# Image Processing based Driver Drowsiness Detection System

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## ABSTRACT

During traveling or driving, our safety is the first priority. A driver error may result in severe physical injuries, deaths, and significant economic losses.Many systems are available in the market today, such as navigation systems, different sensors, etc., to make driver work easy. Especially human errors resulting in road accidents are caused by multiple factors. Reports say there has been an enormous increase in our country's road accidents over the past few years. The main reason for the road accidents is driver's somnolence and sleepiness while driving.An effective technique to detect drowsiness as soon as the driver feels sleepy is a necessary step. This could save the occurrence of large number of accidents. To decrease the accidents, we develop a system for early detection of drowsiness.

**KEYWORDS:** Drowsiness, Accident, Image processing

## INTRODUCTION

As a result of a driver's reduced level of vigilance, the increasing number of traffic accidents has become a serious problem for society[1]. Some of these accidents result from the medical condition of the driver. Most of these crashes, however, are associated with driver fatigue, driver drowsiness[2]. Car accidents involving driver fatigue are more probable to be severe, resulting in severe injuries and fatalities. 30% of all traffic crashes are estimated to have been caused by drowsiness[3].To overcome from this problem we

develop a system for detecting the drowsiness of the driver and also actuating the motor driver to shut down the vehicle ignition[4].The aim was to introduce a vehicle driver monitoring system centered on the methods of an artificial vision and deployed in a smartphone to identify and warn the pilot when indications of drowsiness exist. In order to achieve this goal, we analyzed other works relating to driver drowsiness detection, driver drowsiness symptoms, and the technical parameters and algorithms to process signal of drowsiness in vehicle drivers

## Working of Proposed System

The system comprises of; camera for capturing the image of the driver. A database for storing the image captured through camera[5]. An ADABOOST face detection algorithm for detecting the face of the driver.Comportment techniques are used to detection of face characteristics like a visible state, face motion, flashing frequency and yawning by using assembled sensors in the vehicle[6].

Further handling is implemented after acquiring these characteristics to determine the degree of drowsiness, usually by using computer training methods such as vector machines (Svm), CNN or K–Nearest neighbors (KNn).

These methods are taught to construct designs that can be used to prevent drowsiness using characteristics and labeled inputs[7]. A big dataset that includes the anticipated variation between breeds and skin is the most difficult component of this method. FIG 1 shows the block diagram representation[8].

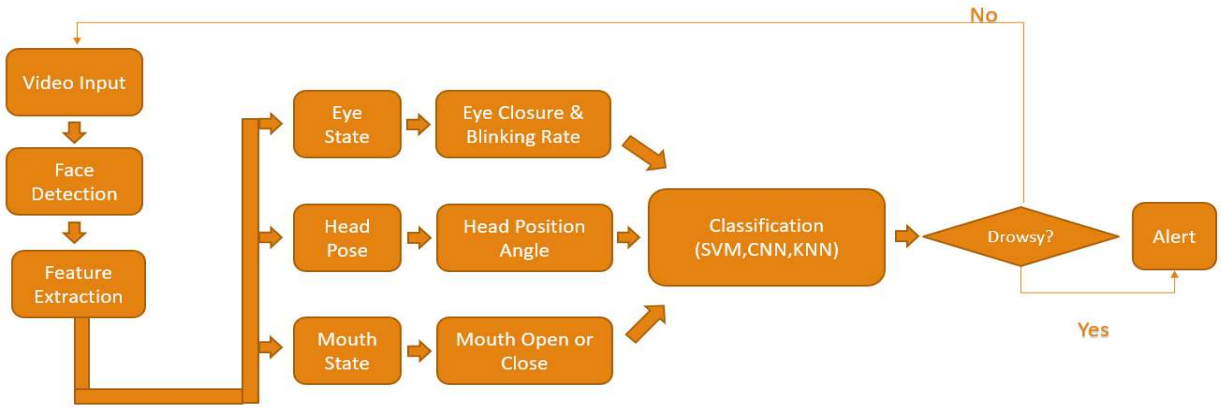

**FIG 1**

Extracted characteristics can then be further analyzed such as PERCLOS and EAR for eye testing and oral tracking techniques.The evaluation phase comprises of classificatory used to make decisions on rider drowsiness[9]. If the classifier detects drowsiness characteristics depending on the weighted parameters, an alert is triggered which suggests a rider breaks down.Behavioral techniques are different because the graphics, camera motions and image rates used to record pictures of riders ' faces affect their efficiency. They have different constraints. Using the infra-red (IR) sensors, light variability can typically be eliminated.

## CONCLUSION

The aforementioned paper discloses techniques of machine teaching like SVM, CNN, etc. are examined. Sadly, comparing these methods is highly hard because a restricted amount of uniform data sets are presently available. A meta-analysis was carried out in an effort to correct this. This assessment reveals the efficiency of CNNs, which exceeded other methods, but also indicated that greater datasets and normal benchmarking procedures are needed for the identification of drowsiness. In future job, an appropriate data set will be created covering a broad variety of distinct species to make more dependable similarities of somnolence.

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