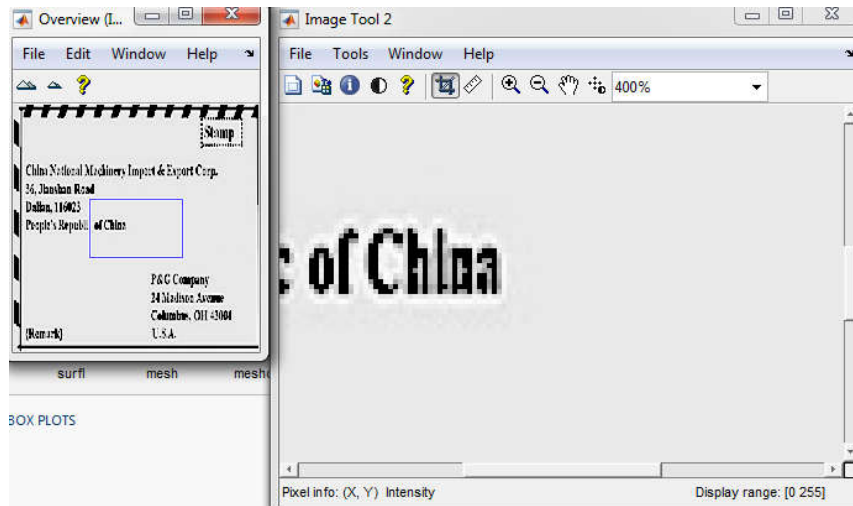**Fig 6.5. Histogram of existing result**

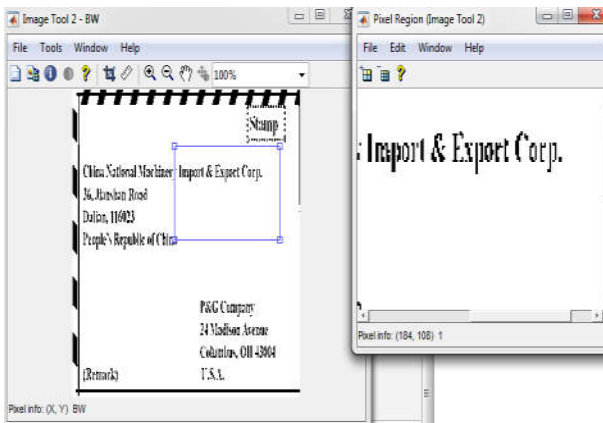**Fig 6.7 text Classification of existing techniques**

Fig 6.8 Text classification, which show clear text

An SVM outputs a map of the sorted data with the margins between the two as far apart as possible. SVMs used in text categorization, image classification, handwriting recognition and in the sciences. A support vector machine is known as a support vector network (SVN).

SVM for text Classification: When we recognize an image of English translating mail some words are not exactly recognize and that time it is very difficult to read. For better understanding of alphabets, we will use SVM. Which will give the better result for your mail and easy to read for the clients.

Advantages

- It is useful for clear margin separation
- Dimensions are highly spaced.
- In decision function, it uses subset of training subsets.

Disadvantages

- It has large dataset because of that it require large training time.
- It does not provide directly probability estimation they calculated by using expensive software.

RESULTS AND DISCUSSION

In this experiment, we had done the work on original data that we show the RGB type image in which the pixels from 0 to 255. In this research we change the image type RGB to Gray level image in which only image between black and white and the pixels variable only between 0 and 1 or we can 0 for false and 1 for true. In Figure 6.1 shows the change image from RGB to Gray level image and change the pixels from 0-255 to 0-1. In figure 6.3, we show the variable of RGB and in Fig 6.4, we showed the result variables of Gray level image which convert from RGB to Gray level.

In next step fig 6.5, we make the histograms of both the image existing result image as well current research. In this, we do the text verification of both images existing and current research

Conclusion and future scope

With the growth of Digital image processing and Machine learning, it is required of every field having knowledge of digital image processing. In this research, we try to improve the image recognition of email image based data set that only changes the color of the image. We tried to enhance the image with exactly which points are important for recognition and improve the accuracy by Using Unsupervised learning i.e. Support vector machine learning technique. Image recognition and SVM is a technique, which is very useful in future, as if by applying the image recognition we find the clue of data which is useful to get live data of its user from where exactly they are. In future argumented reality experiments are not longer imaginary futuristic dream with the help of image recognition it will become reality very soon, which is not possible in virtual experiments.

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