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Traffic Sign Detector using Phash Technique

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ABSTRACT

In today's world is digital world. The domain of this paper is the Image Processing. In this paper we are going to develop an android application that detects the traffic sign an. After the detection it recognizes that traffic sign. It is server based application. It displays the recognized text and sign on smart phone display with the information. Our main objective are to propose an android application is becomes very friendly and become very useful for daily human life. This application useful for forging guest. Many Traffic symbol not aware to people so with the help of this android application user can get the knowledge about the Traffic sign and symbol.

Keywords : Grayscale thresholding, DCT,Hamiltonian distance,Phash Algorithm

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I. INTRODUCTION

In this paper we develop an android application. This android application is Traffic Sign Detector that detect the traffic sign. User should be select image related to the traffic sign. It is totally server based application. At the server side we loaded traffic sign images, description and title. For recognize the traffic sign image we are using the the Phash algorithm. When selected image is match with database image then it display the matched image its title and description to user.

1.1 Project Area:

Area of our project is Image Processing. In imaging science, image processing is processing of images using mathematical operations by using any form of signal processing for which the input is an image, such as a photograph or video frame; the output of image processing may be either an image or a set of characteristics or parameters related to the image. Most image-processing techniques involve treating the image as a two-dimensional signal and applying standard signal-processing techniques to it.

Image processing usually refers to digital image processing, but optical and analog image processing also are possible. This article is about general techniques that apply to all of them. The *acquisition* of images (producing the input image in the first place) is referred to as imaging.

II.LITERATURE SURVEY

A number of survey papers on character recognition are available. An impressive survey papers on OCR methods are written by Mori et al., (1992), Pal et al., (2004), xxviii Bortolozzi et al., (2005), and Jayadevan et al., (2011). The different technique used by different researchers is explained in these papers. Segmentation is very important stage of any recognition system. A good survey about strategies and methods in segmentation are given by Casey and Lecolinet, (1996), and Lu and Shridhar, (1996). In character recognition, two commonly used techniques are: i) Segmentation based technique ii) Segmentation free technique (Holistic Approach) In segmentation based technique word is segmented into individual characters and then recognized. In second technique, word is recognized as a whole. Second technique is holistic approach.

III.EXISTING SYSTEM

The traffic sign detector application required the Android operating system platform. In this application the user captures the image of traffic sign and crop the traffic sign

from image. For capture to image there is we are using camera application that is inbuilt function.

There is first step is capture image or user can choose the image from gallery their is four main oprations are done on image

1)Gray Scale Tresholding
2)Apply DCT function
3)Calculate the Hammaltonian Distance
4)Apply Phash Algorithm

1)Gray Scale Tresholding

Thresholding is the simplest method of image segmentation. From a grayscaleimage, thresholding can be used to create binary images. Colour images can also be thresholded. One approach is to designate a separate threshold for each of the RGB components of the image and then combine them with an AND operation. This reflects the way the camera works and how the data is stored in the computer, but it does not correspond to the way that people recognize colour. Therefore, the HSL and HSV colour models are more often used; note that since hue is a circular quantity it requires circular thresholding.

2) Apply DCT function

A **discrete cosine transform** (**DCT**) expresses a finite sequence of data points in terms of a sum of cosine functions oscillating at different frequencies. DCTs are important to numerous applications in science and engineering, from lossy compression of audio (e.g. MP3) and images (e.g. JPEG) (where small high-frequency components can be discarded), to spectral methods for the numerical solution of partial differential equations. The use of cosine rather than sine functions is critical for compression, since it turns out (as described below) that fewer cosine functions are needed to approximate a typical signal, whereas for differential equations the cosines express a particular choice of boundary conditions.

In particular, a DCT is a Fourier-related transform similar to the discrete Fourier transform (DFT), but using only real numbers. DCTs are equivalent to DFTs of roughly twice the length, operating on real data with even symmetry (since the Fourier transform of a real and even function is real and even), where in some variants the input and/or output data are shifted by half a sample. There are eight standard DCT variants, of which four are common.

The most common variant of discrete cosine transform is the type-II DCT, which is often called simply "the DCT". Its inverse, the type-III DCT, is correspondingly often called simply "the inverse DCT" or "the IDCT". Two related transforms are the discrete sine transform (DST), which is equivalent to a DFT of real and *odd* functions, and the modified discrete cosine transform (MDCT), which is based on a DCT of *overlapping* data.

3) Calculate the Hamiltonian Distance

In information theory, the **Hamming distance** between two strings of equal length is the number of positions at which the corresponding symbols are different. In another way, it measures the minimum number of*substitutions* required to change one string into the other, or the minimum number of *errors* that could have transformed one string into the other

4) Phash Tecnique

Perceptual hashing is the use of an algorithm that produces a snippet or fingerprint of various forms of multimedia. Perceptual hash functions are analogous if features are similar, whereas cryptographic rely on the avalanche effect of a small change in input value creating a drastic change in output value. Perceptual hash functions are widely used in finding cases of online copyright infringement as well as in digital forensics because of the ability to have a correlation between hashes so similar data can be found.

IV.SYSTEM ARCHITECTURE

The user loads the image . After that it extract the features, user can rotate, edit image and then the most representative features are send to the target system. The use case diagram shows the above mentioned processes.

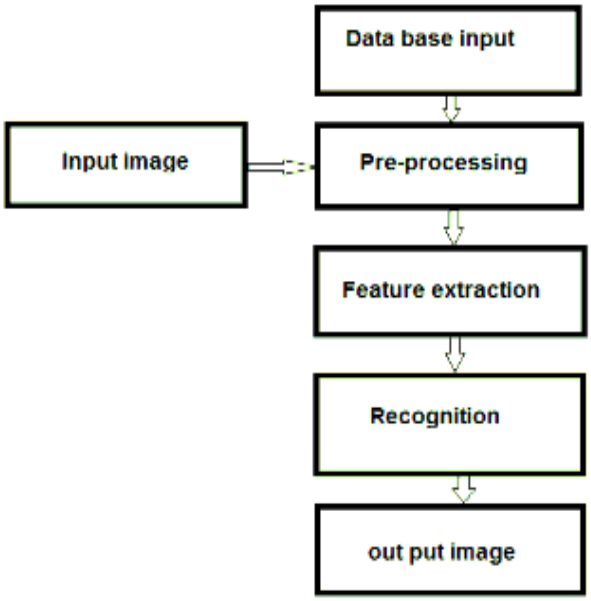

Fig 4.1: System Architecture of Proposed System.

IV. CONCLUSION

The system recognizes and interprets various traffic signs using vision-only information and has reached an exceptionally high detection accuracy.. The system uses camera based object recognition and can be developed to compare the data with those coming from digital maps of a navigation system and traffic services. This will offer additional system robustness, especially in cases where the vision system cannot provide the needed information, such entering urban areas which are not marked by traffic signs.

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