**ABSTRACT**

The most important aspects in an accident investigation are the license plate detection and to prevent accident due to driver drowsiness .License plate detection uses the novel algorithm. It is containing three segments: license plate detection, individual number and character extraction, and number and character recognition. In the image, noise is removed by Gaussian blur filter and then using modified canny algorithm the numbers and characters are recognized using k-nearest neighbor classifier. Driver drowsiness detection algorithm is based on the state of eyes of the driver which is determined by his iris visibility. If driver’s eyes remain in one state either open or closed longer than expected time as well as if the driver is not facing front, it is an indication that driver is drowsy and then the system warns the driver by making alarm. It uses Viola Jones algorithm to detect the objects such as nose, mouth or upper body and captures the image. An image was captured and then, rectangular eyes area was adjusted to reduce the noise. The drowsiness detection uses Black to White pixels ratio, number of pixels in the column greater than the threshold value and eye's shape .And another aspects in the alcohol sensor fixed on helmet is used to prevent driver to drunk and drive scenarios.Which may prevent the driver not to drive in druken state. And there is a pressure sensor which is fixed inside the helmet which may prevent the driver from not wearing the helmet while driving.

Keywords:

* Machine learning
* Driver drowsiness
* Number plate detection
* Alcohol detection
* Open CV
* Teserate-OCR
* ESP8266