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Traffic Sign Recognition using ML and Image Processing

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Abstract: ***TSRS (Traffic Sign Recognition System) may plays a significant role in self driving car, artificial driver assistances, traffic surveillance as well as traffic safety. Traffic sign recognition is necessary to overcome the traffic related difficulties. The traffic sign recognition system has two parts localization and recognition. In localization part, where traffic sign region is located and identified by creating a rectangular area. After that, in recognition part the rectangular box provided the result for which traffic sign is located in that particular region. In this paper, we describe an approach towards traffic signs recognition system***

Keywords: Traffic Sign Recognition System,. Localization, recognition, rectangular box

I. INTRODUCTION

With the rapid growth of technological development, vehicles have become an essential portion of in our routine lives. Because driving vehicles without follow traffic rules, it creates more and more intricate traffic on the road. As a result, it is one of the major reasons behind accidents every year. In recent times road accidents are happening regularly in increasing manner across the world. Leading reason of most road accidents is the ignorance or unawareness of the traffic sign. The meaning of traffic sign is any entity, device, or board on the road that entity carries the rules, indicates the warning or provides other explanation regarding driving. Therefore, it also provides necessary information through traffic signals and traffic control devices to continue smooth car driving.

II. MODULE IDENTIFICATION

Training takes place after a data set has been created and preprocessed with rotation, resizing, grayscale conversion, and normalization. As the number of epochs is set, themodel will be trained so that as the accuracy grows, the training loss will decrease. Having done this, we have completed the evaluation process. After the training is complete, we have a Neural Network model. The resultant Neural Network model was used to further recognize traffic signs in live streams. Using OpenCV libraries, we could detect any sign put in front of the camera by simply displaying a green box bound to the sign along with the traffic sign. We tested the model to ensure that it produces accurate results. It is then repeated with new data if necessary.
Not only does the model accurately recognize traffic signs but it also provides traffic sign to text conversion.

III. SCOPE

Traffic-sign recognition is a safety tech system that recognizes traffic signs and relays the information displayed on the sign to the driver through the instrument cluster. The primary purpose of TSR is to increase driver focus. If a driver misses a sign, TSR can make them aware of it so they can react accordingly.

IV. EXISTING SYSTEM

Sr.No.	Title of Paper	Year	Author	Gap identified	Key Points
1.	Toolkit for Bar Code Recognition and Resolving on Camera Phones – Jump Starting the Internet of Things	2021	Amit Chakraborty	Performance is slow,accuracy is 95%	System developed a freely available EAN-13 bar code recognition and information system that is both lightweight and fast enough for the use on camera-equipped mobile phones, thus significantly lowering the barrier for large-scale.

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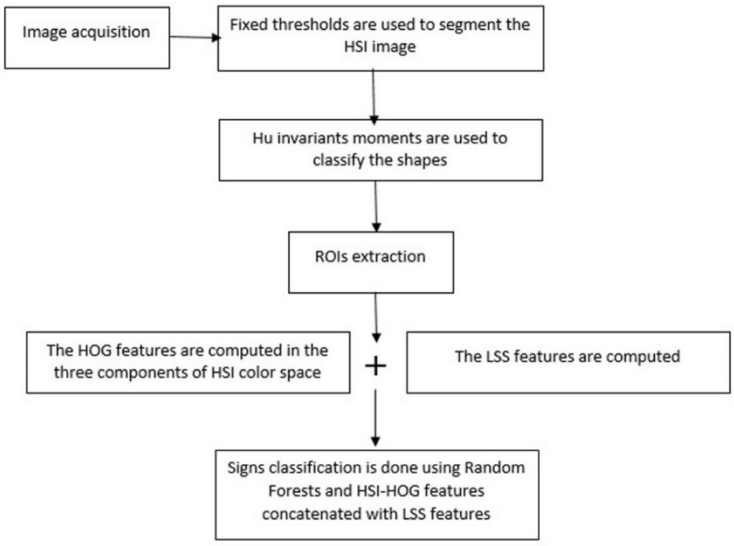
2.	Object detection and tracking using image processing.	2017	Prof. K.S.Loke,	Accruacy results of 93%.	System describe current camera-based object readers do not work well when the image has low resolution, is out of focus, or is motion-blurred. One main reason is that virtually maximum like.

