

Traffic sign board recognition and voice alert system

TEJESHWINI C S^{#1}, PRIYANKA K P^{#2}, PUSHYA B RAJ^{#3}, RAKSHITHA A R^{#4}

[#] INFORMATION SCIENCE AND ENGINEERING, VIDYA VIKAS INSTITUTE OF ENGINEERING AND TECHNOLOGY, MYSURU

Abstract— To ensure a smooth and secure movement of traffic, road signs are major. A critical justification for road setbacks is imprudence in survey the Traffic bulletins and unravelling them erroneously. The proposed system helps in seeing the Traffic sign and sending a voice alert through the speaker to the driver with the objective that he/she could take essential decisions. The proposed structure is arranged using Convolutional Neural Network (CNN) which aids busy time gridlock with checking picture affirmation and gathering. A lot of classes are described and ready on a particular dataset to make it more precise. Following the ID of the sign by the structure, a voice alert is sent through the speaker which tells the driver. The proposed structure similarly contains a section where the vehicle driver is forewarned about the traffic signs in the near proximity which helps them with checking what rules to see on the course. The mark of this system is to ensure the security of the vehicle's driver, voyagers, and walkers.

Index Terms—Traffic Sign board, CNN, voice alert

I. INTRODUCTION

Road and traffic signs considered in this proposition are those that usage a visual/symbolic language about the road(s) ahead that can be unravelled by drivers. The terms are used alternately in this proposition, and elsewhere could similarly appear in mix, as "road traffic signs". They give the driver bits of information that make driving safe besides, worthwhile. A sort of sign that isn't seen as in this hypothesis is the bearing sign, where the looming headings for getting to named towns or on numbered courses are shown not symbolically anyway essentially by message.

Road and traffic signs ought to be suitably presented in the fundamental regions and an

Load of them is clearly expected to help with ensuring palatable invigorating and upkeep. Get-togethers with the street specialists in both Scotland and Sweden uncovered the nonappearance of anyway a prerequisite for a supply of traffic signs. A modified strategy for recognizing and seeing traffic signs can earnestly commit to this goal by giving a fast procedure for recognizing, gathering and logging signs. This method helps with encouraging the stock unequivocally and dependably. At the point when this is done, the area of twisted or obfuscated signs becomes less difficult for human manager.

Road and traffic sign affirmation is the field of study that can be used to help the

Improvement of a stock system (for which continuous affirmation isn't required) or help the progression of an in-vehicle advance notice structure (when consistent fundamental). Both road sign stock and road sign affirmation are stressed over traffic signs, face tantamount hardships and use modified distinguishing proof and affirmation.

II. RELATED WORK

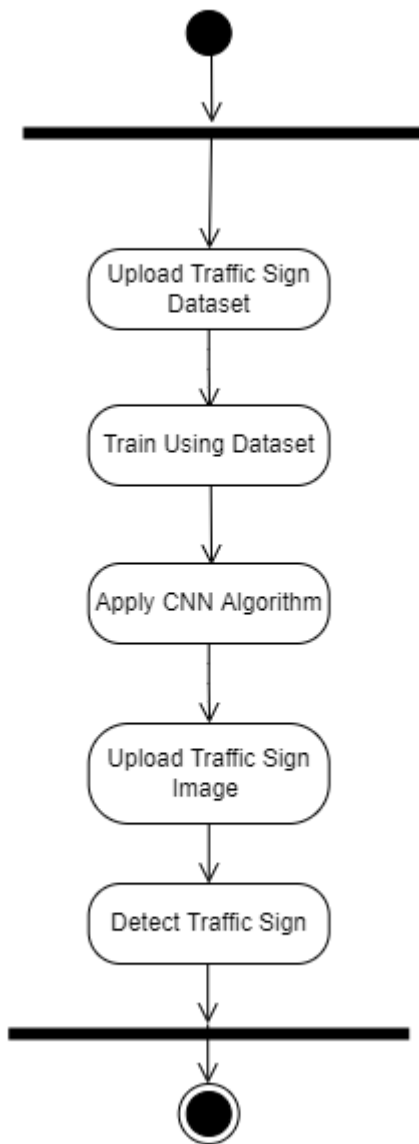
Yadav et. al. employed the Support Vector Machine technique. The dataset was divided into 90/10 for training and testing purposes, and it employs linear classification. To achieve the desired result, a series of phases called Color Segmentation, Shape Classification, and Recognition were followed. Anushree.A et. al. used Raspberry Pi in detecting and recognizing Traffic Signs with much less coding. However, it requires the Raspberry Pi board at one's discourse for implementation which is quite costly. S. Harini et.al. Introduced Another way of Traffic sign recognition is picture intensive. A video is acquired and broken down into frames. Image preprocessing is done which includes separating the foreground and the background, thinning and contrast enhancement. The signs are then categorized as hexagonal, triangular, or circular in shape and transmitted for template matching after these operations. The objects with some definite shape are matched from the pre-trained algorithm.

