

# Drowsy Driving Monitoring System Using Smartphone

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**Abstract-** In this generation, human's lifestyle has changed a lot. Now most of the people can afford the vehicles which is adding more traffic on the road, so that number of accident has increased in recent years. According to road accident stats one of the major cause is driver's fatigue. In this paper, we are representing design approach for drowsy driving monitoring system using smartphone. Drowsy driving monitoring system is developed on android platform based smartphone. So that driver's facial expression can be monitored using smartphone camera. If driver is found to be in drowsy state then smartphone will alert driver hence by this we can avoid the accident.

**Keywords-** Android, DIP, Drowsy Driving, Java, Smartphone.

## I. INTRODUCTION

Road accident is one of the major problem of the world, there plenty of law and regulation related to driver safety and driving. But having this laws and regulation can affect the mortality rate of accident. According world health organization (WHO) report nearly 1.3 million injuries accord in last year. If we look at fact of India it is devastating as compared to world average. According to the Times of India survey in India, 1314 road collisions occurs every day and 18 people dies every hour. In a single year, total 1.41 lakh people killed in road accidents in India, This above number of deaths are more than people died during war in India.

10% of road accidents due to drowsy driving.		
4.5 lakh road accident	1.41 lakh Death	4.8 Lakh injuries.

Table 1: Road Accident in India.

According to Forbes report 10% of accident generally happen due to driver's fatigue. So drowsy driving is the one of major cause of accident.

To avoid accidents due to drowsy driving, there are few system is available but problem with that system is they are not applicable in practical use. As there are bulky, costly and not accurate to determine driver's drowsiness.

So we have design system which is handy, reliable, and cost efficient with the help present day technology. Digital Image Processing (DIP) is vast technology, it has plenty of application.

To make drowsy driving monitoring system portable, we have coupled image processing with smartphone, so that we get new device for robot and reliable operation.

We have design the application on android operating system based smartphone using android studio software. This software allow user to create application with convenient.

Digital image processing technology is a tool for various image related operation. As in drowsy driving monitoring system, we have to monitor driver's face continuously with the help of smartphone inbuilt camera. To detect drowsiness, we have check facial expression of driver i.e. eye is open or closed, mouth position, micro sleep is also good sign of fatigue which last for 3 or 4 seconds. This are the parameter which help to determine driver is in fatigue state or not.

## II. EXISTING SYSTEM

The existing system is consists of dedicate computer system with external attach camera so this makes system more costly and complicated.

### Drawbacks of existing system:

- System required dedicated hardware and software which makes it costly.
- Complex to use.
- System is bulky and practical it is not applicable.

## III. PROPOSED SYSTEM

Drowsy driving warning system is implemented on android smartphone with the help of image processing algorithm. Driver's face expression such as eye blinking, mouth position will continuously monitor by smartphone in-built camera.

If the driver facial cues match with drowsy parameter which are determine by us, then smartphone will alert the driver. For emergency situation, driver can call for medical assistance by speaking “help” so smartphone will convert this command using voice translator function. And it will sent help message to nearest hospital, relatives with its current location as per data base.

**Advantages of proposed system:**

- It’s reliable and power efficient.
- System is portable and required less processing time.
- It is low cost and simple.

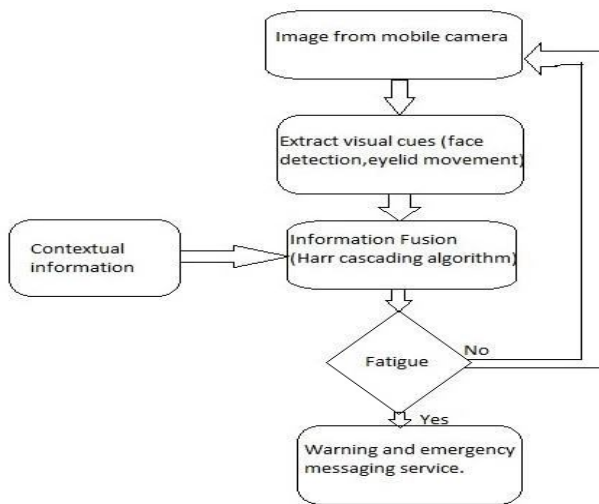


Fig 1: Flowchart of drowsy driving monitoring system.

**IV. SOFTWARE USED**

**1. Eclipse:**

Eclipse is an integrated development environment generally used in computer programming, eclipse is mostly used java IDE. It contains extensive plug in system and base work place for customizing the environment for user define work. It is ideal for designing of android application.

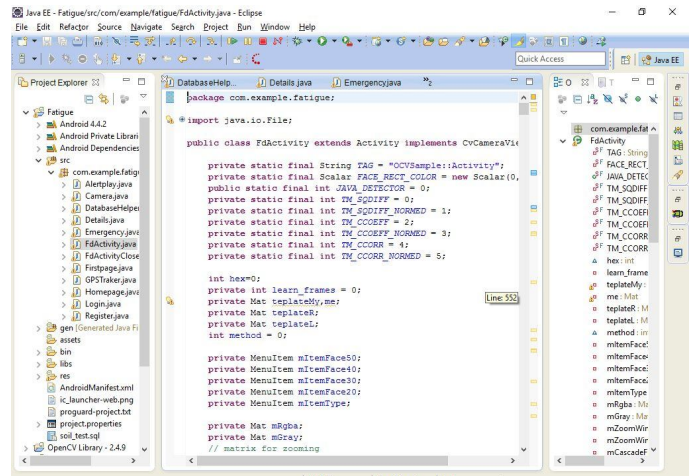


Fig 2: Eclipse software

**2. Java:**

Java is general purposed computer programming language. Which can be divided by concurrent, class based, objected oriented. java is designed to have few implement dependencies as possible. so that makes more popular for user defined function design. In Drowsy driving warning system application java is used for defining the function, parameter and assigning values.

