

DROWSY DRIVER DETECTION SYSTEM

A dissertation submitted to the
Computer Science Technology Degree Program,
Uva Wellassa University
In partial fulfillment of the requirement for the award of the
Degree of Bachelor of Science

By

VIDANA GAMAGE CHAMIL NIROSHANA

CST/ 09/0027

Computer Science Technology Degree Program

Uva Wellassa University, Sri Lanka

October 2013

Abstract

Many road accidents happened due to driver's lack of attention while driving. It can happen due to many reasons. One of the major reasons is driver drowsiness. This paper describes a drowsy driver detection system which implements using c# language and Emgucv wrapper. The system consists of a web camera which continuously provides the video signal of driver face area. System detects driver's face, detects eyes, calculates the state of the eyes and if it detects a drowsy situation, plays an alarm to alert the driver.

Haar like feature technique is used to detect the driver's face on frames. In this case there should be only one human face on frames. Haar classifier trained using equal number of positive and negative samples that are scaled to the same size. Positive samples contained various human faces which have open eyes. System uses face width and height to detect possible eye region to feed as input to detect state of the eyes. System uses two different methods to identify the state of the eyes.

As the first method system uses change of intensity values around eye region because of that system can easily identify the eyebrow and upper lid. If the distance between eye brow and upper eye lid is greater than the system threshold value then eyes of the driver's are in close state otherwise eyes of the driver's are in open state.

System uses support vector machine classifier to confirm the results of the first method to get a better accuracy in calculating state of eyes. Support vector machine trained using local binary pattern data of images. System extracts local binary pattern features from detected eye region and feeds them to support vector machine. Special algorithm designed to calculate the final state of the eyes using both results of haar classifier and support vector machine and identify the drowsy situation.