Intelligent car

Rohini S. Adamapure[1], Shraddha S. Patil[2], Shivani C. Avalakki[3], Prof. A. R.Telepatil [4]

[1, 2, 3]B.Tech Student, [4]Assistant Professor
[1, 2, 3, 4]Department of Electronics & Telecommunication Engineering,
DKTE Society's Textile and Engineering Institute, Ichalkaranji, Maharashtra, India

---***---

Abstract - *Traffic sign recognition plays very important role in driver assistant system to disburden driver as well as in intelligent autonomous vehicles. At present situation the human beings are faced many accidents during the road ways transportation. At the same time they lose our life and valuable properties in those accidents. To avoid these problems the system designed with the help of Raspberry pi. The Digital image processing plays important role in the sign capturing and detection system. The image processing algorithms to takes the necessary action for resizing the captured signs. The Raspberry pi camera port used to capturing the road signs with image enhancement techniques.*

Key Words: *Raspberry pi3, Traffic signal detection and reccongnition, Python, Amplifier, DC Motors, Speaker, PI cam.*

1. INTRODUCTION

Accidents is the biggest problem for every nation whether it is developed or developing country. According to world health organization, more than 1 millions of children are killed because of road accidents. So to reduce this problem we found solution on this. For the detection of signboards of schools and colleges and hospitals, we are using the back camera. For the drowsiness detection of a driver, we are using the PI front camera.

When the back camera captures the signboard of school, colleges, and hospital. It will give signals to raspbery PI and it controls the operation. It gives output to the horn and dc motor. That time the horn will be deactivated and reduces the speed of the car.

For example, If the normal speed of the car is 40m/hr then at this instant speed of the car is 20km/hr for a certain time. The drowsiness detection system works by monitoring the eye movement of the driver using the front camera. When a driver is drowsy the buzzer will activate for some time.
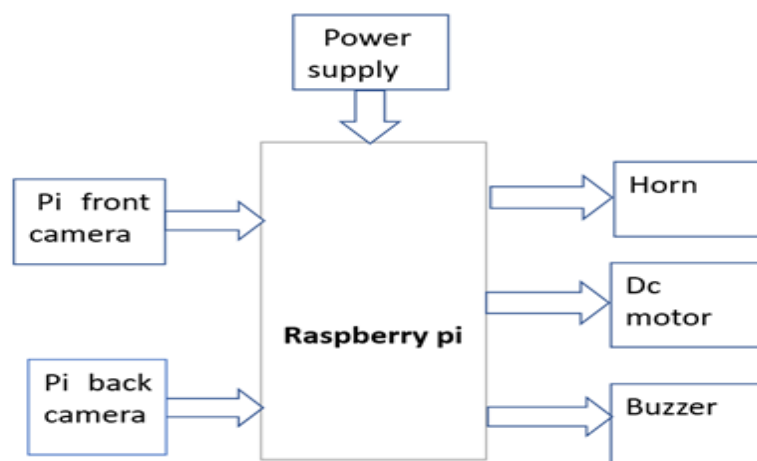
2. BLOCK DIAGRAM