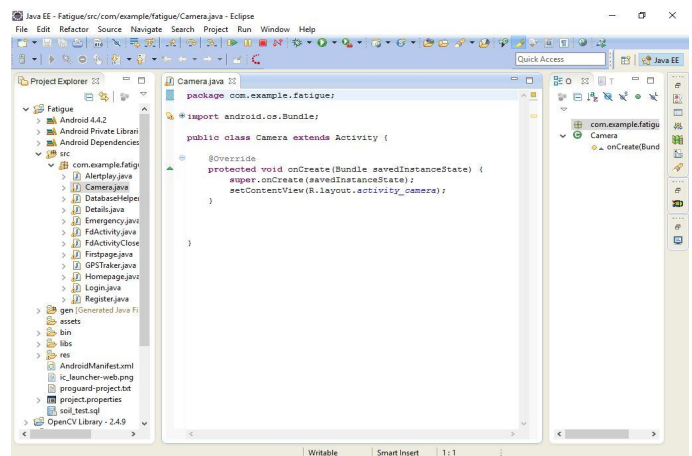


Fig 3: Java used in eclipse software for assign camera values.

**3. OpenCV:**

For detection of driver fatigue or drowsiness, we have used OpenCV library file i.e. Open Source Computer Vision Library. OpenCV is a library of programming function mainly aimed at real time computer vision.

**V. HARDWARE USED**

Android operating system based smartphone with good front facing camera. For this application minimum android phone software requirement is 6.0 nougat.

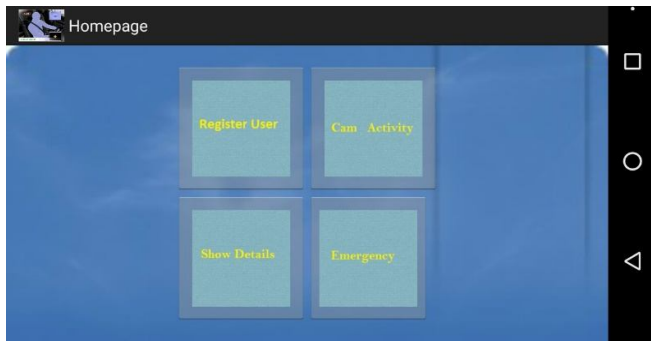


Fig 4: Drowsy driving monitoring application in smartphone

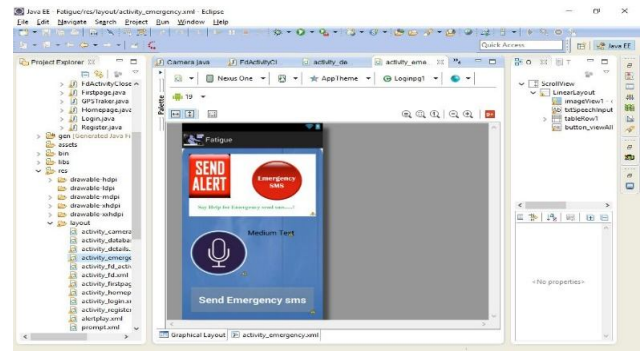


Fig 7: Alert message when drowsy driving detects.

**VI. RESULT AND DISCUSSION**

Drowsy driving monitoring system output is tested on eclipse software as shown below –

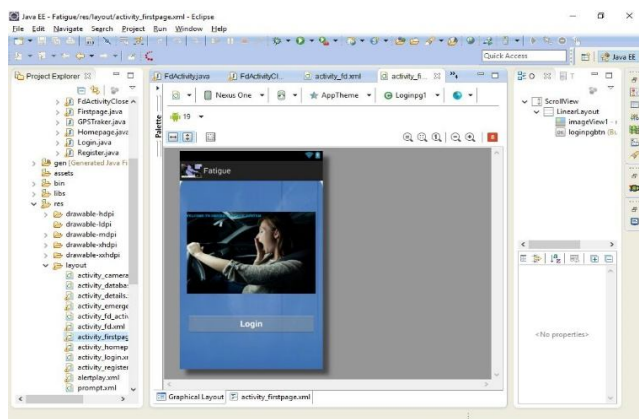


Fig 5: Log in to application and fill the user data.

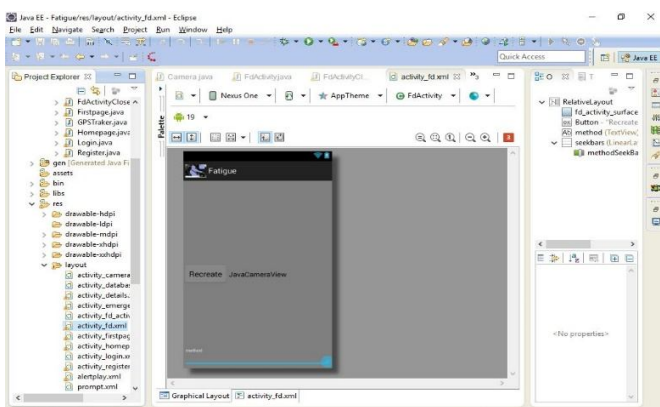


Fig 6: Smartphone camera data retrieve.

This proposed system is simple click and open application, it don't required any special setup, this proposed system continuously monitor driver face if driver is found to be in fatigue state then system will alert the driver and also provide emergency help service as show in fig 7 .

**VI. CONCLUSION**

Our proposed system's main objective is to avoid accident which happen due to driver fatigue hence this objective is achieved .So this drowsy driving monitoring system will alert the driver on drowsiness and also provide help in emergency situation with real time location facility for ambulance, family, etc. as per data base.

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