SRI VENKATESWARA COLLEGE OF ENGINEERING (Autonomous)
INSTITUTION INNOVATION COUNCIL (IIC)
IDEA COMPETITION-APPLICATION FORM

Name of the Student	Rahul RK, Shantha Kumar, Vykunth
Branch	Information Technology
Year /Semester	3rd year – 6th semester
Section	B
Roll.No	74, 88, 112
Register No	170801074, 170801088, 170801112
Any other Camp attended related to Innovation/Entrepreneurship/Incubation	Entrepreneurship Awareness Camp by Entrepreneurship Promotion and Incubation Center EPIC, TNSI 2018 - Awareness Program - Anna University Chennai, Social Entrepreneurship Camp by Rajiv Gandhi National Institute of Youth Development
Idea Competition – Mention the Theme *(Please refer the circular, for more details)*	Automobile Technology & Transportation
Field trips attended related to the theme.	**Yes**
If Yes. Mention the Name of the Organization with Address	Infoziant IT Solutions, Chennai Rajiv Gandhi National Institute of Youth Development, Sriperumbudur
Mentor (if any) Name and Designation	Mrs. Sharon Femi Assistant Professor
Student Name with Signature	
Department IIC Coordinator Name with Signature	

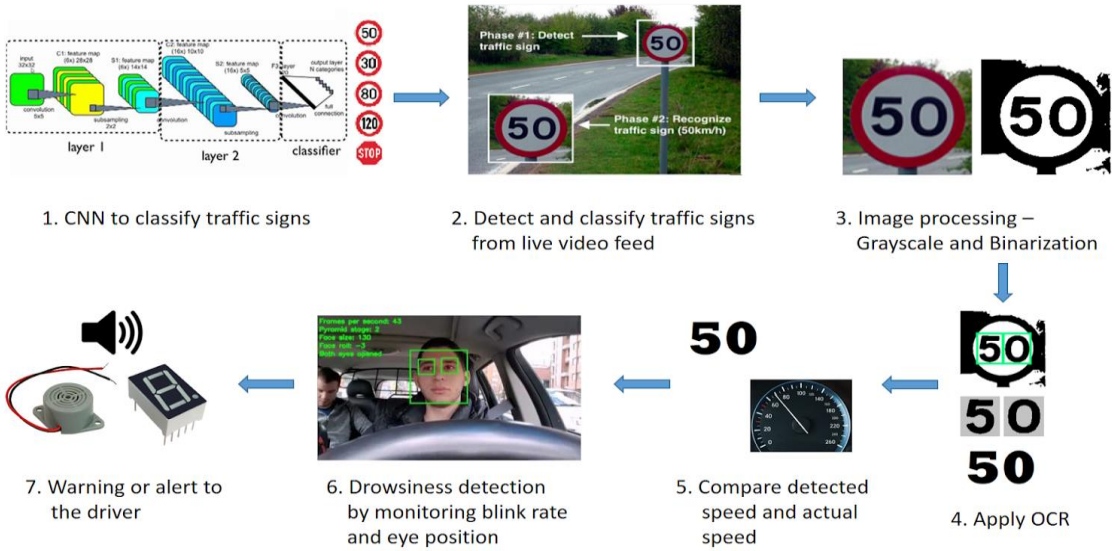
Novelty of Idea / Innovation

The main objective of the project is to ensure pedestrian safety and monitoring the vehicle speed in highways and accident-prone areas. Over 1.25 million road traffic deaths occur globally every year and majority of the accidents happen due to loss of concentration and violation of traffic rules – Over-speeding, drunk-and-drive. Accident rates can be reduced by a great extent if the drivers are warned beforehand in case of any violations. Machine Learning and Computer Vision techniques are used to train a Convolutional Neural Network for detecting and recognizing various traffic signs such as speed limit signs or sign boards for

schools/hospitals/accident prone areas, etc. using the Mapilarry traffic sign dataset. A video camera will be fixed on the car which constantly monitors the path of the car. The system will analyse each frame of the video to identify and classify the traffic signs among one of the classes defined in the traffic sign model. Optical Character Recognition (OCR) can be used to compare the values such as speed limit from the recognized image of the traffic sign with real-time speed of the vehicle. If the real-time speed of the vehicle is greater than the maximum speed limit specified in the traffic sign, then it implies that the driver is not violating the traffic rules. Hence a warning would be given to the driver using LCD or a seven segment display and a buzzer. Additionally, it is important to monitor the driver for drowsiness as it might lead to loss of concentration on the road. Haar-cascade classifier and PyGaze can be used to track the blink rate and eye position of the driver. If the driver's eyes are found to be closed for more than 5-8 seconds, then it can be concluded that the driver is feeling drowsy and a warning will be given accordingly.

Methodology

1. Train a CNN to classify traffic signs using Mapillary dataset.
2. Detect the traffic signs from the live video feed and classify it using the CNN.
3. Obtain the image of the detected traffic sign and apply image processing techniques such as gray scaling and binarization.
4. Apply Optical Character Recognition to get the speed limit from the detected image.
5. Check the speed of the car with the speed limit value detected from the traffic sign.
6. Eye position and blink rate of the driver is monitored in real time to detect the drowsiness of the driver.
7. Warning is given to the driver in the form of a buzzer of a seven segment display.



Societal impact

Many accidents happen due to lack of concentration and violation of speed. Our project aims helps to avoid road accidents by monitoring the road signs denoting the speed limits with the actual speed of the car. Also, the driver is monitored continuously and warning is given if the driver is found to be drowsy and this could potentially save lives. Our project can also be included in Autonomous Electric vehicles in the future which will help to decrease the accident rates in our society.

Market potential

The electric vehicles sector in automobile industry is developing quickly and it is estimated that 10 million self-driving cars will hit the road by 2020. Our project will play a key role for the development of electric and self-driving vehicles in order to monitor the speed limit and driver's drowsiness in real-time using image processing and Machine learning. The automobile industry will keep growing and safety of human lives is the top most priority. Our project will help to ensure safety for drivers and vehicles and will have a great market value. Our project is the need of the hour for autonomous electric vehicles in automobile industry.

HOD Signature with Date