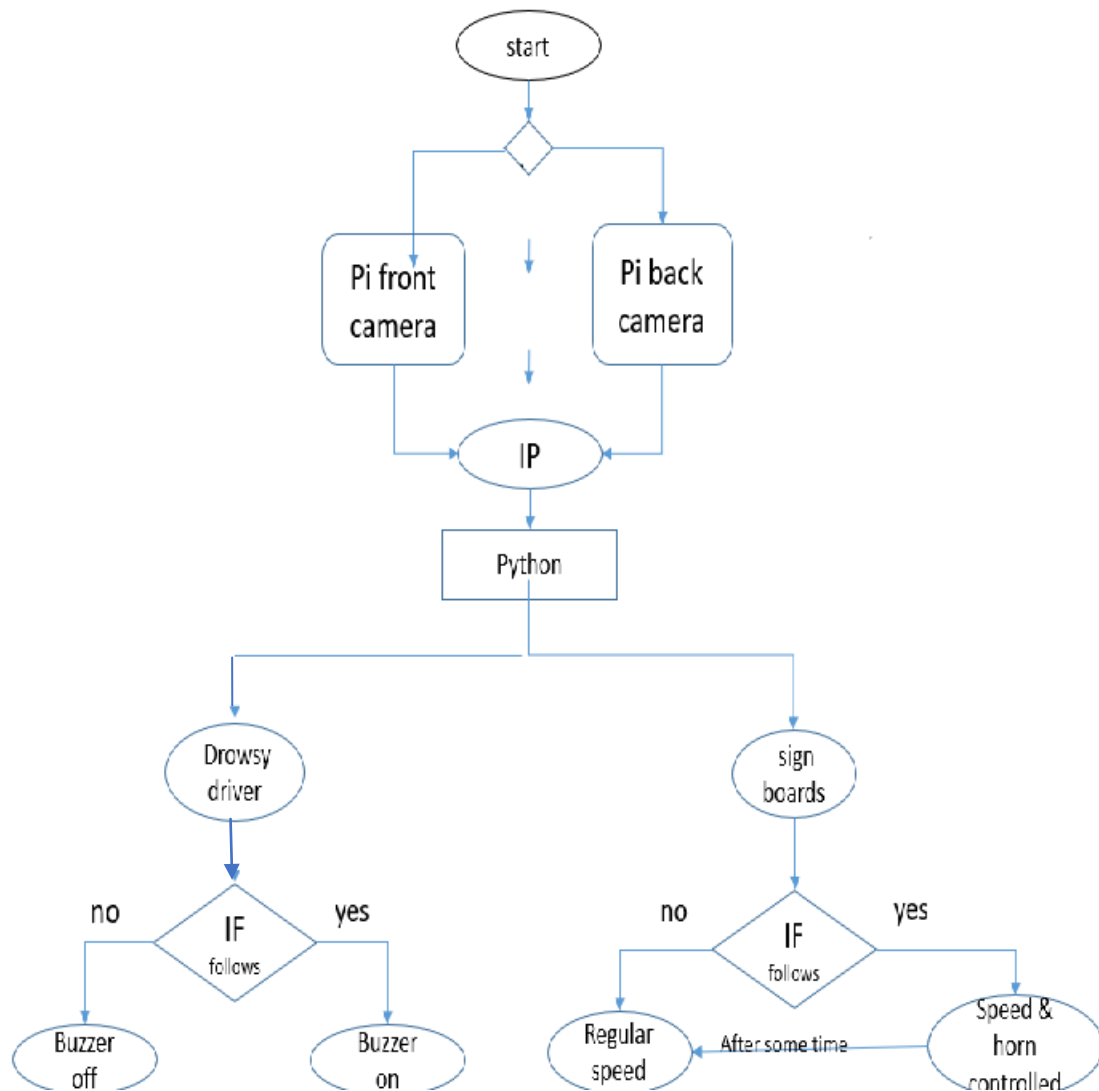**Fig2**. Block diagram of Intelligent car

3. FLOW CHART

Fig3. flow chart of sign detection.

4. METHODOLOGY

Existing System:

As we know current system is based on traffic sign board. These methods not followed by humans, they break the rules. So to overcome these disadvantages, we have proposed a system which will reduce the road accidents.

Proposed System:

We are proposing this system to make automation of entire process of current system. For the detection of signboards of schools and hospitals, we are using the back camera. For the drowsiness detection of a driver, we are using the PI front camera. When the back camera captures the signboard of school, colleges, and hospital. It will give signals to raspberry PI and it controls the horn and speed of the car.

5. GENERAL ALGORITHM OF EXISTING SYSTEMS

Step 1: Camera installed on the vehicle continuously takes the video of the situation ahead.

