ABSTRACT

ON

Traffic Signs Recognition

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of

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ABSTRACT

Traffic signs recognition project is built using machine learning which is used to detect and recognize different traffic signs given in the dataset. Traffic Sign Recognition (TSR) is used to regulate traffic signs, warn a driver, and command or prohibit certain actions. A fast real-time and robust automatic traffic sign detection & recognition can support and significantly increase driving safety and comfort. The aim of this project is to create a program that will identify a stop sign in various backgrounds & lighting conditions from static digital images using deep learning concepts. This processing could then output information to an autonomous vehicle, heads-up display, or other driver assistance device in the future. Automatic recognition of traffic signs is also important for automated intelligent driving vehicles such as self-driving cars in which the passenger can fully depend on the car for traveling. So ,for achieving accuracy in this technology .The vehicles should be able to interpret traffic signs and make decisions accordingly.

Road traffic accidents are primarily caused by driver error. Safer roads infrastructure and facilities like traffic signs and signals are built to aid drivers on the road. But several factors affect the awareness of drivers to traffic signs including visual complexity, environmental condition, and poor driver education.This study implements a traffic sign detection and recognition system with voice alert using Python. It aims to establish the proper trade-off between accuracy and speed in the design of the system.Four pre-processing and object detection methods in different color spaces are evaluated for efficient, accurate, and fast segmentation of the region of interest. In the recognition phase, ten classification algorithms are implemented and evaluated to determine which will provide the best performance in both accuracy and processing speed for traffic sign recognition.This study has determined that Shadow and Highlight Invariant Method for the pre-processing and color segmentation stage provided the best trade-off between detection success rate (77.05%) and processing speed (31.2ms).

The Convolutional Neural Network for the recognition stage not only provided the best trade-off between classification accuracy (92.97%) and processing speed (7.81ms) but also has the best performance even with a lesser number of training data.

INTRODUCTION:

The project aims to achieve high accuracy, recognition and specificity in detection of traffic signs. Additionally, interpretability of the model is prioritized to provide actionable insights for Self-automated cars and manual driving. The results and implications of this project contribute for prevention of accidental proning ,safety of passengers and better control over traffic .The World Health Organization (WHO) in 2013 reported that road traffic accidents that

result to loss of lives and damages to properties will continue to become a global challenge due to rapid motorization and insufficient action of national governments. This paper "Traffic Sign Detection and Recognition System for Assistive Driving" is an extension of work originally presented by the authors in International Symposium on Multimedia and Communication Technology (ISMAC) 2019 entitled "Traffic Sign Detection and Recognition for Assistive Driving". The goal of this study is to help solve the problem of drivers neglect and lack of road education. Traffic signs defined by the Department of Public Works and Highways to be recognized must be strategically positioned, clear and fully visible and captured in good weather condition during daytime. The system will be able to provide voice alert.

EXISTING SYSTEM:

Traffic-sign recognition (TSR) is a technology by which a vehicle is able to recognize the traffic signs put on the road e.g. "speed limit" or "children" or "turn ahead". This part of the features collectively called ADAS(Advanced driver-assistance System).ADAS uses automated technology such as sensors and cameras to detect nearby obstacles or weather conditions and respond accordingly. ADAS can enable various levels of autonomous driving. This technology is being developed by a variety of automotive suppliers. It uses image processing techniques to detect the traffic signs. The detection methods can be generally divided into color based, shape based and learning based methods.

Yuan et al. in which though the accuracy rate was high, the processing time was also very high. Another method used fusion network formation to obtain features of the signs and background statistics around the observed image, but the complexity was high.

Disadvantages of existing system

> Increased algorithms complexity

> Heavy system hardware requirement

> Different pre-processing for training data are necessary

PROPOSED SYSTEM:

The framework we proposed is categorized into three stages: Detection and feature extraction and recognition. The detection stage is just used to find a road sign. At the point when a vehicle is travelling at a specifie speed, the camera catches the road sign in nature, and our calculation verifies whether a sign is available in that outline or not available in that perimeter. Distinguishing the traffic sign depends on shape and color. In the feature extraction stage, the proposed calculation characterizes the distinguished road sign. This is

accomplished with the assistance of "Convolutional Neural Network" algorithm which classifies the image into sub classes.

Traffic sign recognition and detection is an important part of any autonomous vehicle. However, the real challenge lies in the detection and recognition of these traffic sign from the natural image in real time and with accuracy. This paper gives an overview of the traffic road sign detection and recognition system, we developed and implemented using an artificial neural network which is trained using real-life datasets. This paper presents the usage of convolution neural network along with dataset as an implementation of our project to attain real-time result with accuracy.The system developed based on this methodology can be implemented in public transports, personal cars, and other vehicles in order to keep drivers alert and reduce human errors that lead to accidents. The project has a wide implementation of selfdriving vehicles.

ADVANTAGES OF PROPOSED SYSTEM

> Reducing the number of accidents caused by driver distraction and to reduce

> The seriousness of such accidents.

> Improve the driver's safety on the road.