

ITSP 2015

Driver drowsiness detection

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MOTIVATION:

When people drive while they are tired, drowsy or sleepy, this is commonly referred to as “driver fatigue” or drowsy driving.

Various studies have suggested that around 20% of all road accidents are fatigue-related, up to 50% on certain roads.

Fatigued car drivers often have a difficult time perceiving and processing information. For instance, a driver may not recognize that he or she has drifted into

the wrong lane until it is too late, and a serious car accident happens.

In order to prevent these devastating accidents, the state of drowsiness of the driver should be monitored.

SIMILAR PROJECTS IN PAST:

Mercedes-Benz: Attention Assist In 2009, **Mercedes-Benz** unveiled a system called Attention Assist which monitors the driver's fatigue level and drowsiness based on his/her driving inputs. It issues a visual and audible alarm to alert the driver if he or she is too drowsy to continue driving. It is linked to the car's navigation system, and using that data, it can tell the driver where coffee and fuel are available.^[7]

BMW:Active Driving Assistant with Attention Assistant analyses driving behaviour and, if necessary, advises the driver to rest. The advice to take a break is provided in the form of graphic symbols shown on the Control Display.

BASIC ALGORITHM:

The typical eye blink duration is less than 400ms on average and 75ms for minimum

CLASSIFICATION :

Awake : Eye closure time \lt Preset value_1

Drowsy: Eye closure time \gt Preset value _1 and Eye closure time \lt Preset value_2

Sleeping: Eye closure time \gt Preset value_2

DEMONSTRATION:

We will be making a prototype of driver drowsiness detection system and demonstrating it on a Arduino

controlled bot.

Our project will include direct user interaction to demonstrate functioning of our system .

TIMELINE:

Week 1: - buying all the components - Making of bot

-learning PYTHON

Week 2: -Start studying openCV libraries

-emphasizing on functions related to face
and eye blink detection

-study and research algorithms for efficient
detecting of driver drowsiness

Week 3: - Start coding in openCV for the project.

Week 4: -Learning how to use Xbee.

- Including the serial data transmission in

openCV code.

- Finalising the code

Week 5: -Troubleshooting of the project.

- Testing accuracy of the system
- Adding aesthetics to the final product.

COMPONENTS REQUIRED:

PC preferably running Windows 8

Arduino Uno or compatible(1) + power source.

XBee(2)

Buzzer

300 rpm motors(2)

Chassis and wheels(4)

Webcam w/UBS interface.

IC 7805 and 7809

L293D

Lead Acid Battery (12V)

Breadboard and PCB

Jumper wires.

ESTIMATED COST: Around 6000/-