Step 2: Verify the information into database.

Step 3: traffic sign regions of interest (ROIs) extraction, ROIs refinement and classification, and post-processing.

Step 4: First, for each frame in the video, traffic sign ROIs are detected with Maximally Stable external Regions (MSERs) on multichannel images.

Step 5: Then, to refine and classify the ROIs, a multi-task Probabilistic Neural Network (PNN) is proposed.

Step 6: Specifically, the ROIs are first fed to a binary classification layer, and only the positive ones are further classified with a deep multiclass classification network.

Step 7: The network is trained end-to-end with a large number of data, which consists of training data, synthetic signs and images labeled from street view.

Step 8: Finally, recognition results from each frame are fused to get the final results of the video. As per comparison show Result.
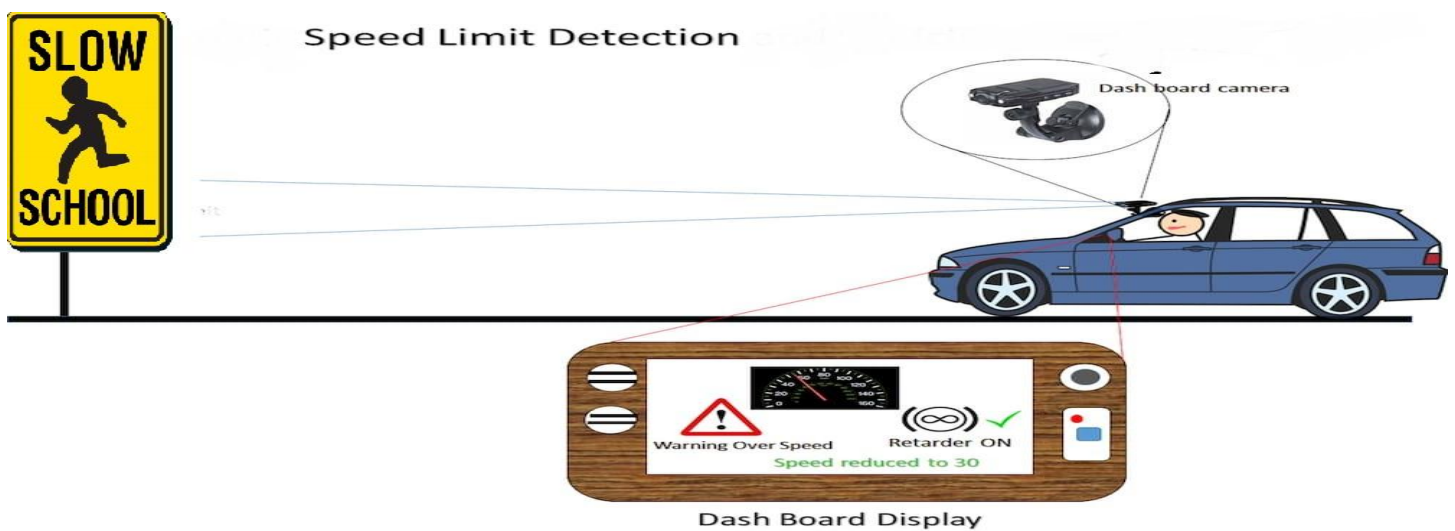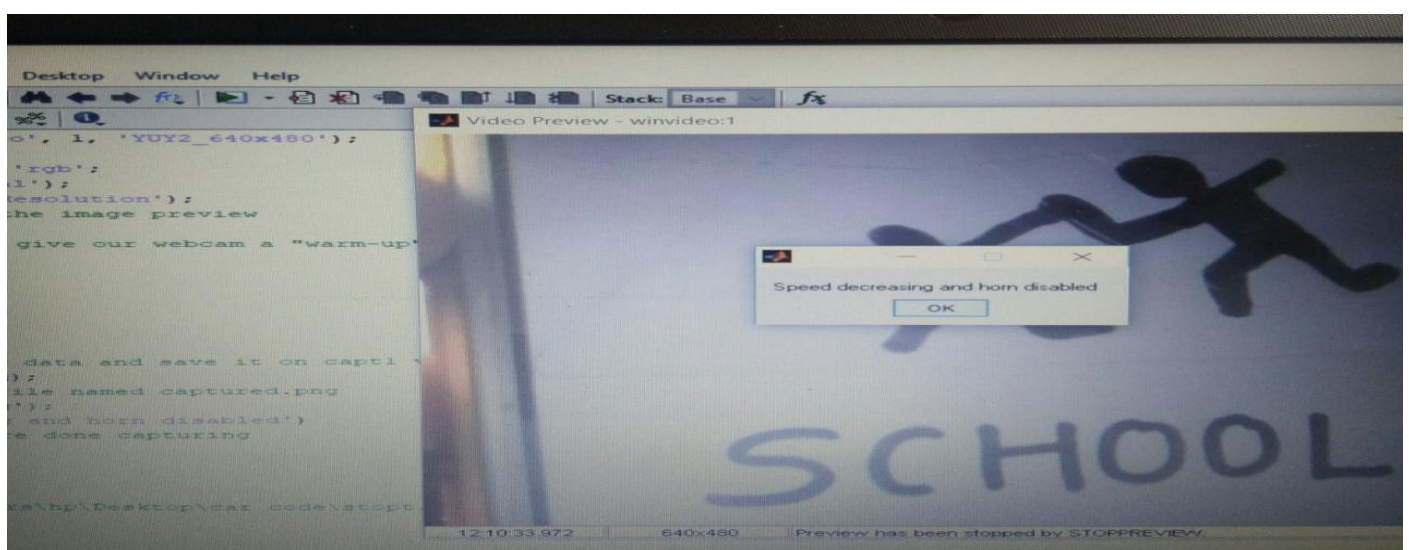
6. RESULTS