III. PROPOSED METHOD

In our proposed framework, we foster the Traffic Sign Board Recognition and Voice Alert System utilizing Convolutional Neural Network. Our framework will ready to identify, perceive and construe the street traffic signs would be a huge assistance to the driver.

The goal of a programmed street signs acknowledgment framework is to recognize and characterize at least one street signs from inside live variety images. We give awareness of the driver about the sign utilizing voice of the distinguished sign board. The framework furnishes the driver with constant data from street signs, which comprise the most significant and testing assignments. Next produce an acoustic admonition to the driver ahead of any risk. This cautioning then permits the driver to take fitting restorative choices to alleviate or totally keep away from the occasion.

Upload Dataset
Data Pre-Processing
Feature Extraction
Application of CNN algorithms to create model
Result



IV. CONCLUSION

The Traffic Sign Board Detection and Voice Alert System is implemented using Convolutional Neural Network. Various models under the CNN heading were studied and the one with highest accuracy on the dataset was implemented. The creation of different classes for each Traffic sign has helped in increasing the accuracy of the model.

REFERENCES

- [1] Yadav, Shubham & Patwa, Anuj & Rane, Saiprasad & Narvekar, Chhaya. (2019). Indian Traffic Sign Board Recognition and Driver Alert System Using Machine Learning. International Journal of Applied Sciences and Smart Technologies. 1. 1-10. 10.24071/ijasst.v1i1.1843.
- [2] Anushree.A., S., Kumar, H., Iram, I., & Divyam, K. (2019). Automatic Signboard Detection System by the Vehicles.
- [3] S. Harini, V. Abhiram, R. Hegde, B. D. D. Samarth, S. A. Shreyas and K. H. Gowranga, "A smart driver alert system for vehicle traffic using image detection and recognition technique," 2017 2nd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT), Bangalore, India, 2017, pp. 1540-1543, doi: 10.1109/RTEICT.2017.8256856.
- [4] C. Wang, "Research and Application of Traffic Sign Detection and Recognition Based on Deep Learning," 2018 International Conference

- on Robots & Intelligent System (ICRIS), Changsha, China, 2018, pp. 150-152, doi: 10.1109/ICRIS.2018.00047.
- [5] M A Muchtar et al 2017 J. Phys.: Conf. Ser. 801 012010
- [6] Y. Yuan, Z. Xiong and Q. Wang, "VSSA-NET: Vertical Spatial Sequence Attention Network for Traffic Sign Detection," in IEEE Transactions on Image Processing, vol. 28, no. 7, pp. 3423-3434, July 2019, doi: 10.1109/TIP.2019.2896952.
- [7] S. Huang, H. Lin and C. Chang, "An in-car camera system for traffic sign detection and recognition," 2017 Joint 17th World Congress of International Fuzzy Systems Association and 9th International Conference on Soft Computing and Intelligent Systems (IFSA-SCIS), Otsu, Japan, 2017, pp. 1-6, doi: 10.1109/IFSA-SCIS.2017.8023239.
- [8] Bi, Z., Yu, L., Gao, H. et al. Improved VGG model-based efficient traffic sign recognition for safe driving in 5G scenarios. Int. J. Mach. Learn. & Cyber. (2020).
- [9] Chuanwei Zhang et al., Study on Traffic Sign Recognition by Optimized Lenet-5 Algorithm, International Journal of Pattern Recognition and Artificial Intelligence, doi:0.1142/S0218001420550034
- [10] Han, C., Gao, G. & Zhang, Y. Real-time small traffic sign detection with revised faster-RCNN. Multimed Tools Appl 78, 13263–13278 (2019). <https://doi.org/10.1007/s11042-018-6428-0>