TRAFFIC SIGNS RECOGNITION

CONTENTS

INTRODUCTION:

Traffic sign recognition can help the driver to make a right decision at the right time for safe driving. The realization of traffic sign recognition system usually divided into two stages: detection and classification, This paper presented an algorithm for detection of traffic sign using convert region of interest (ROI) polygon to region mask method. The algorithm detects the traffic sign from the images captured from different environment and different position angle. The proposed method extracted the detected sign in black and white pixels and further classified into groups. In this paper introduces the main difficulties in road sign recognition with further discussion on the potential trend of road sign recognition. Keywords: Traffic sign recognition, detection, classification, region of interest (ROI).

LITERATURE SURVEY :-

The first research on traffic sign recognition can be traced back to 1987; Akatsuka and Imai [2] attempted to make an early traffic sign recognition system. A system capable of automatic recognition of traffic sign could be used as assistance for drivers, alerting them about the presence of some specific sign (e.g. a one-way street) or some risky situation (e.g. driving at a higher speed than the maximum speed allowed). It also can be used to provide the autonomous unmanned some specificdesigned signs. Generally, the procedure of a traffic sign recognition system can be roughly divided of two stages namely detection and classification.

2.1 Detection :- The goal of traffic sign detection is to locate the regions of interest (ROI) in which a traffic sign is more likely to be found and verify the hypotheses on the sign's presence. The initial detection phase of a traffic sign recognition system offers high costs due to the large scale of detection in a complete single image. In order to reduce the space, prior information of the sign location is supposed to be cropped. This technique called as ROI. ROI locates the traffic sign in the image based on the shape. The traffic signs are cropped and declared as informative signal. The background image is declared as unwanted signal and removed by defining as black pixel. By these

assumptions, a large portion of the image can be ignored. Traffic signs are designed with particular color and shape which make them easier to be recognized.

The detection of traffic signs using only a single frame image has some problems:

1) it is difficult to correctly detect a traffic signs when temporary occlusion occurs; and

2) the correctness of traffic signs is hard to verify. To increase the speed and accuracy of traffic sign detection in subsequent images by using information about the preceding images, such as the number of the traffic signs and their predicted sizes and positions, can be used. Moreover, information supplied by later images is used to assist in verifying the correct detection of traffic signs, and in this way those detected and tracked traffic sign can reduce the burden of the processor.

2.2 Classification:- Image segmentation is the process of partitioning a digital image into multiple segments (sets of pixels, also known as super pixels). The goal of segmentation is to simplify and/or change the Study on Traffic Sign Recognition. A binary image classification method is a digital image that has only two possible values for each pixel. The pixels used to represent the object and background is white and black respectively. Based on classification process, the technique used in the classification of traffic sign is binary classification method. Each traffic signs is grouped based on the amount of white and black pixel. These amounts are matched with the amount of white and black pixel from the template data.

Statement of Proposal:-

Description:- There are several different types of traffic signs like speed limits, no entry, traffic signals, turn left or right, children crossing, no passing of heavy vehicles, etc. Traffic signs classification is the process of identifying which class a traffic sign belongs to.

Data Collection:- The dataset contains more than 50,000 images of different traffic signs. It is further classified into 43 different classes. The dataset is quite varying, some of the classes have many images while some classes have few images. The size of the dataset is around 300 MB. The dataset has a train folder which contains images inside each class and a test folder which we will use for testing our model.

Solution Techniques:- We had used machine Leaning and python programming language. To classify the images into their respective categories, we will build a CNN model Convolution Neural Network. CNN is best for image classification purposes.

EXPECTED RESULTS

ALGORITHMS AND TECHNIQUES

Keras, Matplotlib, Scikit-learn, Pandas, PIL and image classification.

Our approach to building this traffic sign classification model is discussed in four steps:

- Explore the dataset
- Build a CNN model
- Train and validate the model

Test the model with test dataset