Fig1. speed limit detection and horn control**.**

7. CONCLUSION

This technology will help to improve human safety. It helps driver to maintain the speed of car. It controls over noise pollution and eliminates disturbances near school and hospital areas. This system is fully based on automation process which replaces the existing manual operation. Automation process, in turn decreases the human error, increases the accuracy, processing speed and reliability.

8. FUTURE WORK

For future enhancement, more advanced resolution camera and advanced processors can be used in order to detect the sign perfectly and quickly. A System should be developed to monitor the rear end vehicle during the turnings so that the automation process will ensure more safety. To enhance it more in the future machine learning algorithms can be used so it can be able to determine each objects .The current performance is good but to make it more efficient it is necessary to implement it using machine learning and other algorithms so it will understand more things .So in future to make it more advance it.

9. REFERENCES

1] J. Stallkamp, M. Schlipsing, J. Salmen, and C. Igel, "The German traffic sign recognition benchmark: a multi-class classification competition," in Proc. IEEE IJCNN, 2011, pp. 1453–1460.

2] S. Houben, J. Stallkamp, J. Salmen,M. Schlipsing, and C. Igel, "Detection of traffic signs in real-world images: The German traffic sign detection benchmark," in Proc. IEEE IJCNN, 2013, pp. 1–8.

3] Yi Yang, Hengliang Luo, Huarong Xu and Fuchao Wu, "Towards Real-Time Traffic Sign Detection and Classification," IEEE,2014.

4] Kai Li, Weiyao Lan, "Traffic indication symbols recognition with shape context," IEEE ,2011.

5] J. Greenhalgh and M. Mirmehdi, "Real-time detection and recognition of road traffic signs," IEEE Trans. Int. Transp. Syst., vol. 13, no. 4, pp. 1498–1506, Dec. 2012.

6] Dipankar Mudoi and Parismita A. Kashyap, Vision Based Extraction of vehicles in traffic International Conference on signal Processing and Integerated Networks (SPIN), 2014, IEEE.