

## ISEN-689 SYSTEMS THINKING AND ANALYSIS

### Project proposal

### Machine Vision System to Prevent Car Accidents

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#### PROBLEM DEFINITION

Majority of the accidents caused today by cars are mainly due to the driver fatigue. Driving for a long period of time causes excessive fatigue and tiredness which in turn makes the driver sleepy or loose awareness. With the rapid increase in the number of automobiles and road traffic the number of accidents seems to be increasing day to day. Therefore a need arises to design a system that keeps the driver focused on the road.

#### SOCIETAL NEED

Texas motor vehicle accident statistics indicates that about 54% of the accidents were due to roadway departures, 18% were intersection related, 13% fatalities in crashes involving large trucks, and 443 nonmotorist (pedestrians and bicyclists) fatalities. Of 3675 motorists killed in motor-vehicle crashes 40% were passenger car occupants and 36% were light truck passengers. One of the more prominent reasons for car accidents is due to driver fatigue. This alarming situation demands a new system to be incorporated in the vehicle to prevent such fatal accidents.

#### SYSTEM FUNCTION

The new system to be designed uses machine vision system, which encompasses computer science, optics, mechanical engineering, and industrial automation. Using a

sensor we can position the eye of the driver. This sensor triggers the camera to capture the images and constantly carry out image processing. When there is a change in the image like closing of eyelids the system actuates the alarming system inside the car and also actuates a vibrator in the armrest and headrest. This will make the driver conscious and alert.

### TECHNOLOGY USED

- Sync Sensor
- Smart Camera
- Embedded Processors & DSP s
- Vibrator& Alarm Systems

### REFERENCE

- [www.wikipedia.org](http://www.wikipedia.org)
- [www.psychology.nottingham.ac.uk](http://www.psychology.nottingham.ac.uk)
- [www.weitzlux.com/texas/motorvehicleaccident](http://www.weitzlux.com/texas/motorvehicleaccident)