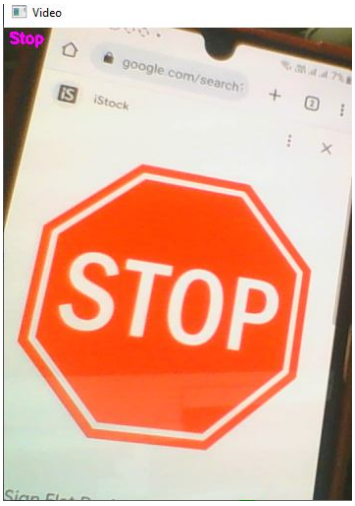
V. ARCHITECTURE DIAGRAM



VI. PROPOSED SYSTEM

1) *Start Video:* User will start the video which will contain the traffic sign
2) *Detect Signs:* Explore the dataset
a) Build a CNN model
b) Train and validate the model
c) Test the model with test dataset

VII.RESULT



VIII. CONCLUSION

Traffic sign recognition is a difficult task if aim is at detecting and recognizing signs in images captured from unfavorable environments. Complex background, weather, shadow, and other lighting-related problems may make it difficult to detect and recognize signs in the rural as well as the urban areas.In future, our aim is to increase the number of traffic sign classes with large amount of quality data. As in machine learning research, to maintain data volume and data quality.

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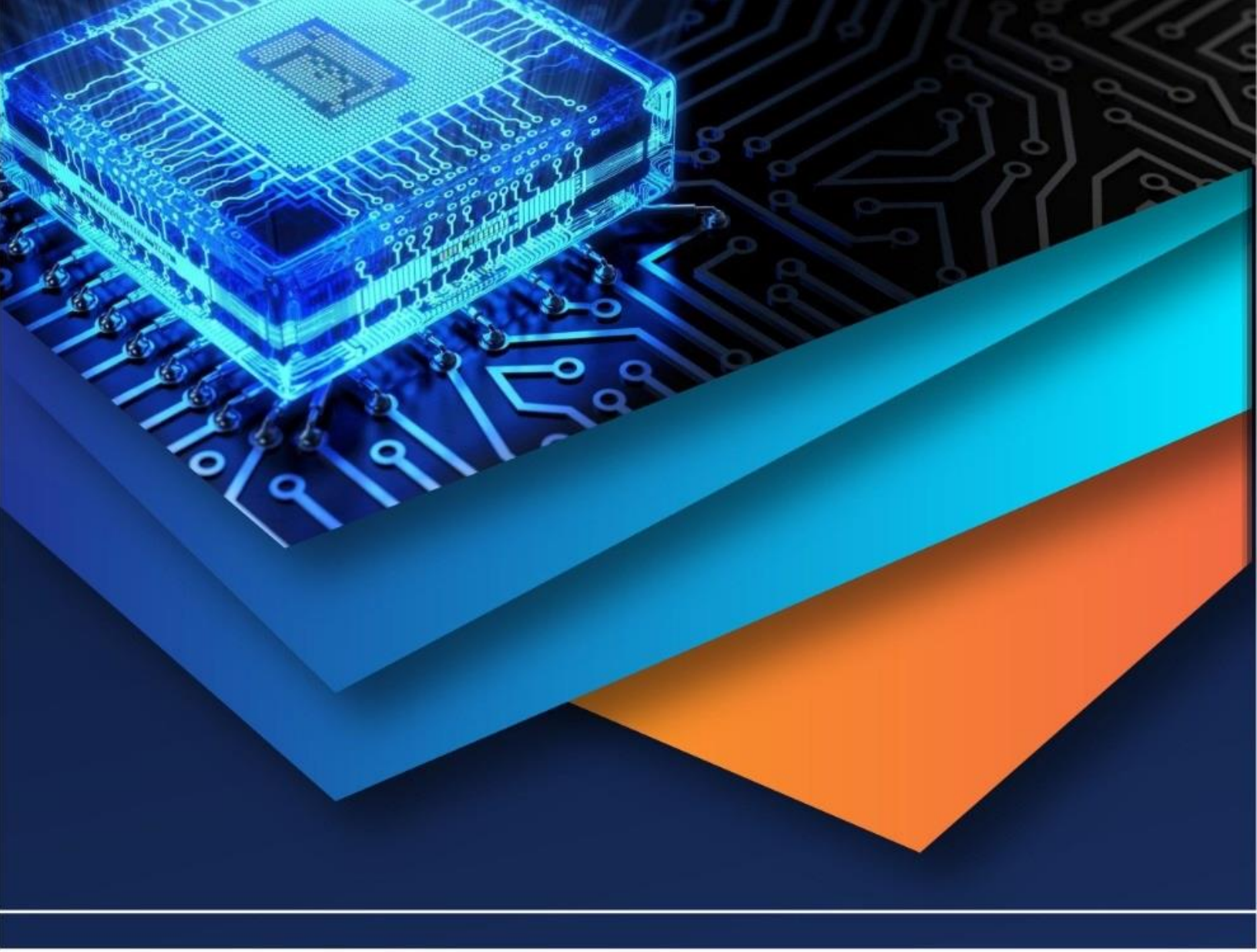

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